

Caritas Diocese of Salford

Red Door Day Centre, Bury

Energy and Carbon Statement

18th December 2025

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Revision P02

Document Control

Document Authority

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0.0 Executive Summary

This Energy and Carbon Statement has been prepared to support the full planning application for the construction of a new Red Door Day Centre (proposed development) at Land adjacent to St Joseph's Presbytery, Bury, BL9 6AB.

This statement demonstrates how the proposed development is designed to maximise its environmental performance by reducing energy use and carbon emissions in accordance with the local energy and climate change policy requirements, including those of the Greater Manchester Combined Authority (GMCA).

0.1 Energy and Carbon Proforma

The Energy and Carbon Proforma has been submitted alongside this statement to support the full planning application for the proposed development in accordance with the GMCA Net Zero Carbon Design guidance. The guidance sets out how applicants should demonstrate compliance with Policies JP-S2 Carbon and Energy and SP-S3 Low Carbon Heat of the Places for Everyone (PfE) Joint Development Plan (adopted March 2024). See the extract of the proforma below, populated with the relevant environmental performance indicators for the development.

Energy and Carbon Proforma		GMCA	
Non-residential		GREATER MANCHESTER COMBINED AUTHORITY	
Minor development (100-999m ²)			
Version 1.0			
Project Name: Red Door Day Centre			
Application ref:			
Date:			
		Ref. name	
		Area (m ² GIA)	181
		Target values	Building 1
Minimise energy demand	Space heating demand (kWh/m ² GIA/yr)	≤ 15	14.61
	Space cooling demand (kWh/m ² GIA/yr)	≤ 15	0.4
	Calculation methodology used to calculate space heating demand and confirmation that this covers all homes/blocks	Predictive energy model	DSM
	Form factor per building	≤ 2	2.5
	Average external wall U-value (W/m ² K)	≤ 0.15	0.18
	Average window U-value (W/m ² K)	≤ 1 (triple)	1.4
	Air permeability rate (m ³ /h/m ² @ 50 Pa)	≤ 1	3
Maximise energy efficiency	BREEAM Ene 01 rating	Excellent	Outstanding
	Energy use intensity (kWh/m ² GIA/yr)	-	211.35
	Calculation methodology used to calculate energy use intensity and confirmation that this covers all homes/blocks	Predictive energy model	DSM
Use renewable energy	PV footprint area (% of ground floor space)	-	15.5
	Annual renewable energy generation (kWh/m ² building footprint/yr)	-	25.72
	Renewable energy balance (%)	-	14
	Total energy used (kWh/yr)	-	38338.89
	Total energy generated on-site (kWh/yr)	-	5324
Use low carbon energy	Fossil fuel free (yes/no)	Yes	Yes
	Heat source - Where the system for generating space heating and hot water is a heat pump and it achieves a SCOP of 3.5 or higher (then a Low Carbon Heat Appraisal not required)	Electric	Electric
Reduce overheating risk	Has CIBSE TM52 been used to calculate overheating and does the building pass?	Yes	No
	What percentage of spaces are cooled? (% of GIA)	-	66
Minimise embodied carbon	Confirmation that a summary of the efforts made to design a lean, low carbon structure and building design has been submitted?	Yes	Yes

Copy of Energy and Carbon Proforma.

0.2 Project Overview

The proposed development comprises the construction of a new single-storey day centre (Use Class F1) with a kitchen and accessible wash areas, meeting and activity rooms, staff offices, cycle and car parking, landscaping and associated works.

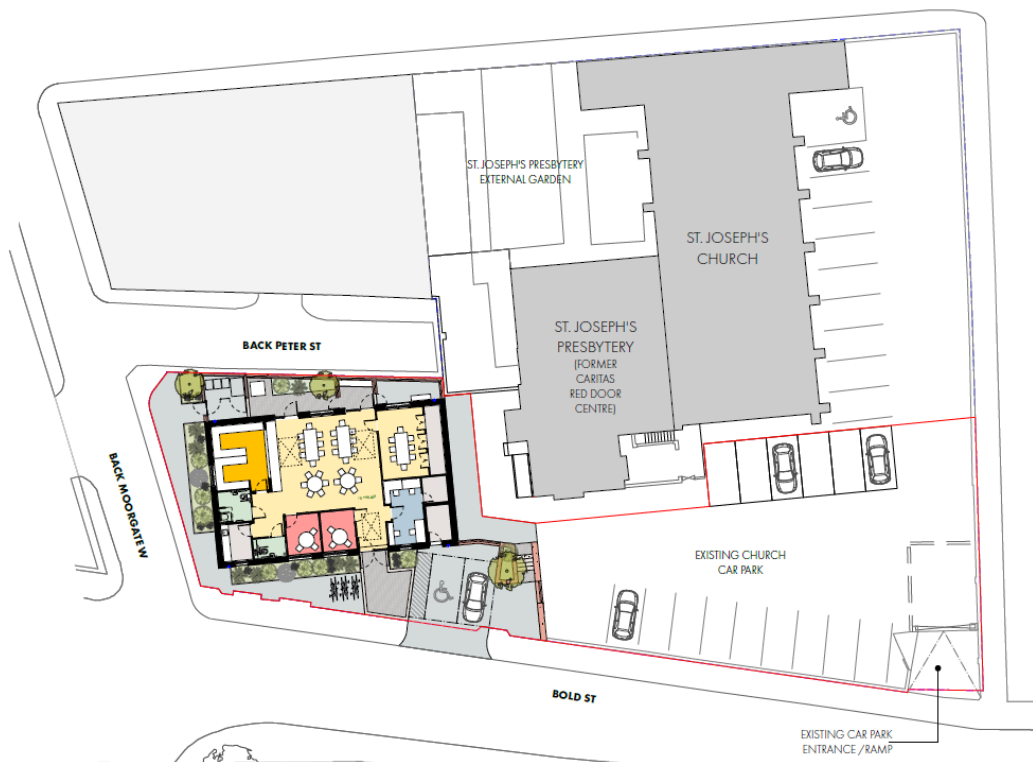
The land proposed for development is the surface car park which adjoins the St Joseph's R C Church and the St Joseph's Presbytery, a former priest house which was converted to non-residential institution (Use Class F1 formerly Use Class D1) in 2011. The presbytery is currently used by Red Door but is not fit for purpose due to its layout and condition, which is a safety concern for the Charity.

