Lane End Road Mixed-Use Development,
Burnage,
Manchester,

Energy Statement

33089



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Prepared by:	[redacted]	Date
Ben Dibb-Fuller		09.04.25

Revision Record			
Rev	Date	By	Summary of Changes
-	09.04.25	BDF	-
1	03.02.26	BDF	Updated scheme

1 EXECUTIVE SUMMARY

An energy & sustainability statement has been carried out for the proposed development at the Lane End Road, Burnage (Manchester). The structure and philosophy of the report has been based upon utilising best practice methodology and adheres to the "Be Lean, Be Clean and Be Green" hierarchy as follows:

Energy Efficient Measures (Be Lean – Use Less Energy)

To maximise the energy efficiency of the development and reduce the energy demand, the development will benefit from the following:

- High specification building fabric
- U values that improve on Part L2 standard values
- Low air leakage rates
- Dedicated LED low energy efficient light fittings within all areas
- High efficiency MVHR (Mechanical Ventilation Heat Recovery) considered

Energy Efficient Systems (Be Clean – Supply Energy Efficiently)

- Hot Water provided via high efficiency systems
- High efficiency Heating/Cooling to Retail Units

Renewable Technologies (Be Green – Use Renewable Energy)

The following renewable technologies have been evaluated as part of this report:

- Solar Thermal
- Solar PV
- Combined Heat and Power (CHP)
- Air Source Heat Pump
- Ground Source Heat Pump



Figure 1: Site plan of the proposed development

With the proposed scheme falling under the Manchester City Core Strategy 2012-2027 (adopted July 2012), Greater Manchester Combined Authorities Places for Everyone (PfE) & The 'saved' policies of the Manchester Unitary Development Plan (adopted 1995), the following policies are applicable:

- Policy JP-S2: Carbon and Energy
- Policy JP-S3: Heat and Energy Networks
- Policy JP-S4: Resilience

2 INTRODUCTION

2.1 PROJECT SCOPE

Complete Sustainability Solutions have been commissioned to prepare an Energy Statement to assist with the planning submission for the proposed scheme.

The purpose of this energy statement is to model the proposed development, utilising SAP & SBEM software, identify the baseline carbon emissions; then utilise the energy hierarchy to minimise energy usage and carbon emissions, thus ensuring compliance with both national and local policy.

2.2 DEVELOPMENT DESCRIPTION

Demolition of the existing buildings and erection of a mixed-use development with retail (Use Class E) at the ground floor and residential development (Use Class C3) and roof terrace above, in addition to car parking, landscaping, and associated infrastructure.

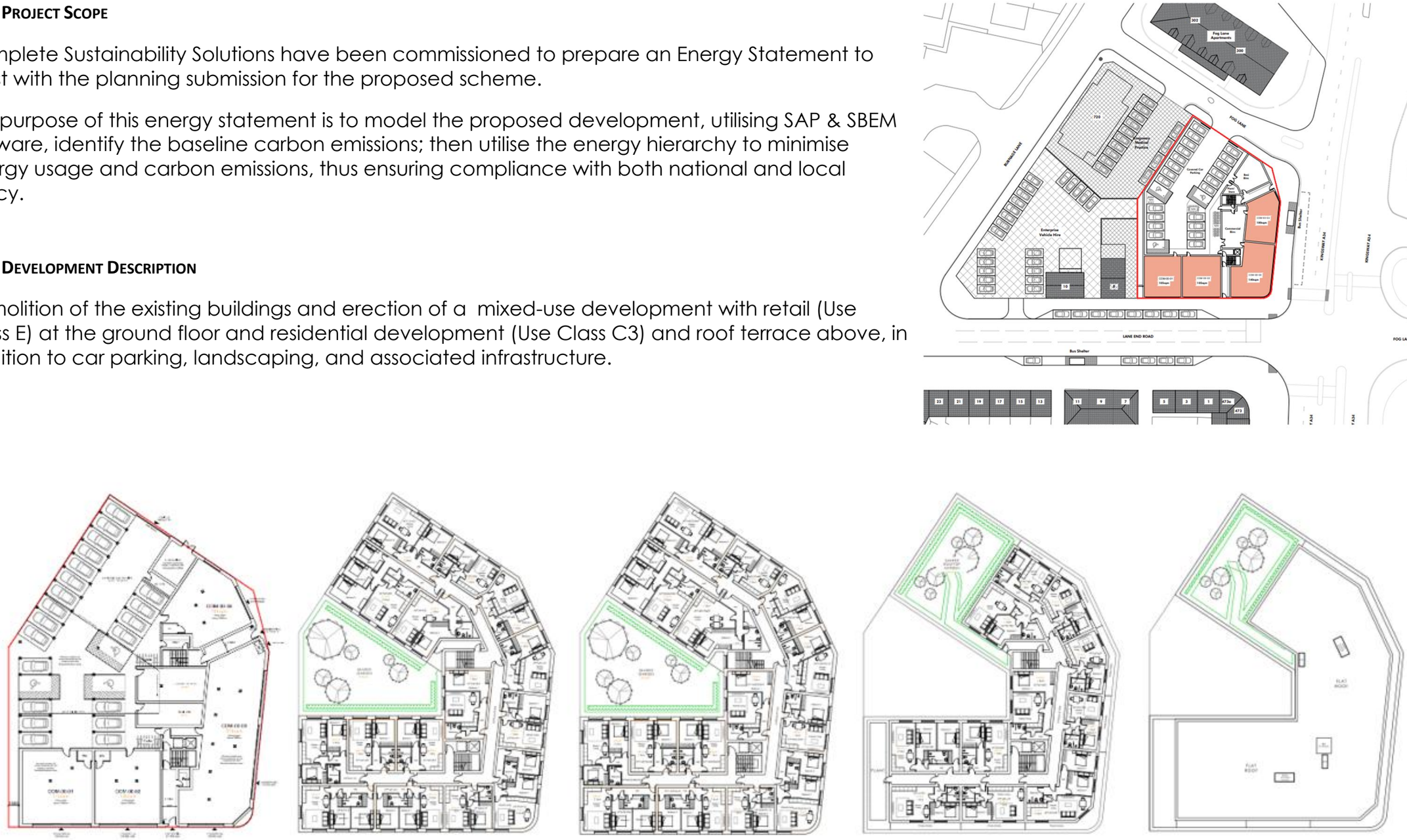


Figure 2: Proposed development plan (top) and floorplans (bottom)

2.3 SITE LOCATION

Architectural site location plan.

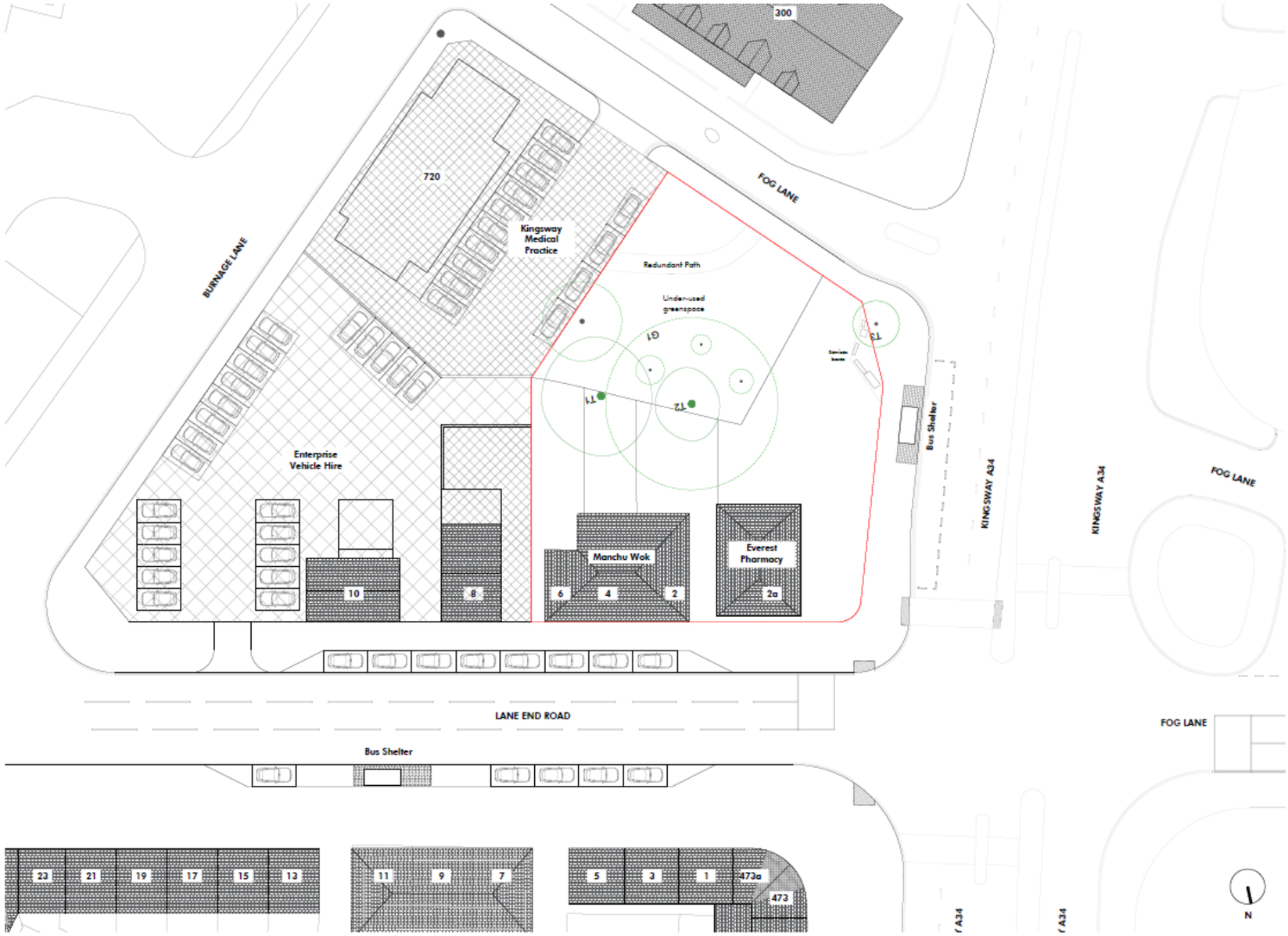


Figure 3: Location of proposed site

3 POLICY CONTEXT

Within this section of the report we will review both local and national policy, establishing key principles that can be taken forward and applied across the development.

