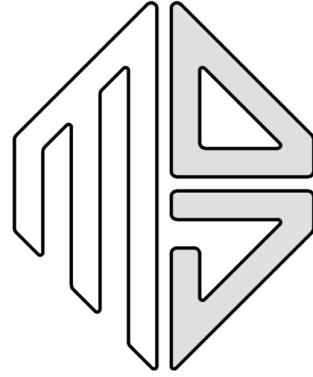




MD&J ENERGY STATEMENT

404 Wilbraham Road

Armistead Property Limited

February 2026



Energy Statement & Sustainability Planning Report

404 Wilbraham Road, Manchester. M21 0UF.

Date: 06/02/2026

Version: 1.0

Report by: Martin Degnen, Director of MD&J

Energy Modelling by: Alex Papaconstantinou, Accredited SAP Assessor,
Energy Consultant BEng MEng

Project: 8 Residential Flats (4 Storeys)

Building Footprint: 152m²

Policy Compliance: Building Regulations Approved Documents L, F, O, and S
(2021 Edition). Policy JP-S1 (Places for Everyone), EN4 & EN6



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1. Executive Summary

MD&J have produced this report on behalf of Armistead property Limited to support a planning application for 8 new build flats in Chorlton, Manchester.

The purpose of this energy strategy is to demonstrate how the measures described within will meet the local and national policy in relation to energy and carbon emissions.

2. Project Description

The site is located on Wilbraham Road in Chorlton which is one of the main access roads into the area. The site was formally used as a garden centre which is now overgrown and neglected. The brownfield site and excellent transport routes make this a fantastic opportunity to develop the site in accordance with national and local environmental policies.

The building will use traditional red clay bricks and natural slate that are prevalent in the surrounding area however the technology behind the facing material will be enhanced to deliver a high performing thermal envelope.



3. Summary of proposed energy saving measures:

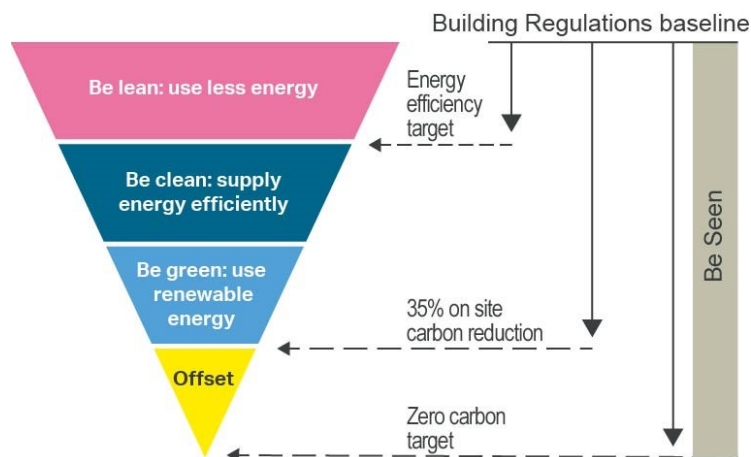
The building envelope will be constructed to deliver a high degree of thermal insulation and air tightness to ensure minimal heat loss and low energy consumption. Strong architectural principals of natural daylight and cross ventilation will provide liveable and efficient units for all the residents.

The project adopts a "Fabric First" approach by utilising enhanced thermal specifications that exceed the mandatory limiting values of the Building Regulations. On average, the proposed building envelope will exceed the current Part L u-values and air permeability figures by 43% - Refer to below table for individual results.

4. Energy Hierarchy

1. Be Lean (Demand Reduction): Prioritize superior building fabric performance, such as improved insulation and airtightness, to minimize energy consumption - Proposed average 43% improvement on Part L building fabric targets.
2. Be Clean (Supply Optimization): Utilize low-carbon, decentralized energy systems, particularly district heating and heat networks, especially in high-density areas identified in the Local Area Energy Plan (LAEP). Proposed dual tariff electricity means Carbon intensity is generally lower at night because the grid relies less on "peak" power solutions. (Data not available to quantify how this reduces load on the grid)
3. Be Green (Renewable Energy): Incorporate on-site renewable technologies, such as rooftop solar PV, to meet remaining demand.





5. Be Lean: Fabric First Approach (Approved Document L)

In accordance with the energy hierarchy, the development prioritises the performance of the building envelope to minimise energy demand. The following table compares the proposed specification against the **Limiting Fabric Parameters** defined in **Table 4.1 of Approved Document L, Volume 1 (2021)**.