The Site is accessible via the current Bold Street access which leads to the car park.

The Site is bound by Badger Street to the north, beyond which are several 2-storey terraced properties. To the east of the site is an industrial estate comprising several commercial and industrial units. Back Moorgate West lines the property to the south, beyond which lies a small car park and the Moorgate Retail Park across the B6222, a local commuter route between Bury & Rochdale. Back Peter Street adjoins the western boundary of the site, beyond which several small local shops & cafes exist.

Part L Dynamic Simulation Modelling (DSM) via IES Virtual Environment (2025) has been carried out using current design information for the development, with the results used to populate the Energy and Carbon Proforma. The following environmental performance indicators outlined within this statement are therefore representative of the estimated performance of the proposed development based on the current, early-stage design scenario.

A site plan of the proposed development is provided below.



Proposed Site Plan.

1.0 Building Fabric and Ventilation

The Red Door Day Centre design seeks to minimise its operational energy demand by applying design strategies that consider energy efficient fabric and ventilation in accordance with Policy JP-S2 of the PfE. The following section demonstrates how the principles of the energy hierarchy have been implemented throughout its design to reduce the space heating demand.

1.1 Building form and heat loss envelope

The proposed development comprises a single-storey and pitched form, with expressed brickwork gables. A feature dormer demarcates the main entrance to the building and brings light into the main entrance area, creating a warm, well-lit environment for visitors and staff.

The form factor of the proposed development has been calculated as 2.5, using the methodology of dividing the exposed external surface area by the gross internal floor area.

$$\text{Form Factor} = \frac{490\text{m}^2 \text{ (total elevations area)}}{181\text{m}^2 \text{ (gross internal floor area)}} = 2.5$$

1.2 Elevation design and window proportions

Materials consist of brickwork, cast stone, aluminium windows and doors, aluminium spandrel panels, clay tile roofing, and zinc standing-seam dormer. Due to the layout of the accommodation, wide and short windows are positioned on the east and west elevations, maximising surveillance and light, with a single circular window located at the southern gable end, as illustrated in the drawings provided in Appendix 1.

The chosen red brickwork grounds the building and responds to the local context. Meanwhile, the windows and cast-stone elements break up the massing, providing features that reference the piers and buttresses of the existing St Joseph's Church. The material features enhance and add interest to the otherwise modest form, ensuring the centre will be approachable and tactile.

The window-to-wall ratio figures for each elevation for each orientation are shown in the table below.

GLAZING-TO-WALL RATIO	
Northern Elevation	0%
Eastern Elevation	30.6%
Southern Elevation	2.1%
Western Elevation	28.8%

1.3 Heated and unheated spaces

The proposed development includes a small unheated plant room accessed externally and located to the corner of the plan. All other rooms within the building including the cafe area, office, activity room, meeting rooms, kitchen, laundry/sluice/cleaners and WC areas are heated spaces.

Drawings are provided in Appendix 2, illustrating the thermal envelope for the proposed development in plan and section views.

1.4 Building fabric specifications and airtightness

A fabric-first approach to improving the performance of the building envelope has been applied using the 2021 'Notional Building' as the target for the construction of the development to ensure compliance with the 2021 Part L Building Regulations. A summary of the as-designed performance specifications for the building envelope is provided in the table below.

Specification	Fabric Performance	Notes
Airtightness (m ³ /hm ²) at 50 Pa	3	
Average U-values Floor External Wall W/m ² K Roof*	0.15 0.18 0.15	*U-value for both flat roof and pitched roof elements.
Window U-value W/m ² K	1.4	
External Door U-value W/m ² K	1.6	U-value representative of external pedestrian doors.
Glazing g-value	0.29	
Shading	No shading	
Thermal bridging W/mK Overall Total - Value		Information on Y-values is not available at this stage.