3.1 National Policy Context – National Planning Policy Framework December 2024

Section 2. Achieving Sustainable Development

(**8**) - Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

a) an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

b) a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being.

c) an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

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

(**164**) – 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 incorporating green infrastructure and sustainable drainage systems; and

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

(**165**) – 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, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

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

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

(**166**) – 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.

(**168**) – When determining planning applications for all forms of renewable and low carbon energy developments and their associated infrastructure, local planning authorities should:

a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future;

b) recognise that small-scale and community-led projects provide a valuable contribution to cutting greenhouse gas emissions;

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.

(**169**) – 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.

3.2 Local Policy Context

The Development Plan for Manchester comprises the:

- Places for Everyone Joint Development Plan (adopted 2024);
- Manchester's Core Strategy 2012-2027 (adopted 2012); and,
- The 'saved' policies of the Manchester Unitary Development Plan (adopted 1995).

Policy JP-S2: Carbon and Energy

From 2025 development should also calculate and minimise carbon emissions from unregulated emissions alongside regulated emissions. From 2025 any residual carbon emissions that cannot be fully mitigated on-site should be offset, in agreement with the relevant local planning authority through a financial contribution to a carbon offset fund.

How will this policy be met?

Using the energy hierarchy, which prioritises a fabric first approach foremost, will target significant carbon emission reductions through sustainable design and renewable technologies. This is evidenced in the summary of results section of this report, whereby the reduction in operational carbon emissions over the building regulation 2021 baseline (sitewide) of 71%.

Despite the above approach, the design stage calculations (as detailed in the summary of results section) have found this however has led to a carbon offset requirement for the remaining 28% of carbon emissions that cannot be fully mitigated on-site, which as outlined in this *'Policy JP-S2: Carbon and Energy'* must be addressed. It is envisaged that a contribution to the local planning authority's carbon offset fund will be made for the residual carbon emissions for the site.

Policy JP-S 3: Heat and Energy Networks

Encourages developments to connect to existing heat and energy networks or, where not available, to establish new networks. This approach aims to enhance energy efficiency and reduce carbon emissions through decentralized energy generation.

How will this policy be met?

Using the Department for Energy and Net Zero heat networks planning database map (see appendix B), it was established that there are no existing networks available to connect into, nor would it be financially viable for the scheme to establish a new network.

Policy JP-S 4: Resilience

Focuses on ensuring that new developments are resilient to climate change impacts. It advocates for adaptive design measures, sustainable drainage systems.

How will this policy be met?

The development will incorporate climate resilience measures through a fabric-first approach and sustainable design principles, including enhanced building fabric performance and efficient building services to maintain occupant comfort and reduce vulnerability to future climate impacts. Sustainable drainage measures (SuDS) will also be incorporated where feasible to manage surface water run-off and improve long-term resilience.

4 Design Criteria

Within this section of the report we will, utilising SAP (10.2) & SBEM software, to carry out an assessment of the proposed development against current Building Regulations. We will establish CO_2 baseline, then following the energy hierarchy, establish a low-carbon specification to ensure CO_2 emissions meet the requirements of both national and local policy.

Full SAP & SBEM calculations will be carried out at detailed design to ensure the specification meets the local policy. If any amendments to the design are required these will be incorporated at this point and calculations updated to ensure compliance.

4.1 Preview and implement the Energy Hierarchy: Be Lean – Be Clean – Be Green

The Energy Hierarchy is a classification of energy options, prioritised to assist progress towards a more sustainable energy system. The energy hierarchy uses a step-by-step process:

- Step 1 Be lean – Use less energy.
- Step 2 Be Clean – Use energy efficiently
- Step 3 Be Green – Utilise renewable technology

4.2 Be Lean – Use Less Energy

The developer, in accordance with both national and local planning policy, has stated their wish towards ensuring the development follows a fabric first approach, therefore reducing demand on the national grid as reasonably possible.

Below we have highlighted the proposed U values, going beyond the requirements of Building Regulations; thus improving upon the baseline CO_2 emissions.

Beyond the fabric first approach, the next stage is to look at possible be lean measures that can be introduced across the site to minimise energy demand. Below we have identified the practical measures to be introduced:

Table 1: Summary of Proposed Be Lean Measures

Element	Building Fabric	
	L1A Minimum Requirement U Values (W/m^2K)	Proposed Dwelling U Values (W/m^2K)
Ground Floor	0.18	0.13
External Wall	0.26	0.18
Roof	0.16	0.11
Windows including roof lights (if applicable)	1.60	1.20 G-value = 0.63
External Doors	1.60	1.2
Air Permeability	8	3

Table 2: Additional Be Lean Measures

Be Lean
Low Air Leakage Rates
Dedicated LED low energy efficient light fitting within all areas
Lighting controls to all applicable areas
High efficiency MVHR (Mechanical Ventilation Heat Recovery units to all applicable areas

4.3 Be Clean – Supply Energy Efficiently

Within this section of the energy hierarchy, we see an emphasis being placed upon ensuring the regulated energy demands of the development are met as efficiently as possible.

District and site-wide heat networks can be utilised to provide heating and hot water to a development in an efficient manner. In this instance there isn't a district wide network within the vicinity of the scheme (see appendix B).

Furthermore, opportunities to include a combined heat and power system (CHP) may be considered, which allows for the production of electricity and although the scheme will provide a mix of users which could allow for a site wide heat network and Combined Heat and Power (CHP) system, the development programme, size of the development, and uses are not aligned in a way to allow for CHP to be considered and has therefore been discounted.

The next stage is to look at possible be clean measures that can be introduced to individual plots on site. Below we have identified the practical measures to be introduced:

Table 3: Be Clean Measures

Be Clean
Hot water provided by high efficiency systems
Space heating via high efficiency systems

4.4 Be Green – Utilise Renewable Energy

The final phase of the report is to ascertain if the development will benefit from renewable/low carbon technologies and the following renewable/low carbon technologies will be analysed for this development;

- Solar Thermal
- Solar PV
- CHP
- Air Source Heat Pump
- Ground Source Heat Pump

See Appendix A for detailed summary and suitability matrix of Be Green technologies.

Renewable technology in the form air source heat pumps and roof mounted Photovoltaics have been selected as the best fit renewable technology for the site.

Table 4: Summary of Be Green Measures

Be Green
We have reviewed the renewable options available to this site and have included the following: • Air Source Heat Pump to provide hot water to the dwellings via the Dimplex KERS ASHP. • Roof-mounted solar PV is applicable to this development, with a favorably sized, orientated and unshaded roof. It is estimated that: - 28.5kWp array to the apartments (0.5 kWp per unit) - 4kWp array allocated to the non-domestic area This array size would be roughly 130m^2 which the roofspace of the proposed 4th floor can accommodate.

5 SUMMARY OF RESULTS

5.1 SUMMARY OF RESULTS – THE ENERGY HIERARCHY

Tables 5 summaries the performance of the development using the guidance outlined in Part L1A & L2A for residential & Non-Residential buildings respectively, as the baseline target.

It is in our professional opinion that renewable technology would greatly improve the performance of this scheme however, the visual impact may be of concern due to the location and local plan limitations on any visual impact on design. Regardless of the implementation of solar photovoltaics, this development will be designed with high levels of insulation and air tightness and surpass current Building Regulation requirements Part L 2021 for fabric requirements.

A summary of the design stage results of the SAP and SBEM compliance documents for the site can be found below, demonstrating that the scheme is in line with the relevant national and local policies outlined within this energy statement. It can be concluded that CO_2 emissions of predicted energy use of the development will be less than the baseline (notional building) as the DER/BER (Dwelling or Building Emissions Rate) will be lower than the TER (Target Emissions Rate), as detailed in the table below.

A calculation of the carbon emission shortfall (those carbon emissions that cannot be mitigated on-site) is also shown, which as outlined in this 'Policy JP-S2: Carbon and Energy' must be addressed. It is envisaged that a contribution to the local planning authority's carbon offset fund will be made for the residual carbon emissions for the site.