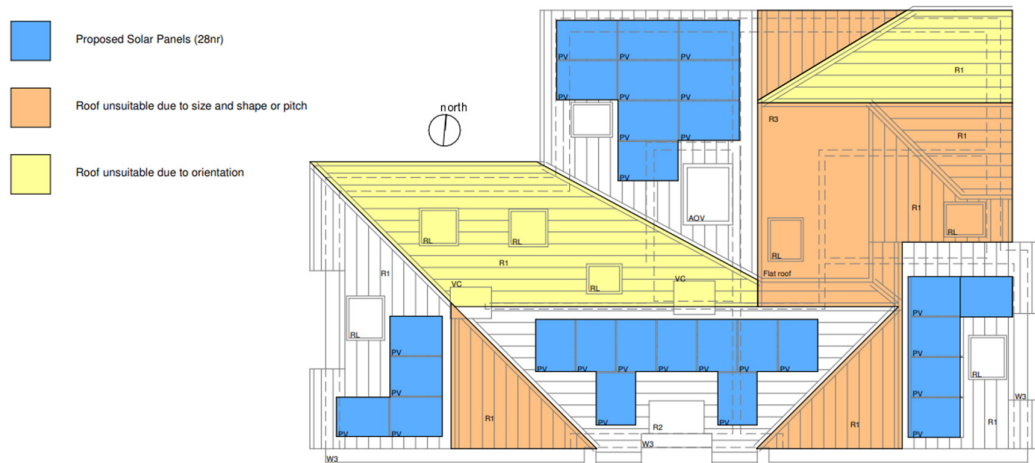
Building Fabric Performance Table

Element	Part L Limiting Standards (Table 4.1)	Proposed Enhanced Standards
External Walls	0.26 W/m ² K	0.13 W/m ² K
Party Walls	0.20 W/m ² K	0.00 W/m ² K
Floor	0.18 W/m ² K	0.13 W/m ² K
Roof	0.16 W/m ² K	0.13 W/m ² K
Windows & Doors	1.60 W/m ² K	1.40 W/m ² K
Air Permeability	8.0 m ³ /h·m ² @ 50Pa	3.5 m ³ /h·m ² @ 50Pa

6. Be Green (Renewable Energy)

Further energy efficiency figures are proposed by integrating an 11.2 kWp Solar PV array and dual-tariff electricity management, the scheme significantly reduces operational carbon emissions.

The diagram below illustrates how the PV array represents 41% of the available roof space for energy generation.



Summary

The proposed energy strategy will incorporate the followings measures:

- A high degree of air tightness targeting 3.5 m³/h/m² at 50Pa to limit heat loss.
- Dual tariff electricity management including High heat retention storage heaters to separate peak and off-peak, lower-cost energy usage
- Solar photovoltaic (PV) systems using efficient and established technology.
- Mechanical Ventilation with Heat Recovery (MVHR) to recover 73-95% of heat from outgoing air to warm incoming air.

7. Methodology and Energy Modelling

SAP modelling was completed using SAP 10.2 which is the current UK government-mandated method for assessing the energy performance and CO2 emissions of new dwellings. The modelling demonstrates that the units will receive 43% emission saving over part L 2021 target emission rates.

8. Policy Context

The energy strategy is designed to align with:

EN4 & EN6 of the Manchester City Council Core Strategy document (partially replaced)

Policy JP-S1: Sustainable Development of the Places for Everyone (PfE) Joint Development Plan

Manchester Local Plan Policy EN 1: Requirement for carbon reduction and sustainable design.

Building Regulations Part L (2021): Ensuring a 31% reduction in emissions.



9. Passive Architectural Principals to promote energy Efficiency

1. Dual and corner Aspect: Maximising Natural Resources

A "dual aspect" flat has windows on at least two sides of the property (for example, north and south or east and west). This provides two primary energy benefits:

Natural Daylighting: By receiving light from different angles throughout the day, the need for artificial lighting is significantly reduced.

Solar Gain Management: In winter, south-facing windows can capture free heat from the sun. In summer, having windows on multiple sides allows residents to shade one side while still receiving light from the other.

2. Cross Ventilation: Passive Cooling

Cross ventilation occurs when there are openings on opposite or adjacent sides of a space, allowing air to be drawn through the interior by pressure differences.

Heat Removal: During warmer months, cool air enters through one side and pushes warm, stale air out the other. This creates a natural cooling effect that can lower the internal temperature by several degrees.

Energy Savings: Efficient cross-ventilation often eliminates the need for energy-intensive air conditioning units or mechanical fans, leading to lower electricity bills and a smaller carbon footprint.