1.5 Ventilation system

Fresh air ventilation will be provided by a combination of local ceiling void-mounted mechanical heat recovery ventilation systems, natural ventilation via openable windows and a kitchen extract system.

1.6 Space heating demand

A dynamic simulation model (DSM) has been created using IES Virtual Environment (2025) to predict the development's energy consumption for heating and demonstrate compliance with Part L Vol 2 of the Building Regulations.

The space heating demand of the development is currently anticipated to be 14.61kWh/m²/yr based on Part L modelling results. This value is 2.6% lower than the target set by the GMCA.



SDH target for minor developments.

2.0 Maximise Energy Efficiency

The design of the Red Door Day Centre seeks to reduce its operational energy consumption further by exploring opportunities to integrate high-efficiency systems, thereby reducing wasted resources and illustrating how the energy hierarchy has been applied to maximise energy efficiency. The following section describes how the proposed development works towards achieving challenging targets for total energy use and considers both regulated and unregulated energy.

2.1 Energy use intensity for residential non-residential developments

A DSM has been created using IES Virtual Environment (2025) to provide predicted Energy Performance Certificates (EPCs) for the development and confirm compliance with Part L Vol 2 of the Building Regulations. The proposed development achieves an EPC rating of 'A', demonstrating a high standard of energy performance.

An energy use intensity (EUI) figure has been calculated using the total energy consumption estimates from the Part L modelling outputs, which considers regulated energy loads and equipment energy only at this early design stage.

The predicted EUI calculated for the proposed development is 211.35kWh/m²/yr.

In accordance with Policy JP-S2, the minimum standard for BREEAM "Excellent" has been exceeded for the Ene-01 Reduction of energy use and carbon emissions BREEAM issue by the proposed development at the early planning stage. The energy performance ratio (EPR) achieved for the Red Door Day Centre is shown below.

BREEAM ENE 01 ENERGY PERFORMANCE RATIO	
Minimum Standard (Excellent)	0.400
Red Door Day Centre	0.809

2.2 Efforts to reduce energy use of equipment

Opportunities to further reduce the operational energy demand beyond what can be achieved through minimising regulated energy use may include specifying energy-efficient equipment and appliances to reduce their energy consumption per use.



EUI target for minor developments.

3.0 Renewable Energy Generation

The design of the Red Door Day Centre aims to maximise the generation of on-site renewable energy by considering opportunities to integrate low carbon and renewable technologies into the design where appropriate. The following section describes how the proposed development advances towards balancing predicted annual energy use with annual renewable energy generation in accordance with the energy hierarchy.

3.1 Proposed renewable energy generation system

Solar PV is the renewable energy generation system proposed for the development. A solar PV array will be provided on the roof of the building to generate low carbon electricity, which will contribute towards reducing operational carbon emissions in accordance with Policy JP-S2 of the PfE and lessen reliance on grid electricity. The proposed solar PV system has been modelled at this early design stage.

The capacity of the system shall be 7.52kWp.

The expected annual renewable electricity generation of the total PV system is 5,324kWh/yr.

The table below provides further details of the proposed solar PV system based on early-stage modelling results.

Description	Solar PV
Orientation	West-facing
Tilt	30°
Peak output (kWp)	7.52kWp
Panel (maximum output, type of inverters)	16 x 470W Panels, Solis 6kw 3 Ph Inverter
PV area as percentage of ground floor area	16%
Expected annual renewable energy generation	5,324kWh/yr
Annual renewable energy generation per m ² (GIA)	29.41kWh/m ² (GIA)/yr
Annual renewable energy generation per m ² (building footprint)	25.72kWh/m ² (building footprint)/yr
Balance between total energy use and renewable energy generation	14%
Shading constraints?	Minimal localised shading from trees and other buildings, shading factor used = 1.
Data source	Atlantic Renewables

3.2 PV footprint area

The opportunities for on-site electricity generation from solar technologies have been maximised by installing panels on the available roof area. The proposed PV arrangement covers an area equivalent to 16% of the roof area, when accounting for total panel area.

The roof layout provided in Appendix 3 illustrates the proposed arrangement of solar PV across the available roof area of the building and demonstrates how the panel area has accounted for other roof-mounted equipment, access for maintenance and any overshadowed areas, where applicable.



Proposed PV layout.

3.3 Renewable energy balance

The renewable energy balance describes the proportion of the total annual energy used for the development that will be balanced by the total annual generation of renewable energy on site.

Based on early-stage predictions of operational energy use, the total renewable energy balance for the proposed development has been calculated as 14%.

This has been achieved by applying the principles of the energy hierarchy in accordance with Policy JP-S2 of the PfE to minimise operational energy use and maximise onsite renewable energy generation to reduce operational carbon emissions.

$$14\% = \frac{5,324\text{kWh/yr (Annual electricity yield)}}{38,338.89\text{kWh/yr (Final energy demand)}} \times 100$$

4.0 Low Carbon Heating

The proposed development has been designed to reduce its contribution to climate change by minimising carbon emissions and mitigating local air pollution through the integration of low carbon heating systems in accordance with Policies JP-S2 and JP-S3 of the PfE.