Table 5: Summary of Results - The Energy Hierarchy and Net-Zero Carbon Emission Shortfall Calculation

Energy Hierarchy	Residential		Non-Residential	
	Carbon Dioxide Emissions for Residential building (Kg CO_2 / year)	Percentage improvement on Part L1A	Carbon Dioxide Emissions for Non-Residential building (Kg CO_2 / year)	Percentage improvement on Part L2A
Part L 2021 Baseline/Target Emissions Rate	41,579	-	700	-
Part L 2021 As Designed Emissions Rate	11,561	72%	652	7%
Cumulative savings for off-set Payment for Net Zero Emissions	11,561	-	652	-
	12,213 kgCO_2			

The residual carbon shortfall of 12.213 t CO_2/yr for the development will be offset via a financial contribution to LPA's Carbon Offset Fund, calculated using an assumed carbon-price of £95/t CO_2 (2025 value), in accordance with PfE Policy JP-S 2. As shown in the table above, this has been calculated to be 12.213 * £95 = **£1,160.24**

30 years x £1,160.24 = 34,807.20.

6 CONCLUSION

This report is based upon a review of the proposals and a thorough analysis of relevant national and local planning policy requirements. Both the National Planning Policy Framework 2024 and Manchester City Core Strategy 2012-2027 (adopted July 2012), Greater Manchester Combined Authorities Places for Everyone (PfE) & The 'saved' policies of the Manchester Unitary Development Plan (adopted 1995). The contents of this report outline how the following policies are met:

- Policy JP-S 2: Carbon and Energy
- Policy JP-S 3: Heat and Energy Networks
- Policy JP-S 4: Resilience

The development will follow the Be Lean, Be Clean, Be Green Energy Hierarchy to evidence this, as follows:

Energy Efficient Measures (Be Lean – Use Less Energy)

To maximise the energy efficiency of the development and reduce the energy demand, the development will benefit from a high specification of building fabric with U values that will improve on Part L (L1A / L2A) 2021 standard values.

Energy Efficient Measures (Be Lean – Use Less Energy)

The proposed development will utilise electric as a primary fuel for heating and hot water, be provided with a high level of user control including local and central temperature controls.

Renewable Technologies (Be Green – Use Renewable Energy)

The following renewable technologies have been evaluated as part of this report, with the Renewable Technologies Matrix in Appendix A detailing the suitability of each for the proposed scheme)

- Solar Thermal (discounted as Solar PV would be better suited for the roof space)
- Solar PV (technology considered as roof; size, orientation, and shading (lack of) lends itself well to this technology)
- Combined Heat and Power (CHP) (discounted as scheme favours more applicable technologies (i.e heat pumps and Solar PV))
- Air Source Heat Pump (technology considered due to high domestic hot water (residential) demand for the scheme, which the high efficiency production this technology can provide)
- Ground Source Heat Pump (discounted as scheme favours Air Source Heat Pumps)

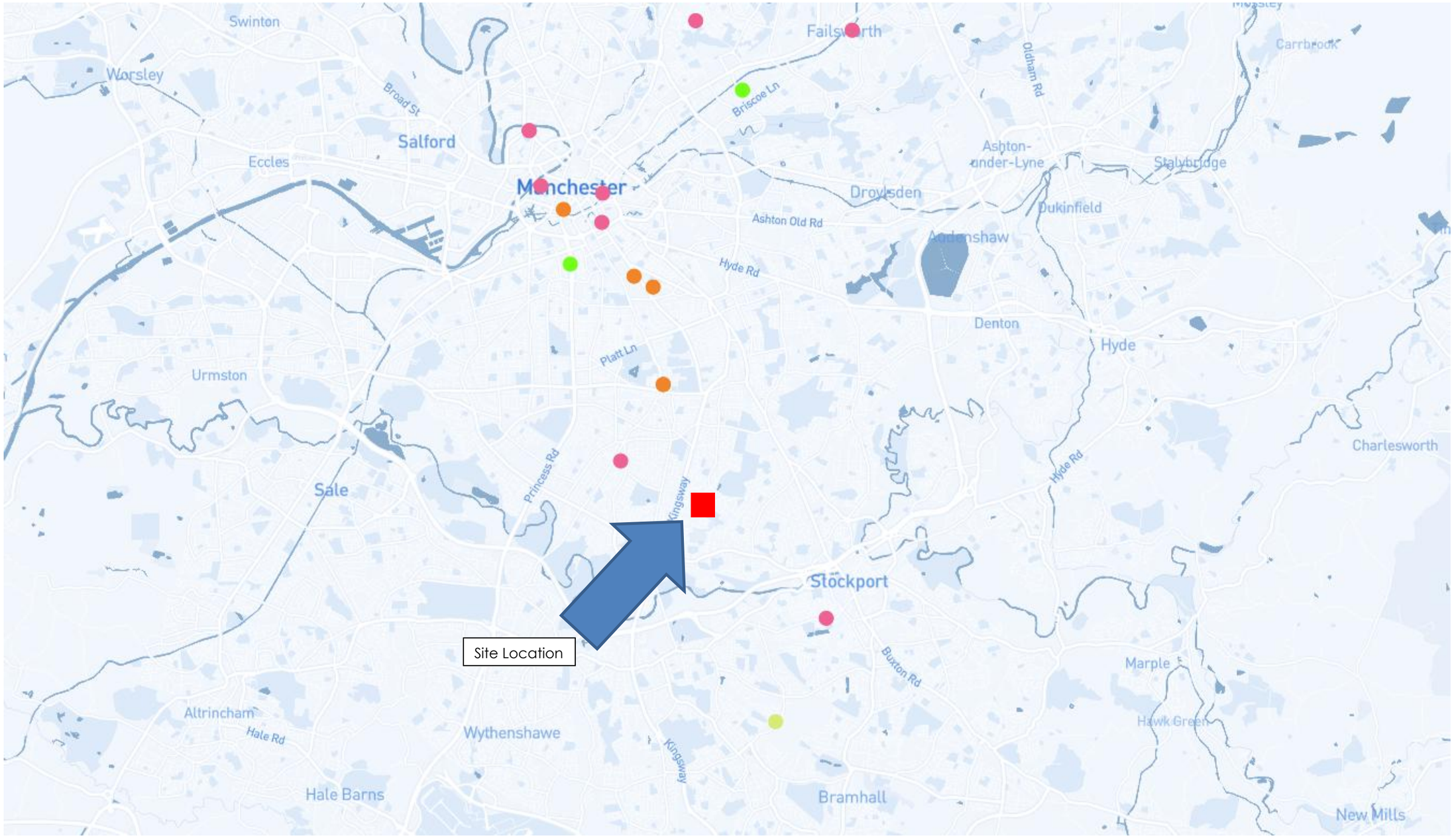
It can be concluded the content of this report highlights, via SAP & SBEM calculations, the scheme is on track to secure a 71% reduction in carbon emissions, utilising Approved Document Part L1A 2021 as a baseline. This has been achieved by following the Energy Hierarchy template to reduce to operational carbon emissions as feasibly possible, with the carbon shortfall calculated for the local planning authority carbon offset fund.

This demonstrates that the relevant national and local policies to the scheme are met, notably '*Policy JP-S2: Carbon and Energy*' of Greater Manchester Combined Authority's Places for Everyone (PfE).

Appendix A – Renewable Technologies Matrix

Technology	Description	Pros	Cons	Project Suitability	Included in Proposed Scheme?
Solar Thermal	Solar thermal hot water collectors are panels or evacuated tubes which are typically located on the roof of the buildings. The collectors harness the sun's energy to warm domestic hot water	• Reduced fuel bills and carbon footprint • Low maintenance • Proven technology	• Only compatible with boilers that have hot water storage • Need south facing roofs to optimise efficiency • Carbon saved is low comparative to the savings offered by PV	Solar thermal HW is not deemed suitable for this development due to the nature of the scheme in particular the level of hot water demand thus making the suitability of a system unfeasible.	✗
Solar PV	Solar Photovoltaic (PV) panels work by converting energy from the sun into electricity. This can then be used with the development to offset the electrical usage.	• Reduced bills and carbon footprint • Benefit from the feed in tariff • Proven technology • Relatively maintenance free	• PV panels lose efficiency over their lifetime	PV would be suited to this development as it is a simple bolt on technology that will assist with meeting the energy demand of the building and ensure compliance with the local planning policy. However, the scheme would benefit more with the use of an air source heat pump.	✓
Combined Heat & Power (CHP)	CHP is a technology which develops heat and power from the same energy source, typically mains gas. The CHP engine is fed by mains gas which then drives an alternator to provide electricity. CHP is highly energy efficient as the heat and electricity are produced on site, therefore reducing transmission losses. Typical efficiencies are 50% for the heat and 35% for the electric.	• Reduced fuel bills and carbon footprints • Eligible for the feed in tariff. • Proven technology which is in use in many schemes in the UK • Suited to large developments	• Not a true renewable technology • Heating and electricity demand must remain fairly stable to ensure CHP is running at optimum efficiency • Requires a centralised/district heating network • Noise. / Capital intensive	The total size and nature of the development does not lend itself to CHP. It would add to the capital costs of the development making the development not financially viable. For these reasons, CHP has been discounted	✗
Air Source Heat Pump	Air source heat pumps extract heat from the external air which can be used to heat radiators/underfloor heating and hot water within a dwelling. ASHP can still extract heat from air as cold as -15 degrees centigrade. ASHP are particularly useful on sites where gas is not available. There are two forms of ASHP – air to air and air to water.	• Can offer lower heating bills and reduce carbon footprints (when compared to electric systems) • Relatively maintenance free • Offers high efficiencies • Can offer heating and cooling depending on system chosen (air to air)	• Requires space to locate the external condenser unit. The unit requires lots of space around it to ensure adequate air flow. • Requires the use of underfloor heating or large radiators due to low grade heat. • Noise issues	Air source heat pumps have been included on this development due to the lower emissions associated with this technology.	✓
Ground Source Heat Pump	Ground source heat pumps (GSHP) work in a similar way to air source heat pumps, however they extract heat from the ground. A ground loop is buried within the garden and a mixture of water and refrigerant is circulated along the loop. The heat from the ground is then absorbed within the fluid and then passes through a heat exchanger within the GSHP. Ground loops can be laid horizontally at depths or 1-2m or vertically at depths of up to 100m.	• Can offer lower heating bills and reduce carbon footprints (when compared to electric systems). • Relatively maintenance free • Offers high efficiencies	• High capital costs • Requires space for boreholes or trenches to locate ground loops • Requires the use of under floor heating or large radiators due to low grade heat	Ground source heat pumps have been discounted on this development predominantly due to the nature of the development and the lower emissions associated with an air source heat pump.	✗