3. Natural daylighting

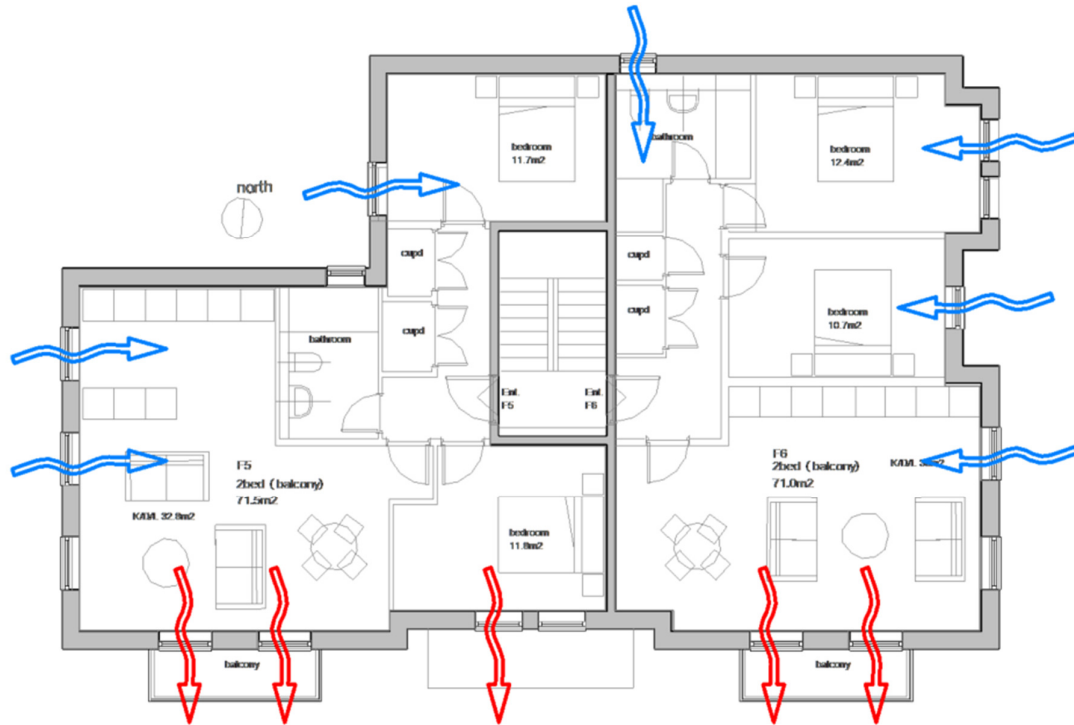
Each room has been designed to provide an optimum window position and size to promote wellbeing and a passive approach to energy efficiency. The opening lights will give dynamic user control to ventilation.

Summary

All flats proposed for 404 Wilbraham Road will benefit from cross and corner ventilation and dual aspect flats. This fundamental architectural principal is



cited in approved document O and is proven to provide environmental benefits as well as making more liveable dwellings.



10. Air Tightness & Ventilation (Approved Document F)

The development targets an air permeability of $3.5 \text{ m}^3/\text{h}\cdot\text{m}^2$ @ 50Pa. This represents a high-performance seal that prevents uncontrolled heat loss while ensuring the building remains compatible with standard ventilation strategies.

- Ventilation Strategy: To support the $3.5 \text{ m}^3/\text{h}\cdot\text{m}^2$ target, the flats will utilise Mechanical Ventilation with Heat Recovery (MVHR) to provide continuous fresh filtered air while extracting stale, moist air. It recovers



73-95% of heat from outgoing air to warm incoming air, significantly reducing energy bills and improving indoor air quality.

- Compliance: In accordance with Approved Document F, all systems will be commissioned and airflow-tested, with results documented for the final BREL (Building Regulations England Part L) evidence pack.

11. Renewable Energy & Smart Management

To satisfy the requirements of Policy JP-S1 and JP-S2, the development maximises on-site renewable generation.

- Solar Photovoltaic (PV) Array: A rooftop solar system (utilising approximately 28 panels) will be installed. This covers 50m², representing over 41% of the building's usable roof space, in line with [GMCA Net Zero Design Guidance](#).
- Dual-Tariff Electricity: Every flat will be equipped with smart meters and dual-tariff capability. This allows residents to shift heavy energy loads and will remove load from the grid in peak hours.

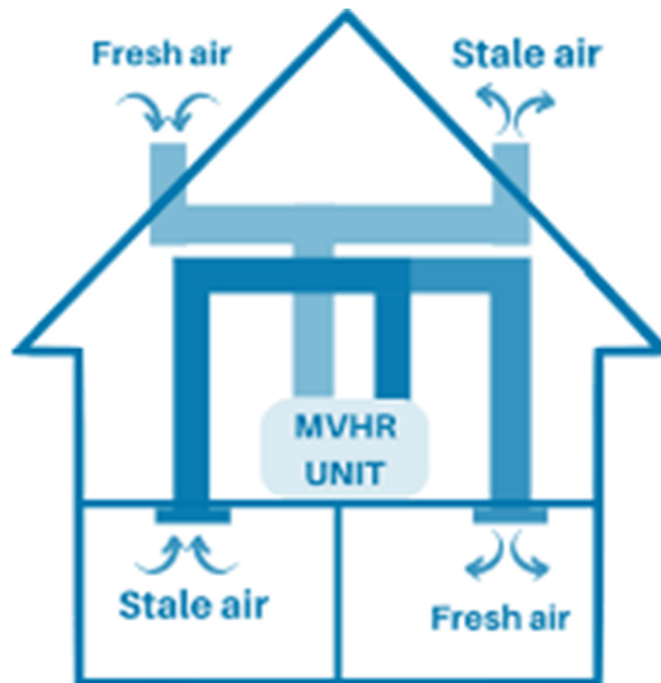
12. Overheating Risk (Approved Document O)

