

Element Sustainability – Technical Note

Project: 2022.123
Crown Street Phase 3

Client: Renaker

Date: 22.08.2025

Reference: 137226/FO/2023

Crown Street Phase 3 – Energy & Low Carbon Proforma

1. Introduction

This technical note has been prepared to support the planning application for Great Jackson Street, Tower D and specifically addresses the requirement for a Carbon and Energy Proforma following the recent publication of the Design Guidance for Net Zero in March 2025 in line with policies JP-S2 and JP-S3 of the Places for Everyone (PfE) Joint Development Plan for Greater Manchester.

An Energy and Sustainability Statement (ESS) was first produced in May 2023 and updated in May 2024 to reflect the policy and technical guidance in place at that time. Since then, the PfE guidance on Net Zero has been published, and the local authority has requested additional information to demonstrate that the proposed development continues to align with the revised energy and carbon policies.

This note summarises how Crown Street Phase 3 performs against the updated policy Key Performance Indicators (KPIs) introduced through the latest PfE guidance and the 2025 Greater Manchester Carbon and Energy Proforma.

2. Policy Context Update

PfE and the supporting Net Zero Guidance introduces ambitious targets for new developments, including:

- Reductions in operational carbon emissions
- Increased uptake of low and zero-carbon technologies
- Alignment with the UK's Net Zero by 2050 goal and Greater Manchester's 2038 carbon neutrality target

As part of this enhanced framework, the Greater Manchester Combined Authority (GMCA) now requires the submission of a Carbon and Energy Proforma to assess how new developments perform against the updated KPIs. This is included overleaf followed by a summary justification.



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3. Energy and Carbon Proforma¹

Project Name: Crown Street Phase 3

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Date: 6th August 2025

		Ref. name	C7 / C8	E1 / E2
		No. dwellings	844	902
		Area (m ² GIA)	54	74.5
		Target values	Building 1	Building 2
Minimise energy demand	Space heating demand (kWh/m ² GIA/yr)	≤ 15 (flats) ≤ 20 (houses)	7.46	9.14
	Calculation methodology used to calculate space heating demand and confirmation that this covers all homes/blocks	Predictive energy model	SAP10	SAP10
	Form factor per building	≤ 2	0.6	0.5
	Average external wall U-value (W/m ² K)	≤ 0.15	0.9	0.9
	Average window U-value (W/m ² K)	≤ 1 (triple)	0.9	0.9
	Air permeability rate (m ³ /h/m ² @ 50 Pa)	≤ 1	2.75	2.5
Maximise energy efficiency	Energy use intensity (kWh/m ² GIA/yr)	≤ 35	30.1	29.9
	Calculation methodology used to calculate energy use intensity and confirmation that this covers all homes/blocks	Predictive energy model	SAP10	SAP10
Use renewable energy	PV footprint area (% of ground floor space)	≥ 40	0	0
	Annual renewable energy generation (kWh/m ² building footprint/yr)	-	-	-
	Renewable energy balance (%)	-	-	-
	Total energy used (kWh/yr)	-	-	-
	Total energy generated on-site (kWh/yr)	-	-	-
Use low carbon energy	Fossil fuel free (yes/no)	Yes	Yes	Yes
	Heat source	Electric	Electric	Electric
	Low Carbon Heat Appraisal completed	Yes	Yes	Yes
	Heat network suitability	-	-	-
	Exemption requested	-	-	-
	Efficiency of heating system (SCOP)	≥ 3.5	3	3
Reduce overheating risk	Carbon content of heat (gCO ₂ /kWh)	≤ 100	45.33	45.33
	Have Part O overheating requirements been met without the use of mechanical cooling?	Yes	Yes	Yes
	If no, how many homes are cooled?	Yes	0	0
Minimise embodied carbon	Has a CIBSE TM59 assessment been carried out using DSY2 and DSY3 weather files? Have any additional passive measures been included as a result?	Yes	No	No
	Upfront embodied carbon (kgCO ₂ e/m ² GIA)	≤ 500-600	-	-
	List top three materials with the highest upfront embodied carbon emissions (kgCO ₂ e/m ² GIA): Material 1	-	Concrete	Concrete
	Material 2	-	-	-
	Material 3	-	-	-
Offsets	Lifecycle embodied carbon (kgCO ₂ e/m ² GIA) - for large major developments only	-	-	-
	Offset contribution (£)	-		