4.1 Fossil fuel free

The development is an all-electric scheme and does not rely on burning fossil fuels (gas/other) on-site for heating, hot water, cooking or back up-generation.

4.2 Proposed systems for heating and hot water

The proposed system for heating within the cafe area, office, activity and meeting rooms shall be provided via a DX/VRF system, using ceiling-mounted 4-way blow cassette units, with a system SCOP of 3.5.

The kitchen & servery, laundry/sluice/cleaners and WC areas shall be heated via electric heaters.

Hot water to sinks, WHB's, etc. shall be generated via local electric water heaters.

As the proposed primary heating system is a high-efficiency heat pump with a SCOP of 3.5, a full low carbon heat appraisal is not required, in accordance with GMCA guidance.

The proposed VRF + direct electric + local electric hot water heating systems will provide an all-electric, low carbon, non-fossil fuel approach for providing heating and hot water, which will become decarbonised over time due to the greening of the national grid.

4.3 Proposed system for cooling

The proposed development is designed to incorporate cooling within the café area, office, activity and meeting rooms via a DX/VRF system, using ceiling-mounted 4-way blow cassette units.

5.0 Overheating Risk

Climate change is expected to increase the frequency of periods of hot weather in the UK, and at more extreme temperatures, creating challenges that will affect infrastructure, health and wellbeing. As such, it is important to consider how increased temperatures will affect the risk of overheating within a new development to ensure occupant comfort. The design of the Red Door Day Centre seeks to minimise the risk of overheating by employing natural ventilation strategies and facilitating mechanical cooling in some areas, as described in the following section.

5.1 Overheating risk assessment

A TM52 overheating risk assessment has not been conducted at this early stage of design however, consideration has still been given to limit overheating risk.

All windows within the café area, office, activity and meeting rooms will be openable for natural purge ventilation and manually controlled by the building occupier to suit individual comfort levels. Mechanical cooling will be provided in these spaces to mitigate overheating risk.

The percentage of spaces that are cooled has been calculated as 66% using a GIA of 181m².

6.0 Materials

Further to reducing operational carbon emissions as far as practicably feasible, the design of the Red Door Day Centre seeks to consider and reduce the embodied carbon associated with its construction and building materials through efficient design and low carbon material selection. This will reduce the building's whole life carbon impacts, which account for both operational and embodied carbon in accordance with Policy JP-S2.