APPENDIX B – EXISTING AND PROPOSED LOCAL HEAT NETWORKS



Summary for Input Data Appendix C

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Plot Reference			06/01/2026
Assessment Reference	01-08	Plot Type Ref	
Plot Address		SAP Version	10.2

SAP Rating	84 B	DER	5.13	TER	15.95
Environmental	97 A	% DER < TER			67.84
CO_2 Emissions (t/year)	0.26	DFEE	32.16	TFEE	36.61
Compliance Check	See BREL	% DFEE < TFEE			12.16
% DPER < TPER	38.21	DPER	52.73	TPER	85.34

Assessor Details	Mr. Andrew Graves	Assessor ID	K720-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	North	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
4.0 Sheltered Sides	3	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	126.90	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	15.86 m	50.00 m²	2.93 m

8.0 Living Area 41.71 m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.18	70.00	46.47	41.70	0.00	None	4.77	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	27.95		None
Corridor Wall	Solid Wall	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	18.34		None

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	50.00

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Heatloss Floor 1	Exposed Floor - Timber	Lowest occupied	Timber exposed floor, insulation between joists	0.13	None	0.00	20.00	50.00

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.20

Summary for Input Data

elmhurst energy

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Rear Window	Window	External Wall 1	South	4.77	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	User Input	

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)		2.27			Yes
E3 Sill		2.27			Yes
E4 Jamb		8.40			Yes
E7 Party floor between dwellings (in blocks of flats)		15.86			Yes
E16 Corner (normal)		2.93			No
E18 Party wall between dwellings		5.86			Yes
E20 Exposed floor (normal)		15.86			No
P6 Party wall - Ground floor (inverted)		15.80			No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)		15.80			No

Y-value	0.06	W/m²K
Description	n/a	

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes	
Approved Installation	Yes	
Mechanical Ventilation data Type	Database	
Type	Balanced mechanical ventilation with heat recovery	
MV Reference Number	500794	
Configuration	1	
MVHR Duct Insulated	Insulated Ducts	
Manufacturer SFP	0.54	
Duct Type	Rigid	
MVHR Efficiency	90.00	
Wet Rooms	1	
SFP from Installer Commissioning Certificate	No	
MVHR System Location	Outside heated envelope (not installed exclusively)	

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	

21.0 Fixed Cooling System	No	

22.0 Pressure Testing	Yes	
Designed AP_{50}	3.00	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No	

Name	Efficacy	Power	Capacity	Count

Summary for Input Data

	Lighting 1	102.86	7.00	720.00	5

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Fuel Type	Electricity	
SAP Code	691	
In Winter	100.00	
In Summer	349.41	
Controls SAP Code	2603	
Controls description	Programmer and appliance thermostats	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	190006	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	349.41	
Model Name	EDL200UK-630	
Manufacturer	GDC Group Ltd	
Controls	2100	
Controls description	Not applicable (heating provides DHW only)	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 2	
SAP Code	914	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Cold Water Source	From mains	
Bath Count	1	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
S1	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Insulation Type	Measured Loss	
Cylinder Volume	201.00	L
Loss	1.61	kWh/day
32.0 Photovoltaic Unit	Multiple Dwellings – Connected	
Export Capable Meter?	No	
Connected To Dwelling	Yes	
Diverter	No	
Battery Capacity [kWh]	0.00	

Summary for Input Data

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
0.50	South	Horizontal	None Or Little		No	1.00		

34.0 Small-scale Hydro None

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			0	0
Photovoltaic			0	0
Wind turbine			0	0

BRITISH STANDARD 5837 TREE SURVEYS ARBORICULTURAL IMPLICATION STUDIES TPO/PLANNIG ADVICE/ PROJECT MANAGEMENT
TREE INVENTORIES AND RISK ASSESSMENTS WOODLAND MANAGEMENT PLANS TREE PLANTING SCHEMES TPO RE-SURVEY



Land at Lane End Road, Burnage, Manchester

Ecology Scoping and BNG Assessment

24th April 2025

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1 Introduction

1.1 Background

Kingdom Ecology have carried out a Protected Species and a Biodiversity Net Gain Assessment of a pharmacy building, area of open car park and adjacent amenity area located between Lane End Road and Fog Lane, Burnage, M19 1WA (National Grid Reference SJ 8591 9354).

The assessment has been carried out to identify any ecological constraints which should be considered during proposed works to redevelop the site. The development proposals are to built an apartment block with rooftop garden at the site.

Field surveys were undertaken on 5th April 2024. Surveys were carried out by Richard Roe (BSc, MSc, MIEEM, CEnv). Richard has extensive experience of undertaking habitat and protected species surveys as a professional ecological consultant with over twenty years' experience. Richard is also a licensed bat worker and holds a Level 4 FISC.

1.2 Purpose of Report

This report provides the findings of initial field surveys undertaken at the site.

Surveys aimed to identify habitats and species which are either of importance in terms of their conservation value or are afforded statutory legal protection. The presence of such habitats or species would form a material consideration during the planning process and could pose a constraint to the redevelopment of the site.

The field surveys comprised of an ecological walkover survey with a search for habitats that could support any protected or notable species.

Following a description of the survey findings and an evaluation of habitats at the site, the report goes on to make recommendations for further works, mitigation and ecological enhancement measures where relevant.

A Biodiversity Metric Assessment for the site pre- and post-development has also been carried out to determine the level of habitat compensation required to allow the development to achieve a biodiversity net gain.

1.3 Protected Species Legislation

1.3.1 Birds

All wild birds in England and Wales are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, or take, damage or destroy the nest (whilst being built or in use) or its eggs.

The barn owl (*Tyto alba*) is afforded special protection on Schedule 1 of the Wildlife and Countryside Act 1981 from intentional or reckless actions that may cause disturbance in the breeding season.

1.3.2 Bats

All British bat species are fully protected under the Wildlife and Countryside Act 1981 (as amended) and through their inclusion in Schedule II of the Habitats Regulations 2010 which transpose Annex II of the Council Directive 92/43/EEC 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora ("EC Habitats Directive") which defines European protected species of animals.

British bats species are afforded further protection by the Countryside and Rights of Way Act 2000; and the Natural Environment and Rural Communities Act 2006.

Taken together, this legislation makes it an offence to:

- Intentionally or deliberately kill, injure or capture bats.
- Deliberately disturb bats, whether at roost or not.
- Damage, destroy or obstruct access to bat roosts.
- Possess or transport bats, unless acquired legally.
- Sell, barter or exchange bats.

A bat roost is interpreted as "any structure or place, which any wild bat uses for shelter or protection." (Bat Conservation Trust 2016[1]). A bat roost is protected whether or not bats are present at the time.

All species of British bat are considered a European Protected Species (EPS). The Conservation of Habitat and Species Regulations (2010) provide derogation against certain offences which could potentially affect an EPS through the EPS Licensing system.

[1] Bat Conservation Trust (2016) 'Bat Surveys: Good Practice Guidelines 3rd Edition'

2 Field Survey Methods

2.1 Survey Aims and Objectives

The survey aim was to assess the site as to its ecological importance by assessing the value of habitats and their suitability to support any protected or notable species. The purpose of this was to highlight any ecological constraints associated with future development proposals.

Survey comprised of an ecological walkover survey, this included an assessment of habitats at the site in terms of their suitability to support any protected species including breeding birds and roosting bats.

Species that are considered unlikely to be significantly affected by the proposed development, even if known to be present in the general vicinity, were 'scoped out' of the assessment.

Survey also aimed to identify opportunities for ecological enhancement and to inform potential mitigation measures, if required, to ameliorate any negative impacts attributable to the proposed works.

2.2 Survey Methods

2.2.1 Ecological Walkover Survey

An initial Ecological Walkover of the site was undertaken on the 5th April 2024.

The aims of the walkover survey were to:

- identify areas or habitats that are of particular ecological interest for nature conservation and which require more detailed investigation;
- provide a broad botanical description of habitats present;
- provide additional information regarding incidental observations of protected species or non-native, invasive species;
- to assess the site as to its ecological importance by assessing the value of habitats and their suitability to support any protected or notable species (including badgers, bats and breeding birds).

A map of the study site is shown in Figure 1. Typical habitats recorded at the site are also shown in photographs in the Appendix.

3 Survey Results

3.1 Site Description

The study site comprises of an existing pharmacy building, area of car park and adjacent amenity garden located between Lane End Road and Fog Lane, Burnage. The A34 Kingsway runs along the western boundary of the site.

The site is located in the suburban area of Burnage with residential housing and commercial units surrounding the site. Habitats recorded at the study site are shown on Photographs and target noted on Figure 1 in the Appendix. Habitats identified at the site are described below.