The building's high thermal mass and enhanced insulation are protected against summer overheating through passive design measures and will be enhanced by the use of Mechanical extract (MVHR) with summer bypass capability.

- Glazing Specification: High-performance solar control glass with a low g-value will be used to limit solar gain.
- Passive Cooling: Window opening areas have been calculated to allow for effective "purge" ventilation during warmer months, satisfying the requirements of Regulation O1.



- Cross ventilation: All flats have dual aspect spaces giving more effective control of heat build up and air flow.
 - Mechanical Ventilation with Heat Recovery (MVHR) with summer bypass to provide further control with overheating
-



13. Water efficiency

Proposed 105 litres per person per day (LPPPD). This is a reduction from the previous 125-litre standard. This will be achieved by using efficient appliances and water saving shower technology.



14. Zero & Low Carbon Energy Sources & Technology Appraisal

1. Solar Photovoltaics (PV)

By far the most common choice for residential projects due to its versatility and falling costs.

How it works: Solar panels convert sunlight directly into electricity.

Best for: Roofs with south, south-east, or south-west orientations and minimal shading.

Pros: Low maintenance, easy to scale from individual houses to large apartment blocks, and highly visible "green" credentials.

Cons: Intermittent (doesn't work at night); requires significant roof space or "solar farms" for high-density builds.

✅ This solution has been selected for the 404 Wilbraham Road

2. Air Source Heat Pumps (ASHP)

ASHP technology is rapidly replacing gas boilers as the standard heating solution in many regions.

How it works: It extracts heat from the outside air (even in cold temperatures) and uses a compressor to upgrade it for space heating and hot water.

Best for: Well-insulated new builds with underfloor heating.

Pros: Highly efficient and provides both heating and sometimes cooling.

Cons: Requires space for an external fan unit; can be slightly noisy; efficiency drops during extreme cold.

❌ Not selected for 404 Wilbraham road due to limited space on site and proximity of neighbouring dwellings.

3. Ground Source Heat Pumps (GSHP)

A more stable but more expensive alternative to air source pumps.

How it works: It uses a network of pipes buried underground (boreholes or horizontal loops) to extract heat from the earth.

Best for: Developments with larger land areas or high-end projects where long-term efficiency is the priority.

Pros: Extremely consistent performance year-round as ground temperature stays constant; hidden from view.

Cons: Very high upfront installation costs; requires significant excavation or deep drilling.

☒ Not selected for 404 Wilbraham Road due high costs and proximity of neighbouring property.

4. Solar Thermal

Unlike PV, which makes electricity, solar thermal is dedicated solely to heating water.

How it works: Solar collectors (tubes or panels) absorb heat from the sun to warm a fluid, which then heats the water in a storage tank.

Best for: Homes with high hot water demand.

Pros: More space-efficient than PV for the specific task of water heating.

Cons: Cannot power appliances; requires a backup heating source for winter months.

☒ Not selected for 404 Wilbraham Road as there are less benefits compared to solar PV

5. Micro-Wind Turbines

While popular in theory, these are less common in dense residential areas.

How it works: Small turbines harness wind energy to generate electricity.

Best for: Exposed, rural, or coastal developments.

Pros: Can generate power 24/7 (unlike solar).



Cons: Often restricted by planning laws due to noise and "flicker" concerns; turbulent air in urban areas significantly reduces efficiency.

☒ Not selected for 404 Wilbraham Road as the location makes it unviable.

6. High Heat Retention (HHR) storage heaters

While not a renewable "source" in the same way as solar or wind, dual-tariff electricity supplies paired with High Heat Retention (HHR) storage heaters are a common and effective strategy for managing energy costs and carbon in residential developments, especially those without a gas connection.

HHR heaters are the modern, high-efficiency evolution of traditional night storage heaters.

HHR units feature Integral Energy Managers (IEM) and fans to deliver heat only when the thermostat calls for it. Many HHR models are "Solar Compatible," meaning they can be wired to automatically divert excess "free" electricity from rooftop Solar PV into the heating bricks during the day.

Lower Running Costs: They are estimated to be 27% cheaper to run than traditional storage heaters and up to 47% cheaper than standard electric radiators on a peak-rate tariff.