¹ The facade u values for the curtain wall system incorporate all heat losses, including cold bridging through the framing system. Therefore, although the proposed buildings will benefit from a very high performance, triple glazed system with minimised thermal bridging the combined facade u value appears higher than the target values sought by the PfE guidance document which relates to traditional construction methods rather than curtain walling.

Additionally, when the calculations were originally completed, the area (m² GIA) of the buildings had not been determined. Therefore, the area of a representative apartment type has been used for this assessment.



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3.1 Minimise energy Demand

The 2025 PfE JP-S2 policy requirement aligns with the Climate Change Committee recommendation of a space heating demand of less than 15-20 kWh/m²/yr for new homes.

Representative SAP calculations have previously been completed and continue to align with this target:

- Representative apartment from E1 / E2 = 9.14 kWh/m²/year
- Representative apartment from C7 / C8 = 7.46 kWh/m²/year

3.2 Maximise Energy Efficiency

The building should meet the total energy use (regulated and unregulated), through low carbon and energy efficient heating systems. The Truly Affordable Net Zero (TANZ) policy requirement is to achieve an EUI of less than 35kWh/m²GIA/yr.

When the Energy and Sustainability statement was updated in 2024, only regulated energy reporting was required. However, due to the new requirement to report both regulated and unregulated energy, the EUI has been recalculated for the representative units as follows:

- E1 / E2 = 29.9 kWh/m²_{GIA}/year
- C7 / C8 = 30.1 kWh/m²_{GIA}/year

3.3 Use Renewable Energy

The building should seek to maximise the generation of on-site renewable energy.

The guidance states that an equivalent of 40% or more of the ground floor space should be utilised for PV installation.

Due to the high-density nature of the tower scheme, achieving this target is not feasible. However, the scheme does promote the use of air source heat pumps (ASHPs), which are highly efficient, low-carbon technologies. This approach aligns with the rapidly decarbonising UK electricity grid, ensuring that the overall carbon impact of the development remains low even without on-site PV generation.

3.4 Use Low Carbon energy

The proposed scheme adopts a 'full electric' energy strategy connected to the rapidly decarbonising UK electricity grid, supporting lower carbon emissions over time.

Electric Panel heaters have been specified to provide space heating:

- Efficiency of system: 100% (SCOP of 1.0)
- Carbon content of heat: 136 gCO₂/kWh

ASHP's have been specified to provide water heating:

- Efficiency of system: 300% (SCOP of 3.0)
- Carbon content of heat: 45.33 gCO₂/kWh

By utilising this 'full electric' strategy alongside a cleaner grid, the scheme maximises energy efficiency and minimises operational carbon emissions



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3.5 Reduce Overheating Risk

The scheme demonstrates compliance with Part O without relying on active cooling.

This scheme does not require active cooling to mitigate the risk of overheating.

Note: Part O analysis was not included in the original ESS but was provided as a standalone technical report by Futureserv, utilising CIBSE's TM59 Design Methodology for the assessment of overheating risk in dwellings.

3.6 Minimise Embodied Carbon

Embodied Carbon calculations were completed to inform the Climate Change Chapter of the Environmental Statement, this identified that the substructure and superstructure accounted for over half of the total emissions, with concrete identified as a material hotspot.

3.7 Carbon Offsetting Contribution

Following the implementation of steps 1 -6, financial contributions are the last step to offset the remaining emissions/energy. The decision to include offsetting will be determined by each local authority in Greater Manchester, with options for offsetting currently under development.

This was not required at the time of the ESS submission. Offset mechanisms are currently under development and will be adopted by individual Local Planning Authorities (LPAs).