3.2 Habitats

3.2.1 Habitat Description

The habitats at the site are largely artificial in origin and include areas of hardstanding and amenity lawn. However, there is also a small area of ornamental shrubbery which supports some scattered broadleaved trees.

Developments proposals would include the demolition of the pharmacy building and construction of a new apartment block. This will affect all existing habitats including areas of hard standing, modified grassland, the introduced shrubbery and scattered trees. The affected habitats are considered to be of relatively low significant biodiversity value.

Identified habitats are target noted and shown on Figure 1 in the Appendix. Targets Note descriptions are provided in Table 1 below. Photographs of habitats us Appendix.

For the purposes of the follow-on Biodiversity Net Gain Assessment, condition assessments of relevant habitats have been undertaken with condition rationale provided in Table 1. Condition sheets are provided in the Appemdix.

Table 1- Habitat and Target Note Descriptions

Target Note	*Habitat Description*
1	Small area of amenity grassland lawn adjacent to the open car park. This area comprises of modified grassland with a short pathway present. The grassland is enclosed by weld mesh fencing at its east face and low-level railings at the south and west faces. Five x 1 m² quadrats were undertaken to determine grassland species diversity. The grassland was found to be species-poor with approximately five species recorded per metre square. Grassland species present comprise of abundant perennial rye-grass with frequent Yorkshire fog, annual meadow grass, and red fescue. There are some common grassland herbs present including frequent Dandelion, daisy, spear thistle, white clover, broadleaved dock, daisy, creeping buttercup, common ragwort, and common mouse ear. The grassland is regularly mown. Grassland assessed as representing 'modified grassland' in a 'poor' condition (grassland fails compulsory criterion A of the grassland condition sheets).
2	Area of dense ornamental shrubbery and trees. The vegetation in this area comprises of holly, barberry, snowberry, privet and tree cotoneaster. There are two mature, 'large' trees present comprising of a sycamore and an ash. There are further trees present including an additional two 'small' sycamore, a 'small' red maple, and a 'medium' ash tree. The trees do not support any obvious suitable bat roosting habitat. Block of trees assessed as being in a 'moderate' condition, as trees pass criteria A, B, D and F only.
3	This area comprises of a hardstanding visitor car park and the pharmacy building. Habitats represent 'Developed land/sealed surface'.

3.3 Protected Species

3.3.1 Breeding Birds

The areas of ornamental shrubbery and trees present could support nesting birds during the breeding bird season.

The pharmacy building does not support any obvious suitable bird nesting habitat.

3.3.2 Bats

The site is located within an urbanised setting on the corner of the busy A34 Kingsway and Lane End Road. Habitats surrounding the site principally comprise of residential housing and commercial properties. Surrounding habitats are generally considered to be of 'low' value for foraging bats.

There is a pharmacy building at the site (Target Note 3). The building is a single-storey brick built, mid-20th century structure with a hipped roof clad in slate.

The Pharmacy building is currently in use. Internally, it has a single upper floor loft space which is approximately 2.5 m in height. The loft space measures approximately 10m x 7m in area. The building has a hipped roof and the internal face of the roof is lined in bitumen hessian felt. The loft space is currently used for storage, is not insulated and the eaves are enclosed within external short brick walls. The roofing felt is tightly fitted and there are no obvious potential bat or bird access points to the roof interior. Light cobwebbing was observed along the ridge.

Externally, the building has short, brick, parapet walls which extend above the height of the building's eaves. Therefore, there is no potential access to the loft space at the building's eaves.

Furthermore, the roof slates and ridge and hip tiles were observed to be tightly fitted and no potential bat roosting features were observed. The building is located on the corner of the A 34 Kingsway and Lane End Road, there are street lights located immediately outside of the building.

No bat droppings or other bat field signs were identified either internally or externally.

Taking account of the building's highly urbanised location and the absence of any obvious potential bat roosting features or bat access points, the building was assessed as offering a 'negligible' bat roosting potential.

The building also does not support any obvious features suitable for nesting birds.

The trees located at Target Note 2 do not support any obvious suitable bat roosting features with no suitable splits, areas of ivy growth, cavities, significant knot holes, areas of lifting bark identified.

Trees assessed as offering a 'negligible' bat roosting potential.

4 Summary & Recommendations

4.1 Habitats

4.1.1 Summary

Kingdom Ecology have carried out an Ecological Walkover Survey of an existing pharmacy building, area of car park and adjacent area of amenity land located between Lane End Road and Fog Lane, Burnage. Development proposals are to construct a new apartment block at the site.

These works would require the removal of some existing developed land plus some amenity habitats which include areas of modified grassland, ornamental shrubbery and six trees.

The proposed development area is considered to support habitats which are mostly of relatively low ecological value.

4.2 Protected Species

4.2.1 Birds

Although of limited botanical value, the areas of shrubbery, and trees present could support nesting birds during the breeding bird season.

All wild birds in England and Wales are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird, or take, damage or destroy the nest (whilst being built or in use) or its eggs.

It is therefore recommended that future development of the site including any vegetation clearance or management avoid taking place during the breeding bird season (March-September inclusive).

Where this is not possible, a check for breeding birds should be carried out immediately prior to the start of works by an appropriately qualified ecologist.

If during works any nesting birds are found, works should immediately stop and further advice should be sought from an appropriately qualified ecologist.

4.2.2 Other Protected Species

The site is considered unlikely to support any other protected species with the trees and pharmacy building considered to be unsuitable for roosting bats.

4.3 Ecological Enhancements

It is recommended that opportunities to enhance the ecological value of the development area are taken.

4.3.1 Bat and Bird Boxes

The proposed development should include provision for roosting bats and breeding birds. This can be achieved through the installation of bat boxes (recommended model Habibat 003) and sparrow nest boxes (model Schwegler 1SP) into the proposed new buildings at the site.

The bat and bird boxes can be built into the brick walls of the proposed buildings so as to remain visually unobtrusive. Further bird boxes for common garden bird species can be installed on retained semi-mature trees located on the site boundaries.

The precise location, model and number of bat and bird boxes should be determined by an appropriately qualified ecologist.

4.3.2 Plants for Pollinators and Birds

The development proposals should also aim to maximise the biodiversity of landscaping proposals at the site.

It is recommended that new planting for the proposed roof garden incudes species which can provide nectar sources for insects and berries/fruits for invertebrates and birds.

Areas of new shrubbery should include suitable nectar sources for insects. The Royal Horticultural Society provides a list of suitable plants for invertebrates (see rhs.org.uk/plantsforpollinators).

It is recommended that this list is consulted when producing detailed landscaping designs for the site.

The following small/medium sized tree species are recommended as they offer suitable foraging opportunities to various native wildlife (including birds and invertebrates): rowan, wild cherry, crab apple, silver birch, holly, and willow.

4.4 Biodiversity Net Gain

4.4.1 Proposals and Biodiversity Recommendations Overview

The proposed development works are shown on Figure 2. The development will comprise of the construction of a new apartment block with associated parking and landscaping.

The proposed works will result in the loss of the existing building and the adjacent areas of hardstanding, modified grassland and ornamental shrubbery and trees.

Development proposals will include the planting of 12 new trees at the site including within the apartment's rooftop gardens.

A new area of vegetated roof garden will be created on the upper floor of the proposed apartment building.

4.4.2 Biodiversity Metric Calculation Results

Based upon the development proposals, the relative biodiversity units at the site before and after the proposed development have been calculated following methodologies and using tools provided within DEFRA's Statutory Biodiversity Metric Calculator Version (DEFRA July 2024).

Summary tables of these calculations are provided in the Appendix. The full Biodiversity Metric Calculation Tool Spreadsheet for the site has also been submitted to the Council.

The baseline biodiversity units (i.e. the site's pre-development condition) has been calculated at 0.92 Habitat Units.

The on-site biodiversity units after the completion of development has been calculated at 0.15 habitat units.

Therefore the development will result in **a loss of 0.76 biodiversity units representing a 83.22% net biodiversity loss.**

Therefore, an additional 0.86 Habitat Units would be required to deliver a 10% biodiversity net gain. It proposed that these are provided through a third party habitat bank.

Other biodiversity features have been recommended and which are not accounted for within the metric calculation. These measures include the installation of bat and bird boxes within the proposed new apartment building.