Installation: Easier and cheaper to install than wet central heating systems as they require no pipes or boilers, only a dedicated electrical circuit.

☑ This solution has been selected for the 404 Wilbraham Road

7. Dual-Tariff Electric Supply (Economy 7 / Economy 10)

A dual-tariff system offers electricity at two different rates based on the time of day.

Off-Peak: A significantly cheaper rate (often ~50% less than standard) provided during the night (e.g., 12 am – 7 am for Economy 7).

☑ This solution has been selected for the 404 Wilbraham Road

Technology Conclusion:

404 Wilbraham road will use Solar Photovoltaics (PV) in conjunction with High Heat Retention (HHR) storage heaters and Dual-Tariff Electric Supply. This system is tailored for a building with good u-values and a high degree of air tightness to provide a low carbon solution that can be managed by the end user to provide optimum benefits.

15. Summary Table of Energy Improvements

Plot	TER	DER	Difference	% improvement
1	13.91	9.19	4.72	34%
2	13.61	8.32	5.29	39%
3	11.76	6.22	5.54	47%
4	11.5	5.72	5.78	50%
5	11.76	6.22	5.54	47%
6	11.5	5.72	5.78	50%
7	14.23	8.41	5.82	41%
8	14.3	8.45	5.85	41%
TOTALS	102.57	58.25	44.32	43%



16. Conclusion

The proposed development represents a sustainable solution for residential housing. By exceeding the mandatory limiting values of Table 4.1 of ADL 2021 and delivering a significant renewable energy contribution, the project aligns with the strategic climate objectives of the Places for Everyone framework and the Greater Manchester 2038 Carbon Neutral target.

An average 43% improvement on current standards makes this development highly efficient without putting onerous technology solutions on the end user. The dual tariff heating and hot water solution combined with smart technology will provide intuitive control over energy usage. The proposed PV array will reduce CO2 emissions and ensure manageable bills for the end user.

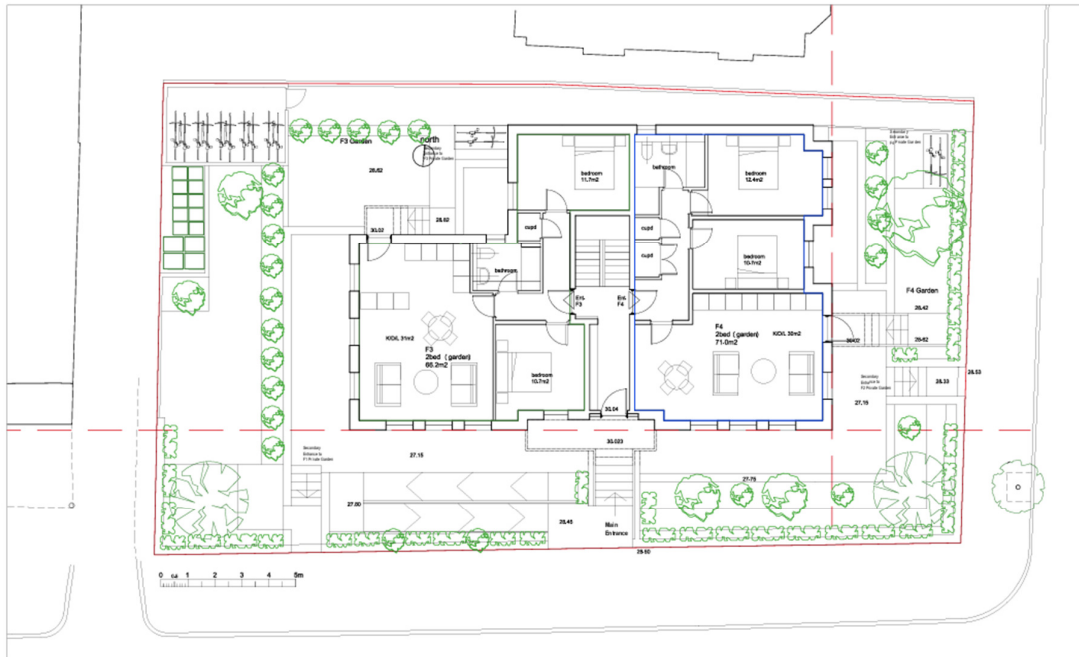
The passive design principals of cross ventilation and optimum window placement will ensure a comfortable environment for all residents. This is combined with Mechanical Ventilation with Heat Recovery (MVHR) that will allow a summer bypass to ensure greater control over unwanted temperature fluctuations.