6.1 Efforts to minimise embodied carbon

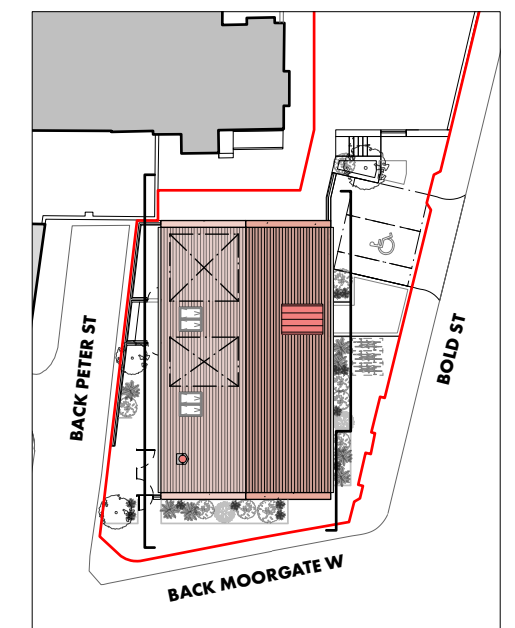
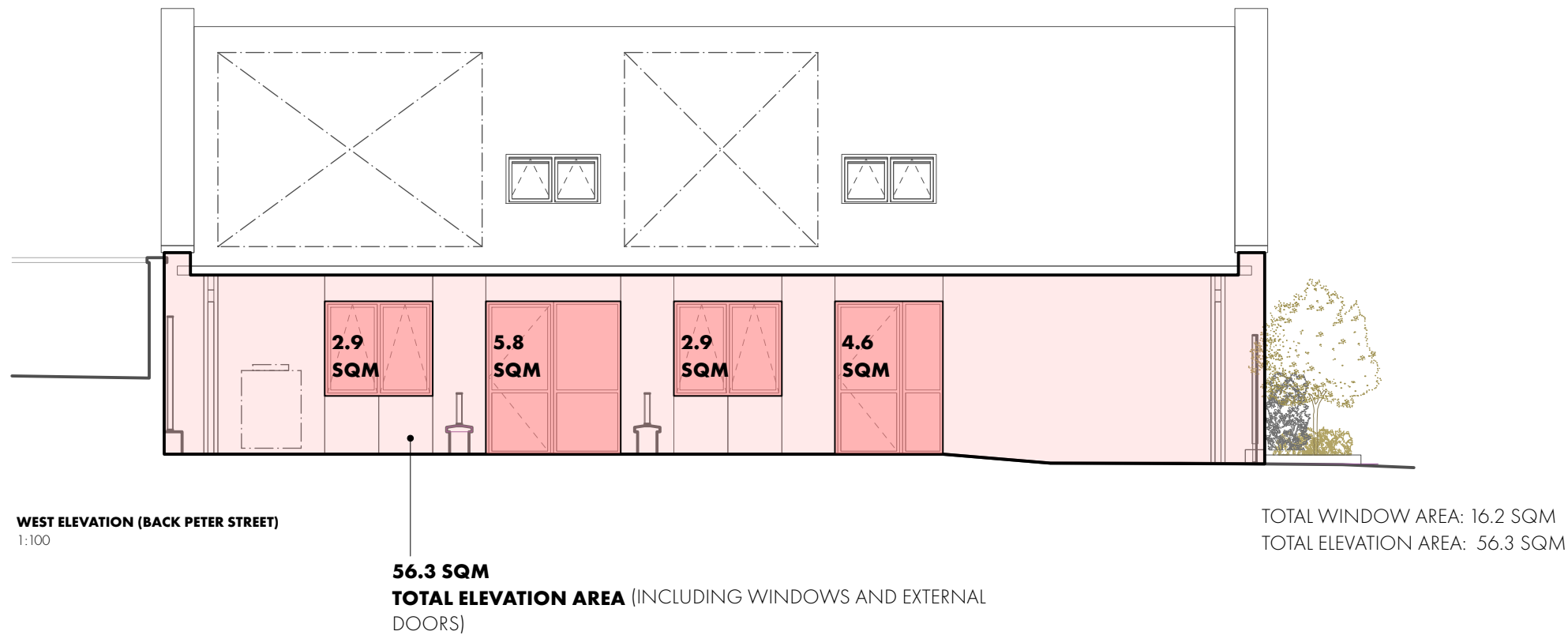
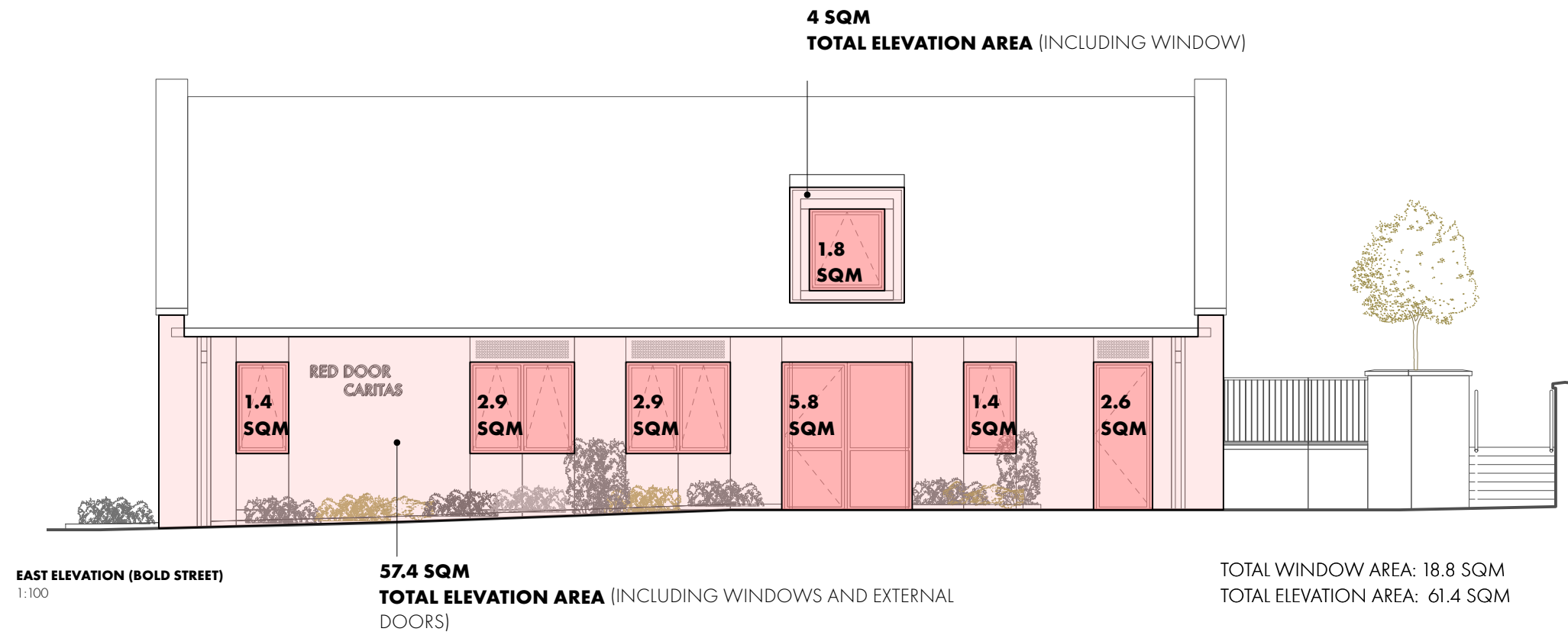
Opportunities to reduce the embodied carbon associated with the proposed development's structure, façade and building services have been explored through the implementation of design choices that focus on efficient use of materials, with careful consideration given to the project's scale and budget.