Table 2- Headline Results Summary

On-site baseline	*Habitat units*	0.92		
	Hedgerow units	0.00		
	Watercourse units	0.00		
On-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.15		
	Hedgerow units	0.00		
	Watercourse units	0.00		
On-site net change (units & percentage)	*Habitat units*	-0.76	-83.22%	On-site net gain is less than target set ▲
	Hedgerow units	0.00	0.00%	
	Watercourse units	0.00	0.00%	
Off-site baseline	*Habitat units*	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Off-site post-intervention (Including habitat retention, creation & enhancement)	*Habitat units*	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Off-site net change (units & percentage)	*Habitat units*	0.00	0.00%	
	Hedgerow units	0.00	0.00%	
	Watercourse units	0.00	0.00%	
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-0.76		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Spatial risk multiplier (SRM) deductions	*Habitat units*	0.00		
	Hedgerow units	0.00		
	Watercourse units	0.00		
FINAL RESULTS				
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-0.76		
	Hedgerow units	0.00		
	Watercourse units	0.00		
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	*Habitat units*	-83.22%	Total net gain achieved is less than target set ▲	
	Hedgerow units	0.00%		
	Watercourse units	0.00%		
Trading rules satisfied?	No - Check Trading Summaries ▲			

Unit Type	Target	Baseline Units	Units Required	Unit Deficit	
Habitat units	10.00%	0.92	1.01	0.86	
Hedgerow units	10.00%	0.00	0.00	0.00	No additional hedgerow units required to meet target ✓
Watercourse units	10.00%	0.00	0.00	0.00	No additional watercourse units required to meet target ✓

5 Appendix

PHOTOGRAPHS

Photograph 1 – Area of amenity lawn (Target Note 1)



Photograph 2 – Patch of introduced shrubbery and trees (Target Note 2)



Photograph 3 – Area of parking and pharmacy building at Target Note 3



Photograph 4 –Interior of loft space of pharmacy building



FIGURE 1 - Existing Habitats



KEY

- Red Boundary
- Target Note
- Small Tree
- Medium Tree
- Large Tree
- Developed/Sealed Surface
- Buildings
- Modified Grassland
- Introduced Shrubbery

0 5 10 m

FIGURE 2 - Proposed Habitats



KEY

- Red Boundary
- Small Proposed Tree
- Lost Tree
- Developed/Sealed Surface
- Buildings
- Introduced Shrubbery

0 5 10 m

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type			
Grassland - Modified grassland			
On-site or off-site, site name and location	Lane End Burnage	**Survey date and Surveyor name**	R Roe 5thApril 2024
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	
Habitat Description			
Small area of amenity grassland lawn adjacent to the open car park. This area comprises of modified grassland with a short pathway present. The grassland is enclosed by weld mesh fencing at its east face and low-level railings at the south and west faces. Five x 1 m² quadrats were undertaken to determine grassland species diversity. The grassland as found to be species-poor with approximately five species recorded per metre square. Grassland species present comprise of abundant perennial rye-grass with frequent Yorkshire fog, annual meadow grass, and red fescue. There are some common grassland herbs present including frequent Dandelion, daisy, spear thistle, white clover, broadleaved dock, daisy, creeping buttercup, common ragwort, and common mouse ear. The grassland is regularly mown.			
ukhab – UK Habitat Classification			

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m^2 present, including at least 2 forbs (these may include those listed in Footnote 1). **Note - this criterion is essential for achieving Moderate or Good condition.** Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m^2 (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	No	
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	No	
C	Any scrub present accounts for less than 20% of the total grassland area. (Some scattered scrub such as bramble *Rubus fruticosus* agg. may be present). Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Yes	
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Yes	
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens)[2].	No	
F	Cover of bracken *Pteridium aquilinum* is less than 20%.	Yes	

G	There is an absence of invasive non-native plant species[3] (as listed on Schedule 9 of WCA[4]).	Yes	
		Essential criterion achieved (Yes or No)	NO
		Number of criteria passed	

Condition Assessment Result (out of 7 criteria)	**Condition Assessment Score**	**Score Achieved ×/✓**
Passes 6 or 7 criteria including passing essential criterion A	Good (3)	
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)	
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	X

Suggested enhancement interventions to improve condition score

Footnotes

Footnote 1 – Creeping thistle *Cirsium arvense* , spear thistle *Cirsium vulgare* , curled dock *Rumex crispus* , broad-leaved dock *Rumex obtusifolius* , common nettle *Urtica dioica* , creeping buttercup *Ranunculus repens* , greater plantain *Plantago major* , white clover *Trifolium repens* and cow parsley *Anthriscus sylvestris* .

Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover.

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Condition Sheet: INDIVIDUAL TREES Habitat Type

Habitat Types

Individual trees – Urban trees
Individual trees – Rural trees
Complete a condition sheet for each tree or block of trees.

Please see separate Line of trees condition sheet for a line of Rural trees.

Habitat Description

Individual trees (description applied to the urban or rural environment):
Young trees over 7.5 cm in diameter at breast height whose canopies are not touching.

Urban Perimeter / Linear Blocks and Groups (description applied to the urban environment only):
Groups or stands of trees (size requirement as defined above) within and around the perimeter of urban land. This includes those along urban streets, highways, railways and canals, and also former field boundary trees incorporated into developments. Canopies must overlap continuously. Groups of urban trees that don't match the descriptions for woodland may be assessed within this category.

On-site or off-site, site name and location	Lane End	**Survey date and Surveyor name**	4th April 24 Rroe
Limitations (if applicable)		**Survey reference (if relating to a wider survey)**	
Grid reference		**Habitat parcel reference**	

	Condition Assessment Criteria	Criterion passed (Yes or No)	Notes (such as justification)
A	The tree is a native species (or at least 70% within the block are native species).	y	
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	y	
C	The tree is mature (or more than 50% within the block are mature)[1].	n	
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.	y	
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	n	
F	More than 20% of the tree canopy area is oversailing vegetation beneath.	y	
	Number of criteria passed	4	

Condition Assessment Result (out of 6 criteria)	Condition Assessment Score	Score Achieved ×/✓
Passes 5 or 6 criteria	Good (3)	
Passes 3 or 4 criteria	Moderate (2)	X
Passes 2 or fewer criteria	Poor (1)	
Note that 'Fairly Good and Fairly Poor' condition categories are not available for this broad habitat type.		

Suggested enhancement interventions to improve condition score[2]



Summary for Input Data Appendix D

elmhurst energy

Plot Reference	114		06/01/2026
Assessment Reference	01-14	Plot Type Ref	104
Plot Address		SAP Version	10.2

SAP Rating	86 B	DER	5.13	TER	17.39
Environmental	97 A	% DER < TER			70.50
CO_2 Emissions (t/year)	0.21	DFEE	32.93	TFEE	36.49
Compliance Check	See BREL	% DFEE < TFEE			9.76
% DPER < TPER	43.32	DPER	52.78	TPER	93.12

Assessor Details	Mr. Andrew Graves	Assessor ID	K720-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	South	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	1	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
4.0 Sheltered Sides	3	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	97.06	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	5.71 m	40.00 m²	2.93 m

8.0 Living Area	34.14	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.18	70.00	16.73	9.57	0.00	None	7.16	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	43.89		None
Corridor Wall	Solid Wall	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	16.73		None

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	40.00

11.0 Heat Loss Floors

Description	Type	Storey Index	Construction	U-Value (W/m²K)	Shelter Code	Shelter Factor	Kappa (kJ/m²K)	Area (m²)
Heatloss Floor 1	Exposed Floor - Timber	Lowest occupied	Timber exposed floor, insulation between joists	0.13	None	0.00	20.00	40.00

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.20

Summary for Input Data

elmhurst energy

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Rear Window	Window	External Wall 1	North	7.16	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	User Input	

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)		3.41			Yes
E3 Sill		3.41			Yes
E4 Jamb		12.60			Yes
E20 Exposed floor (normal)		5.71			No
E7 Party floor between dwellings (in blocks of flats)		5.71			No
E18 Party wall between dwellings		5.86			No
P6 Party wall - Ground floor (inverted)		20.69			No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)		20.69			No

Y-value	0.06	W/m²K
Description	n/a	

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes	
Approved Installation	Yes	
Mechanical Ventilation data Type	Database	
Type	Balanced mechanical ventilation with heat recovery	
MV Reference Number	500794	
Configuration	1	
MVHR Duct Insulated	Insulated Ducts	
Manufacturer SFP	0.54	
Duct Type	Rigid	
MVHR Efficiency	90.00	
Wet Rooms	1	
SFP from Installer Commissioning Certificate	No	
MVHR System Location	Outside heated envelope (not installed exclusively)	

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	

22.0 Pressure Testing	Yes	
Designed AP_{50}	3.00	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Lighting 1	102.86	7.00	720.00	5

Summary for Input Data

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Fuel Type	Electricity	
SAP Code	691	
In Winter	100.00	
In Summer	349.41	
Controls SAP Code	2603	
Controls description	Programmer and appliance thermostats	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	190006	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	349.41	
Model Name	EDL200UK-630	
Manufacturer	GDC Group Ltd	
Controls	2100	
Controls description	Not applicable (heating provides DHW only)	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 2	
SAP Code	914	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Cold Water Source	From mains	
Bath Count	1	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
S1	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Insulation Type	Measured Loss	
Cylinder Volume	201.00	L
Loss	1.61	kWh/day
32.0 Photovoltaic Unit	Multiple Dwellings – Connected	
Export Capable Meter?	No	
Connected To Dwelling	Yes	
Diverter	No	
Battery Capacity [kWh]	0.00	

Summary for Input Data

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
0.50	South	Horizontal	None Or Little		No	1.00		

34.0 Small-scale Hydro None

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			0	0
Photovoltaic			0	0
Wind turbine			0	0

Summary for Input Data Appendix E

elmhurst energy

Plot Reference	27		06/01/2026
Assessment Reference	02-07	Plot Type Ref	207
Plot Address		SAP Version	10.2

SAP Rating	87 B	DER	3.79	TER	12.19
Environmental	97 A	% DER < TER			68.91
CO_2 Emissions (t/year)	0.23	DFEE	22.71	TFEE	25.11
Compliance Check	See BREL	% DFEE < TFEE			9.56
% DPER < TPER	39.71	DPER	39.17	TPER	64.97

Assessor Details	Mr. Andrew Graves	Assessor ID	K720-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	West	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	132.15	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	15.86 m	61.00 m²	2.93 m