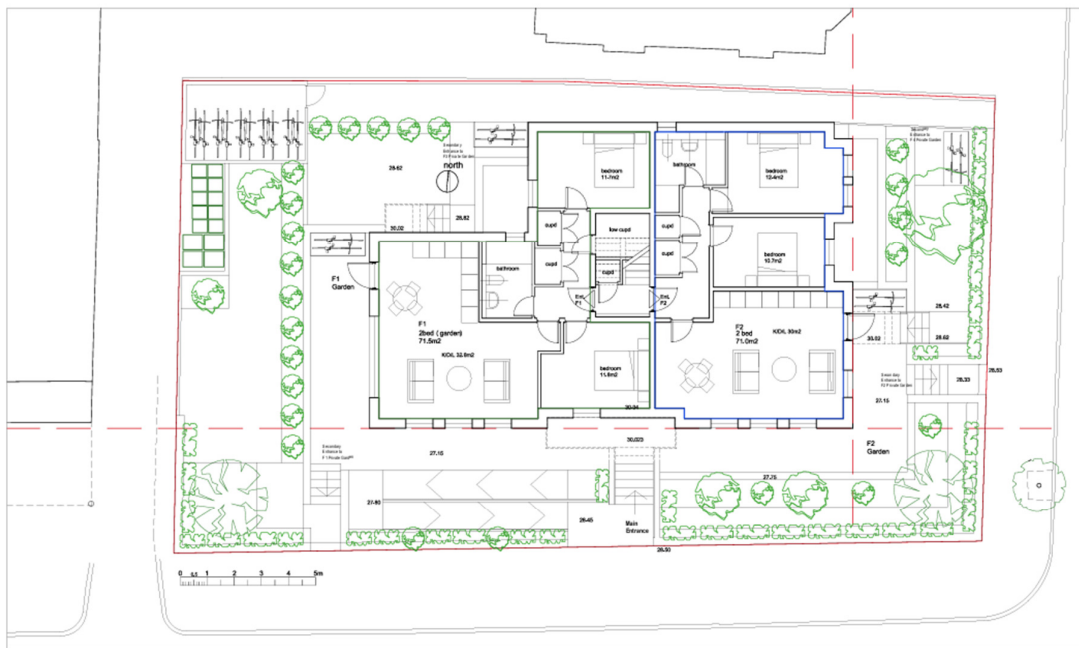
Appendix 1 – Proposed Drawings



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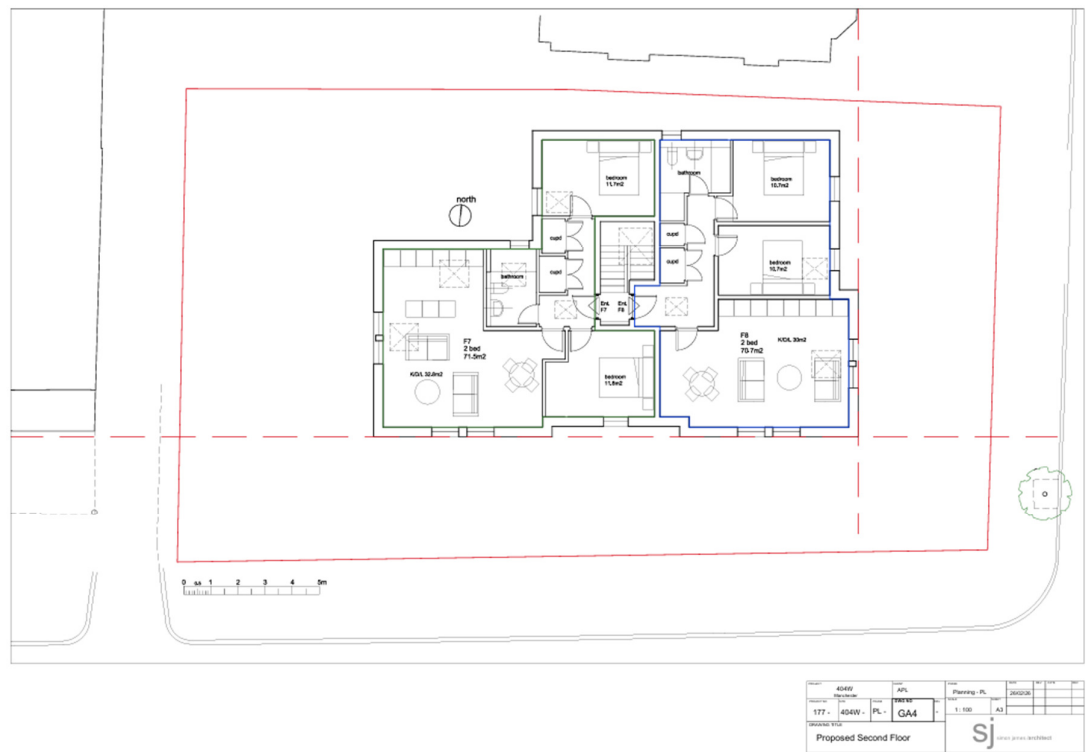
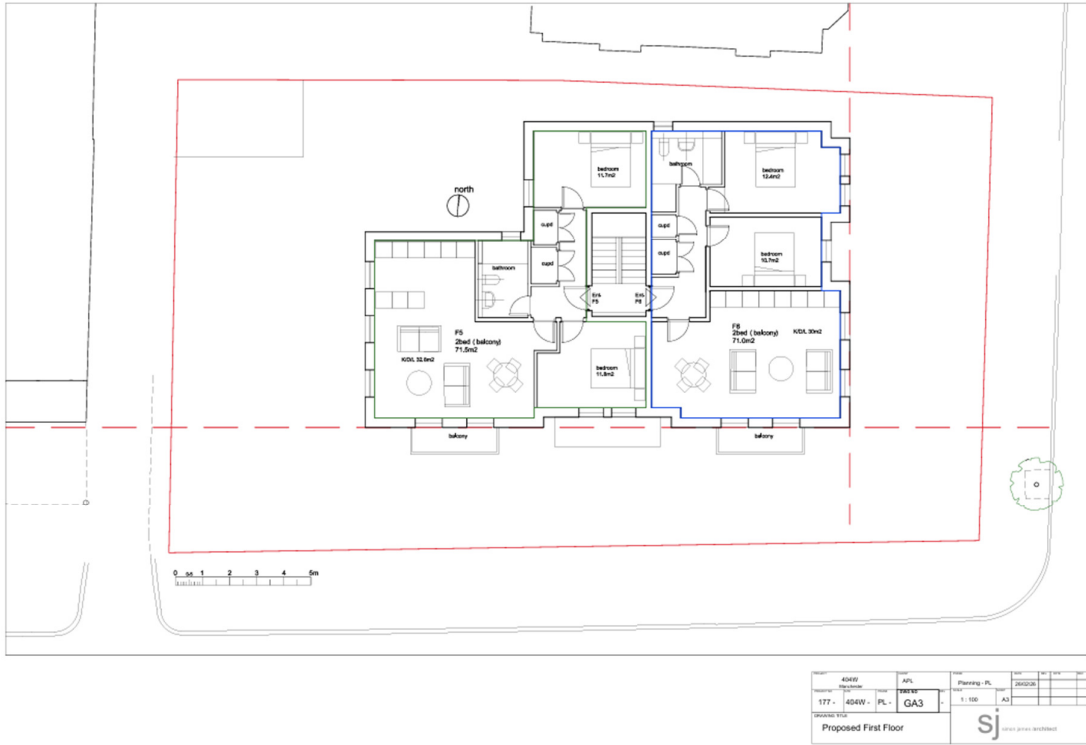
4040	APL	Planning - PL	202303
177 - 4040W - PL - GA2	1:100	AI	
Proposed Ground Floor			
SJ			



4040	APL	Planning - PL	202303
177 - 4040W - PL - GA1	1:100	AI	
Proposed Lower Ground Floor			
SJ			



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Appendix 2 – SAP Calculations Summary

Energy Modelling by Alex Papaconstantinou Accredited SAP Assessor, Energy
Consultant BEng MEng

Address	Flat No	Floor	DER (kgCO ₂ /yr/m ²)	TER (kgCO ₂ /yr/m ²)
404 Wilbraham Road, Manchester, M21 0UF	Flat 1	Ground	9.19	13.91
404 Wilbraham Road, Manchester, M21 0UF	Flat 2	Ground	8.32	13.61
404 Wilbraham Road, Manchester, M21 0UF	Flat 3	Middle	5.95	11.78
404 Wilbraham Road, Manchester, M21 0UF	Flat 4	Middle	5.72	11.50
404 Wilbraham Road, Manchester, M21 0UF	Flat 5	Middle	5.70	11.45
404 Wilbraham Road, Manchester, M21 0UF	Flat 6	Middle	5.72	11.50
404 Wilbraham Road, Manchester, M21 0UF	Flat 7	Top	8.41	14.23
404 Wilbraham Road, Manchester, M21 0UF	Flat 8	Top	8.45	14.30



Full SAP Calculation Printout



Plot Reference	Flat 1				Issued on Date	27/02/2026	
Assessment Reference	Storage, Dual, Wall0.13, PVs			Plot Type Ref			
Plot Address	Flat 1, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating	69 C		DER	9.19	TER	13.91	
Environmental	93 A		% DER < TER		33.93		
CO ₂ Emissions (t/year)	0.57		DFEE	59.65	TFEE	38.91	
Compliance Check	See BREL		% DFEE < TFEE		-53.31		
% DPER < TPER	-40.29		DPER	103.48	TPER	73.76	
Assessor Details	Mr. Zisis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						