The design of the proposed development has sought to reduce overall materials use from the early design stages, with the project brief calling for a simple form and use of robust, suitable, low-maintenance materials, whilst also ensuring that the new Red Door Day Centre has a clearly identifiable presence on Bold Street and the surrounding area.

Initial proposals involved a flat-roof and pitched-roof building design, which required steel support and complex detailing. The roof was subsequently redesigned and simplified due to funding and cost considerations, resulting in a more straightforward single storey building with short spans suitable for trussed rafters and masonry construction. The redesigned roof reduced the overall use of carbon-intensive materials within the building, such as steel, and instead, replaced elements with timber.

There are also no recessed elements, and the simple form results in fewer complex details, leading to an efficient use of materials. Powder-coated aluminium spandrel panelling is proposed above the aluminium windows; however, the proportions, quantity, and size have been carefully considered, along with the zinc dormer, aluminium gutters, downpipes, and entrance doors.

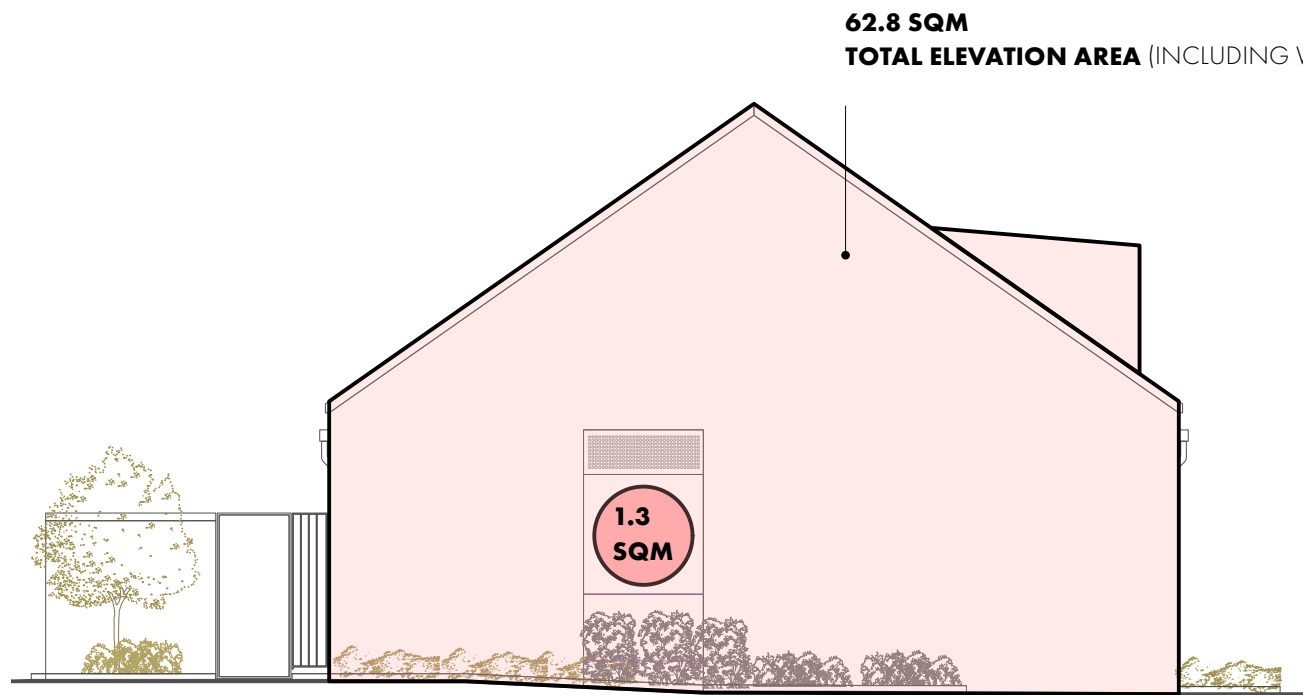
The inherent simplicity of the design and vernacular has minimised embodied carbon, where possible, leading to a lean, low-carbon structure.



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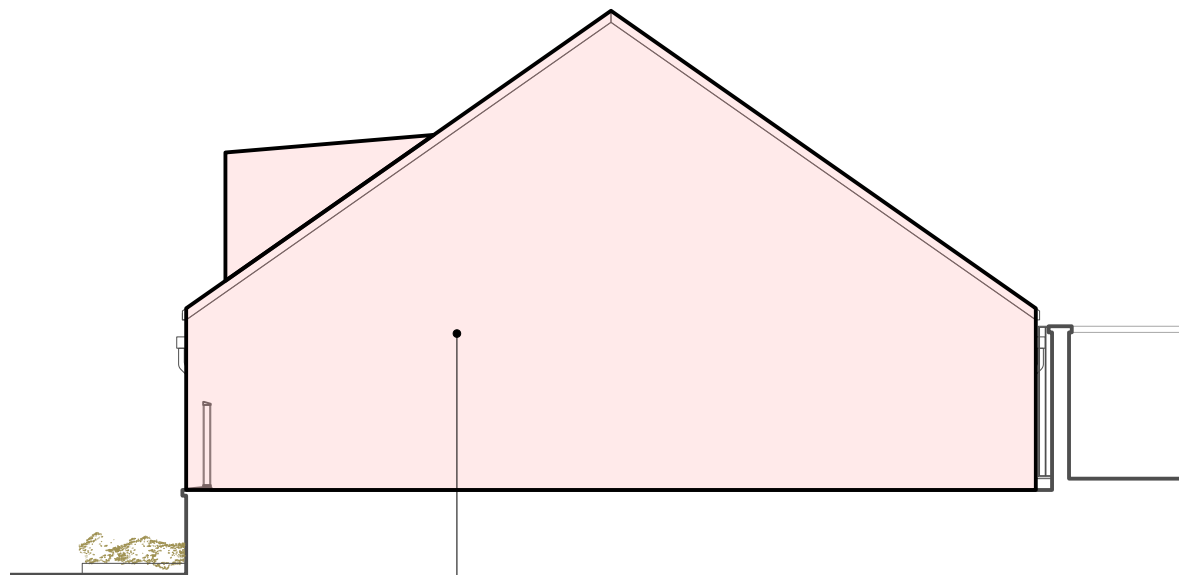
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CARITAS, RED DOOR BURY
ELEVATION AND AREA MARK UP 1 OF 4