8.0 Living Area	41.71	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.18	70.00	45.70	40.93	0.00	None	4.77	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	27.95		None
Corridor Wall	Solid Wall	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	18.34		None

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	61.00

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	61.00

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)

Summary for Input Data

Window	Manufacturer	Window	Double Low-E Soft 0.05	0.63	0.70	1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Rear Window	Window	External Wall 1	North	4.77	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	
17.0 Thermal Bridging	User Input	

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)		2.27			Yes
E3 Sill		2.27			Yes
E4 Jamb		8.40			Yes
E7 Party floor between dwellings (in blocks of flats)		31.72			No
E16 Corner (normal)		2.93			No
E18 Party wall between dwellings		5.86			Yes
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)		31.60			No

Y-value	0.06	W/m²K
Description	n/a	

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes	
Approved Installation	Yes	
Mechanical Ventilation data Type	Database	
Type	Balanced mechanical ventilation with heat recovery	
MV Reference Number	500794	
Configuration	1	
MVHR Duct Insulated	Insulated Ducts	
Manufacturer SFP	0.54	
Duct Type	Rigid	
MVHR Efficiency	90.00	
Wet Rooms	1	
SFP from Installer Commissioning Certificate	No	
MVHR System Location	Outside heated envelope (not installed exclusively)	

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	3.00	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No				
	Name	**Efficacy**	**Power**	**Capacity**	**Count**
	Lighting 1	102.86	7.00	720.00	5

Summary for Input Data

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Fuel Type	Electricity	
SAP Code	691	
In Winter	100.00	
In Summer	346.75	
Controls SAP Code	2603	
Controls description	Programmer and appliance thermostats	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	190006	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	346.75	
Model Name	EDL200UK-630	
Manufacturer	GDC Group Ltd	
Controls	2100	
Controls description	Not applicable (heating provides DHW only)	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 2	
SAP Code	914	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Cold Water Source	From mains	
Bath Count	1	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
S1	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Insulation Type	Measured Loss	
Cylinder Volume	201.00	L
Loss	1.61	kWh/day
32.0 Photovoltaic Unit	Multiple Dwellings – Connected	
Export Capable Meter?	No	
Connected To Dwelling	Yes	
Diverter	No	
Battery Capacity [kWh]	0.00	

Summary for Input Data

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
0.50	South	Horizontal	None Or Little		No	1.00		

34.0 Small-scale Hydro None

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			0	0
Photovoltaic			0	0
Wind turbine			0	0

Summary for Input Data Appendix F

elmhurst energy

Plot Reference	204		06/01/2026
Assessment Reference	02-11	Plot Type Ref	204
Plot Address		SAP Version	10.2

SAP Rating	91 B	DER	3.30	TER	14.53
Environmental	98 A	% DER < TER			77.29
CO_2 Emissions (t/year)	0.13	DFEE	21.44	TFEE	24.32
Compliance Check	See BREL	% DFEE < TFEE			11.86
% DPER < TPER	56.25	DPER	34.01	TPER	77.75

Assessor Details	Mr. Andrew Graves	Assessor ID	K720-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
4.0 Sheltered Sides	3	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	117.06	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	5.71 m	40.00 m²	2.93 m

8.0 Living Area	34.14	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.18	70.00	16.73	9.57	0.00	None	7.16	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	43.89		None
Corridor Wall	Solid Wall	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	16.73		None

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	40.00

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	40.00

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)

Summary for Input Data

elmhurst energy

Window	Manufacturer	Window	Double Low-E Soft 0.05	0.63	0.70	1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Rear Window	Window	External Wall 1	West	7.16	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	User Input	

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)		3.41			Yes
E3 Sill		3.41			Yes
E4 Jamb		12.60			Yes
E7 Party floor between dwellings (in blocks of flats)		11.42			No
E18 Party wall between dwellings		5.86			No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)		41.38			No

Y-value	0.06	W/m²K
Description	n/a	

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes	
Approved Installation	Yes	
Mechanical Ventilation data Type	Database	
Type	Balanced mechanical ventilation with heat recovery	
MV Reference Number	500794	
Configuration	1	
MVHR Duct Insulated	Insulated Ducts	
Manufacturer SFP	0.54	
Duct Type	Rigid	
MVHR Efficiency	90.00	
Wet Rooms	1	
SFP from Installer Commissioning Certificate	No	
MVHR System Location	Outside heated envelope (not installed exclusively)	

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0
Number of open flues	0
Number of chimneys/flues attached to closed fire	0
Number of flues attached to solid fuel boiler	0
Number of flues attached to other heater	0
Number of blocked chimneys	0
Number of intermittent extract fans	0
Number of passive vents	0
Number of flueless gas fires	0

21.0 Fixed Cooling System	No	

22.0 Pressure Testing	Yes	
Designed AP_{50}	3.00	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Lighting 1	102.86	7.00	720.00	5

Summary for Input Data

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Fuel Type	Electricity	
SAP Code	691	
In Winter	100.00	
In Summer	349.41	
Controls SAP Code	2603	
Controls description	Programmer and appliance thermostats	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	190006	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	349.41	
Model Name	EDL200UK-630	
Manufacturer	GDC Group Ltd	
Controls	2100	
Controls description	Not applicable (heating provides DHW only)	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 2	
SAP Code	914	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Cold Water Source	From mains	
Bath Count	1	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
S1	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Insulation Type	Measured Loss	
Cylinder Volume	201.00	L
Loss	1.61	kWh/day
32.0 Photovoltaic Unit	Multiple Dwellings – Connected	
Export Capable Meter?	No	
Connected To Dwelling	Yes	
Diverter	No	
Battery Capacity [kWh]	0.00	

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate	Panel Manufacturer

Summary for Input Data

						Reference
0.50	South	Horizontal	None Or Little	No	1.00	

34.0 Small-scale Hydro None

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	**Typical savings per year**	**Ratings after improvement**	
			SAP rating	**Environmental Impact**
Solar water heating			0	0
Photovoltaic			0	0
Wind turbine			0	0

Summary for Input Data Appendix G

elmhurst energy

Plot Reference	402	**Issued on Date**	06/01/2026
Assessment Reference	04-03	**Plot Type Ref**	402
Plot Address		**SAP Version**	10.2

SAP Rating	80 C	**DER**	5.05	**TER**	13.51
Environmental	96 A	**% DER < TER**			62.62
CO_2 Emissions (t/year)	0.43	**DFEE**	31.32	**TFEE**	38.15
Compliance Check	See BREL	**% DFEE < TFEE**			17.90
% DPER < TPER	27.67	**DPER**	51.99	**TPER**	71.87

Assessor Details	Mr. Andrew Graves	**Assessor ID**	K720-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	East	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Top-floor flat	
Which Floor	4	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
4.0 Sheltered Sides	1	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	108.27	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	19.41 m	82.00 m²	2.93 m

8.0 Living Area	40.31	m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.18	70.00	56.87	51.05	0.00	None	5.82	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	15.68		None
Corridor Wall	Solid Wall	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	48.64		None

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof 1	External Flat Roof	Plasterboard, insulated flat roof	0.11	9.00	82.00	82.00	None	0.00	Enter Gross Area	0.00

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	82.00

12.0 Opening Types

Summary for Input Data

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Rear Window	Window	External Wall 1	West	5.82	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	

17.0 Thermal Bridging	User Input	

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)		2.77			Yes
E3 Sill		2.77			Yes
E4 Jamb		8.40			Yes
E7 Party floor between dwellings (in blocks of flats)		19.41			No
E15 Flat roof with parapet		19.41			No
E18 Party wall between dwellings		5.86			No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)		21.95			No
P4 Party wall - Roof (insulation at ceiling level)		21.95			No
E16 Corner (normal)		2.93			No

Y-value	0.06	W/m²K
Description	n/a	

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes	
Approved Installation	Yes	
Mechanical Ventilation data Type	Database	
Type	Balanced mechanical ventilation with heat recovery	
MV Reference Number	500794	
Configuration	2	
MVHR Duct Insulated	Insulated Ducts	
Manufacturer SFP	0.55	
Duct Type	Rigid	
MVHR Efficiency	90.00	
Wet Rooms	2	
SFP from Installer Commissioning Certificate	No	
MVHR System Location	Outside heated envelope (not installed exclusively)	

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	

21.0 Fixed Cooling System	No	

22.0 Pressure Testing	Yes	
Designed AP_{50}	3.00	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

Summary for Input Data

elmhurst energy

22.0 Lighting

No Fixed Lighting	No

Name	Efficacy	Power	Capacity	Count
Lighting 1	102.86	7.00	720.00	8

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Fuel Type	Electricity	
SAP Code	691	
In Winter	100.00	
In Summer	341.87	
Controls SAP Code	2603	
Controls description	Programmer and appliance thermostats	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	190006	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	341.87	
Model Name	EDL200UK-630	
Manufacturer	GDC Group Ltd	
Controls	2100	
Controls description	Not applicable (heating provides DHW only)	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 2	
SAP Code	914	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Cold Water Source	From mains	
Bath Count	1	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
S1	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Insulation Type	Measured Loss	
Cylinder Volume	201.00	L
Loss	1.61	kWh/day
32.0 Photovoltaic Unit	Multiple Dwellings – Connected	
Export Capable Meter?	No	
Connected To Dwelling	Yes	

Summary for Input Data

Diverter	No
Battery Capacity [kWh]	0.00

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
0.50	South	Horizontal	None Or Little		No	1.00		

34.0 Small-scale Hydro None

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			0	0
Photovoltaic			0	0
Wind turbine			0	0