Full SAP Calculation Printout



Plot Reference	Flat 2				Issued on Date	27/02/2026	
Assessment Reference	Storage, Dual, Wall0.13, 4PVs			Plot Type Ref			
Plot Address	Flat 2, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating	72 C		DER	8.32	TER	13.61	
Environmental	94 A		% DER < TER		38.87		
CO ₂ Emissions (t/year)	0.51		DFEE	52.71	TFEE	37.39	
Compliance Check	See BREL		% DFEE < TFEE		-40.98		
% DPER < TPER	-29.96		DPER	93.74	TPER	72.13	
Assessor Details	Mr. Zisis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						

Full SAP Calculation Printout



Plot Reference	Flat 3				Issued on Date	27/02/2026	
Assessment Reference	Storage, Dual, Wall0.13, 3PVs				Plot Type Ref		
Plot Address	Flat 3, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating	79 C		DER	6.22	TER	11.76	
Environmental	95 A		% DER < TER			47.11	
CO ₂ Emissions (t/year)	0.39		DFEE	37.78	TFEE	29.18	
Compliance Check	See BREL		% DFEE < TFEE			-29.46	
% DPER < TPER	-14.33		DPER	71.11	TPER	62.20	
Assessor Details	Mr. Zisis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						



Full SAP Calculation Printout



Plot Reference	Flat 4				Issued on Date	27/02/2026	
Assessment Reference	Storage, W0.13, Dual, 3PVs			Plot Type Ref			
Plot Address	Flat 4, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating	81 B		DER	5.72	TER	11.50	
Environmental	96 A		% DER < TER		50.26		
CO ₂ Emissions (t/year)	0.35		DFEE	34.43	TFEE	27.81	
Compliance Check	See BREL		% DFEE < TFEE		-23.79		
% DPER < TPER	-8.72		DPER	66.09	TPER	60.79	
Assessor Details	Mr. Zisis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						

Full SAP Calculation Printout



Plot Reference	Flat 5			Issued on Date	27/02/2026
Assessment Reference	Storage, Dual, Wall0.13, 3PVs	Plot Type Ref			
Plot Address	Flat 5, 404 Wilbraham Road, Manchester, M21 0UF			SAP Version	10.2
SAP Rating	79 C	DER	6.22	TER	11.76
Environmental	95 A	% DER < TER		47.11	
CO ₂ Emissions (t/year)	0.39	DFEE	37.78	TFEE	29.18
Compliance Check	See BREL	% DFEE < TFEE		-29.46	
% DPER < TPER	-14.33	DPER	71.11	TPER	62.20
Assessor Details	Mr. Zisis Papaconstantinou			Assessor ID	V622-0001
Client	N/A, N/A				

Full SAP Calculation Printout



Plot Reference	Flat 6				Issued on Date	27/02/2026	
Assessment Reference	Storage, W0.13, Dual, 3PVs				Plot Type Ref		
Plot Address	Flat 6, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating	81 B		DER	5.72	TER	11.50	
Environmental	96 A		% DER < TER		50.26		
CO ₂ Emissions (t/year)	0.35		DFEE	34.43	TFEE	27.81	
Compliance Check	See BREL		% DFEE < TFEE		-23.79		
% DPER < TPER	-8.72		DPER	66.09	TPER	60.79	
Assessor Details	Mr. Zisis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						



Full SAP Calculation Printout



Plot Reference	Flat 7				Issued on Date	27/02/2026	
Assessment Reference	Storage, W0.13, Dual, 4PVs			Plot Type Ref			
Plot Address	Flat 7, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating		71 C	DER	8.41	TER	14.23	
Environmental		93 A	% DER < TER		40.90		
CO ₂ Emissions (t/year)		0.53	DFEE	54.67	TFEE	40.65	
Compliance Check		See BREL	% DFEE < TFEE		-34.50		
% DPER < TPER		-26.60	DPER	95.57	TPER	75.49	
Assessor Details	Mr. Zissis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						

Full SAP Calculation Printout



Plot Reference	Flat 8				Issued on Date	27/02/2026	
Assessment Reference	Storage, W0.13, Dual, 4PVs			Plot Type Ref			
Plot Address	Flat 8, 404 Wilbraham Road, Manchester, M21 0UF				SAP Version	10.2	
SAP Rating	71 C		DER	8.45	TER	14.30	
Environmental	93 A		% DER < TER		40.91		
CO ₂ Emissions (t/year)	0.53		DFEE	54.95	TFEE	40.82	
Compliance Check	See BREL		% DFEE < TFEE		-34.63		
% DPER < TPER	-26.59		DPER	96.03	TPER	75.86	
Assessor Details	Mr. Zissis Papaconstantinou				Assessor ID	V622-0001	
Client	N/A, N/A						