1454 | SK004.A | OCT'25 | 1:200 @A3



SOUTH ELEVATION (BACK MOORGATE WEST)
1:100

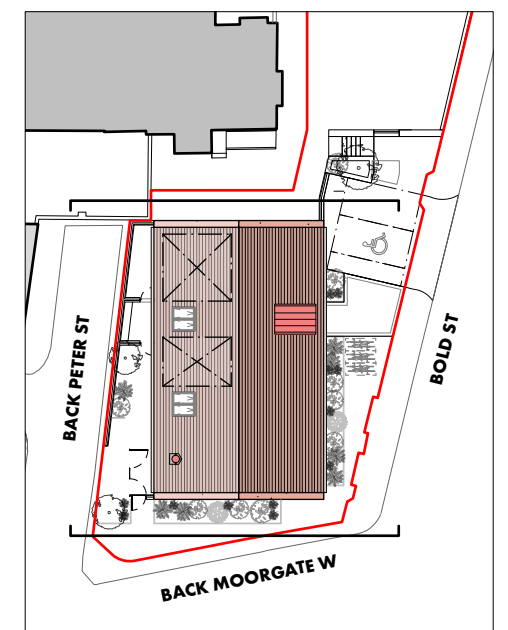
TOTAL WINDOW AREA: 1.3 SQM
TOTAL ELEVATION AREA: 62.8 SQM



NORTH ELEVATION
1:100

50.2QM
TOTAL ELEVATION AREA (INCLUDING DORMER)

TOTAL ELEVATION AREA: 50.2 SQM



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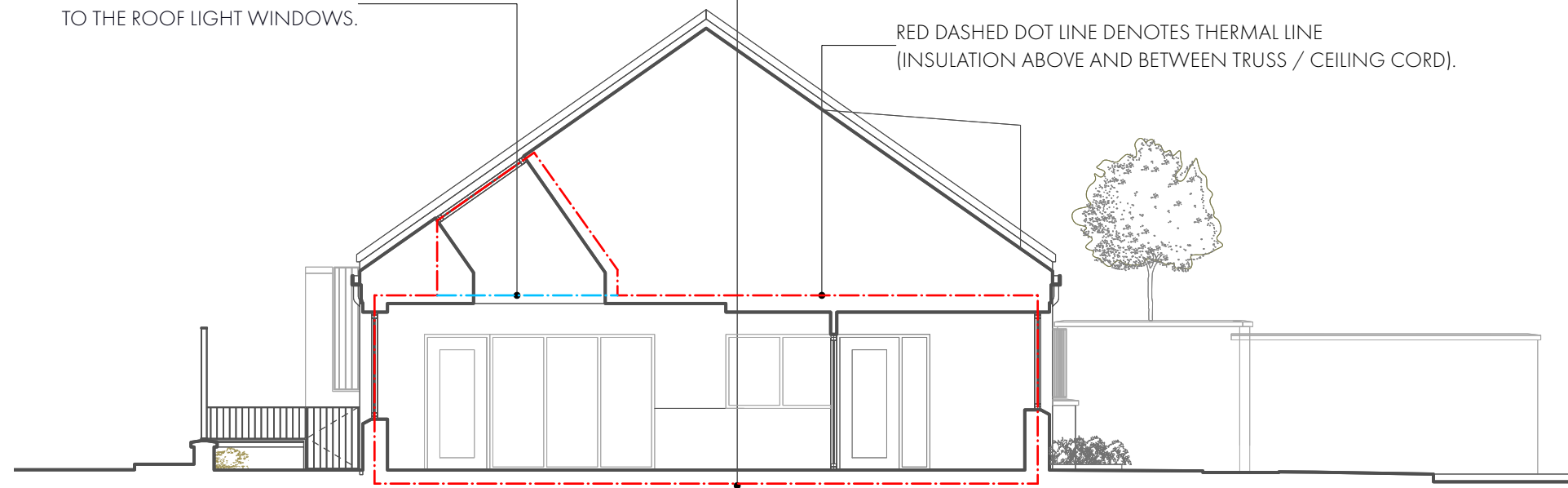
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ELEVATION AND AREA MARK UP 2OF4

1454 | SK004.B | OCT'25 | 1:200 @A3

BLUE DASHED DOT LINE DENOTES TYPICAL LOCATION OF THERMAL LINE TO ROOF AREA. NOTE: THERMAL LINE STEPS TO THE ROOF LIGHT WINDOWS.