Summary for Input Data Appendix H

elmhurst energy

Plot Reference	401	Issued on Date	06/01/2026
Assessment Reference	04-05	Plot Type Ref	401
Plot Address		SAP Version	10.2

SAP Rating	79 C	DER	5.64	TER	15.28
Environmental	95 A	% DER < TER			63.09
CO_2 Emissions (t/year)	0.43	DFEE	35.78	TFEE	43.88
Compliance Check	See BREL	% DFEE < TFEE			18.45
% DPER < TPER	28.66	DPER	58.11	TPER	81.46

Assessor Details	Mr. Andrew Graves	Assessor ID	K720-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	South	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Top-floor flat	
Which Floor	4	
2.0 Number of Storeys	1	
3.0 Date Built	2025	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	120.30	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	No	
Smart gas meter fitted	No	

7.0 Measurements

	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Ground floor:	24.51 m	73.00 m²	2.93 m

8.0 Living Area 35.06 m²

9.0 External Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Res	Shelter	Openings	Area Calculation Type
External Wall 1	Cavity Wall	Cavity wall : dense plaster, AAC block, filled cavity, any outside structure	0.18	70.00	71.81	65.99	0.00	None	5.82	Enter Gross Area

9.1 Party Walls

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Area (m²)	Shelter Res	Shelter
Party Wall	Filled Cavity with Edge Sealing	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	15.68		None
Corridor Wall	Solid Wall	Double plasterboard on both sides, twin timber f rame with/without sheathing board	0.00	20.00	13.59		None

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof 1	External Flat Roof	Plasterboard, insulated flat roof	0.11	9.00	73.00	73.00	None	0.00	Enter Gross Area	0.00

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	40.00	73.00

12.0 Opening Types

Summary for Input Data

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Window	Manufacturer	Window	Double Low-E Soft 0.05			0.63		0.70	1.20

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Rear Window	Window	External Wall 1	North	5.82	

14.0 Conservatory	None	
15.0 Draught Proofing	100	%
16.0 Draught Lobby	No	
17.0 Thermal Bridging	User Input	

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)		2.77			Yes
E3 Sill		2.77			Yes
E4 Jamb		8.40			Yes
E7 Party floor between dwellings (in blocks of flats)		24.51			No
E15 Flat roof with parapet		24.51			No
E18 Party wall between dwellings		5.86			No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)		9.99			No
P4 Party wall - Roof (insulation at ceiling level)		9.99			No

Y-value	0.06	W/m²K
Description	n/a	

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present	Yes	
Approved Installation	Yes	
Mechanical Ventilation data Type	Database	
Type	Balanced mechanical ventilation with heat recovery	
MV Reference Number	500794	
Configuration	2	
MVHR Duct Insulated	Insulated Ducts	
Manufacturer SFP	0.55	
Duct Type	Rigid	
MVHR Efficiency	90.00	
Wet Rooms	2	
SFP from Installer Commissioning Certificate	No	
MVHR System Location	Outside heated envelope (not installed exclusively)	

20.0 Fans, Open Fireplaces, Flues

Number of open chimneys	0	
Number of open flues	0	
Number of chimneys/flues attached to closed fire	0	
Number of flues attached to solid fuel boiler	0	
Number of flues attached to other heater	0	
Number of blocked chimneys	0	
Number of intermittent extract fans	0	
Number of passive vents	0	
Number of flueless gas fires	0	
21.0 Fixed Cooling System	No	
22.0 Pressure Testing	Yes	
Designed AP_{50}	3.00	m³/(h.m²) @ 50 Pa
Test Method	Blower Door	

22.0 Lighting

Summary for Input Data

elmhurst energy

No Fixed Lighting	No				
	Name	**Efficacy**	**Power**	**Capacity**	**Count**
	Lighting 1	102.86	7.00	720.00	8

24.0 Main Heating 1	SAP table	
Percentage of Heat	100.00	%
Fuel Type	Electricity	
SAP Code	691	
In Winter	100.00	
In Summer	343.69	
Controls SAP Code	2603	
Controls description	Programmer and appliance thermostats	
25.0 Main Heating 2	Database	
Percentage of Heat	0.00	%
Database Ref. No.	190006	
Fuel Type	Electricity	
In Winter	0.00	
In Summer	343.69	
Model Name	EDL200UK-630	
Manufacturer	GDC Group Ltd	
Controls	2100	
Controls description	Not applicable (heating provides DHW only)	
26.0 Heat Networks	None	
27.0 Secondary Heating	None	
28.0 Water Heating		
Water Heating	Main Heating 2	
SAP Code	914	
Flue Gas Heat Recovery System	No	
Waste Water Heat Recovery Instantaneous System 1	No	
Waste Water Heat Recovery Instantaneous System 2	No	
Waste Water Heat Recovery Storage System	No	
Solar Panel	No	
Water use <= 125 litres/person/day	Yes	
Cold Water Source	From mains	
Bath Count	1	
Immersion Only Heating Hot Water	No	

28.1 Showers

Description	**Shower Type**	**Flow Rate [l/min]**	**Rated Power [kW]**	**Connected**	**Connected To**
S1	Combi boiler or unvented hot water system	8.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Internal Store	
Insulation Type	Measured Loss	
Cylinder Volume	201.00	L
Loss	1.61	kWh/day
32.0 Photovoltaic Unit	Multiple Dwellings – Connected	
Export Capable Meter?	No	
Connected To Dwelling	Yes	

Summary for Input Data

Diverter	No
Battery Capacity [kWh]	0.00

PV Cells kWp	Orientation	Elevation	Overshading	FGHRS	MCS Certificate	Overshading Factor	MCS Certificate Reference	Panel Manufacturer
0.50	South	Horizontal	None Or Little		No	1.00		

34.0 Small-scale Hydro None

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

	Typical Cost	Typical savings per year	Ratings after improvement	
			SAP rating	Environmental Impact
Solar water heating			0	0
Photovoltaic			0	0
Wind turbine			0	0

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Renold's Corner - Appendix I

As designed

Date: Mon Jan 05 16:37:24 2026

Administrative information

Building Details

Address: Lane End Road, Manchester, M19 1WA

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.30

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.30

BRUKL compliance module version: v6.1.e.1

Certifier details

Name:

Telephone number:

Address: , ,

Foundation area [m^2]: 124.35

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

Target CO_2 emission rate (TER), $kgCO_2/m^2.annum$	1.01	
Building CO_2 emission rate (BER), $kgCO_2/m^2.annum$	0.94	
Target primary energy rate (TPER), $kWh_{PE}/m^2.annum$	10.25	
Building primary energy rate (BPER), $kWh_{PE}/m^2.annum$	9.54	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

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

Fabric element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.18	0.18	0000000C:Surf[2]
Floors	0.18	0.13	0.13	0000000E:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.11	0.11	03000005:Surf[0]
Windows** and roof windows	1.6	-	-	No external windows/roof-windows
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1	1	0000000C:Surf[1]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [$W/(m^2K)$] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [$W/(m^2K)$]

$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [$W/(m^2K)$]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m^2K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
$m^3/(h.m^2)$ at 50 Pa	8	3

Building services

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

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	0.9 to 0.95

1- EPH Natural Ventilation

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.3	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

"No HWS in project, or hot water is provided by HVAC system"

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

General lighting and display lighting	**General luminaire**	**Display light source**	
Zone name	**Efficacy [lm/W]**	**Efficacy [lm/W]**	**Power density [W/m²]**
Standard value	95	80	0.3
00-Lobby A	110	-	-
00-Lobby B	110	-	-
00-Plant	110	-	-
00-Resi Bins	110	-	-
00-Resi Entrance B	110	-	-
00-Resi Entrance A	110	-	-
00-Staircore A	110	-	-
00-Staircore B	110	-	-
01-Lobby A	110	-	-
01-Lobby B	110	-	-
02-Lobby A	110	-	-
02-Lobby B	110	-	-
03-Lobby A	110	-	-
03-Lobby B	110	-	-
04-Lobby A	110	-	-
01-Staircore B	110	-	-
01-Staircore A	110	-	-
01-Communal Circulation	110	-	-
02-Staircore B	110	-	-
02-Communal Circulation	110	-	-
02-Staircore A	110	-	-
03-Staircore A	110	-	-
03-Communal Circulation	110	-	-
03-Staircore B	110	-	-
04-Staircore B	110	-	-
04-Staircore A	110	-	-
04-Communal Circulation	110	-	-

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

There are no zones in the building where the solar gain check is applicable.

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m^2]	693.3	693.3
External area [m^2]	461.3	461.3
Weather	MAN	MAN
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	82.46	130.06
Average U-value [W/m^2K]	0.18	0.28
Alpha value* [%]	25.25	10

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

Building Use

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

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	0.8	2.03
Cooling	0	0
Auxiliary	0	0
Lighting	6.24	6.87
Hot water	3.98	3.59
Equipment*	17.23	17.23
TOTAL**	**11.01**	**12.49**

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

Energy Production by Technology [kWh/m^2]

	Actual	Notional
Photovoltaic systems	4.86	5.69
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*4.86*	*5.69*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	2.87	10.3
Primary energy [kWh_{PE}/m^2]	9.54	10.25
Total emissions [kg/m^2]	0.94	1.01

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
	Actual	3.2	0	0.9	0	0	1	0	1	0
	Notional	11.5	0	2.3	0	0	1.41	0	----	----
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	0	----	----

Key to terms

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