RED DASHED DOT LINE DENOTES THERMAL LINE (INSULATION ABOVE STRUCTURAL SLAB AND LINKED WITH WALL INSULATION BY THERMAL INSULATION BLOCK)

RED DASHED DOT LINE DENOTES THERMAL LINE (INSULATION ABOVE AND BETWEEN TRUSS / CEILING CORD).

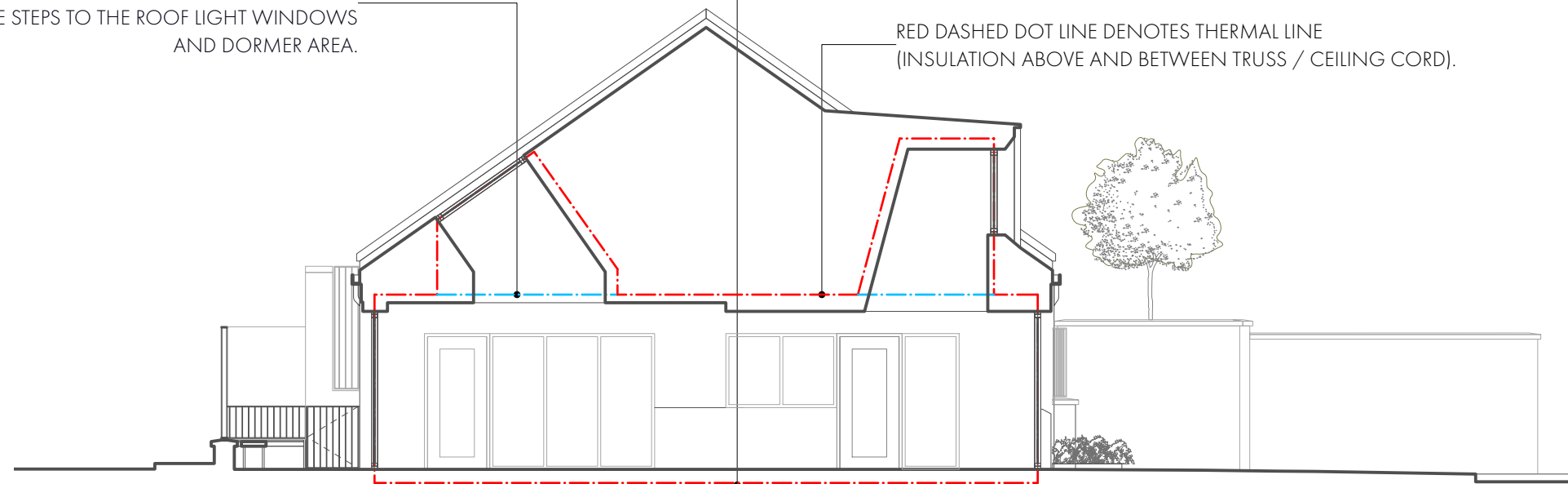


SECTION BB
1:100

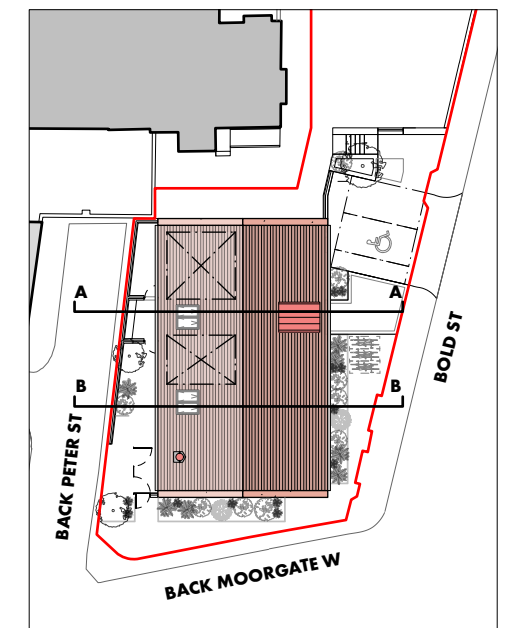
BLUE DASHED DOT LINE DENOTES TYPICAL LOCATION OF THERMAL LINE TO ROOF AREA. NOTE: THERMAL LINE STEPS TO THE ROOF LIGHT WINDOWS AND DORMER AREA.

RED DASHED DOT LINE DENOTES THERMAL LINE (INSULATION ABOVE STRUCTURAL SLAB AND LINKED WITH WALL INSULATION BY THERMAL INSULATION BLOCK)

RED DASHED DOT LINE DENOTES THERMAL LINE (INSULATION ABOVE AND BETWEEN TRUSS / CEILING CORD).



SECTION AA
1:100



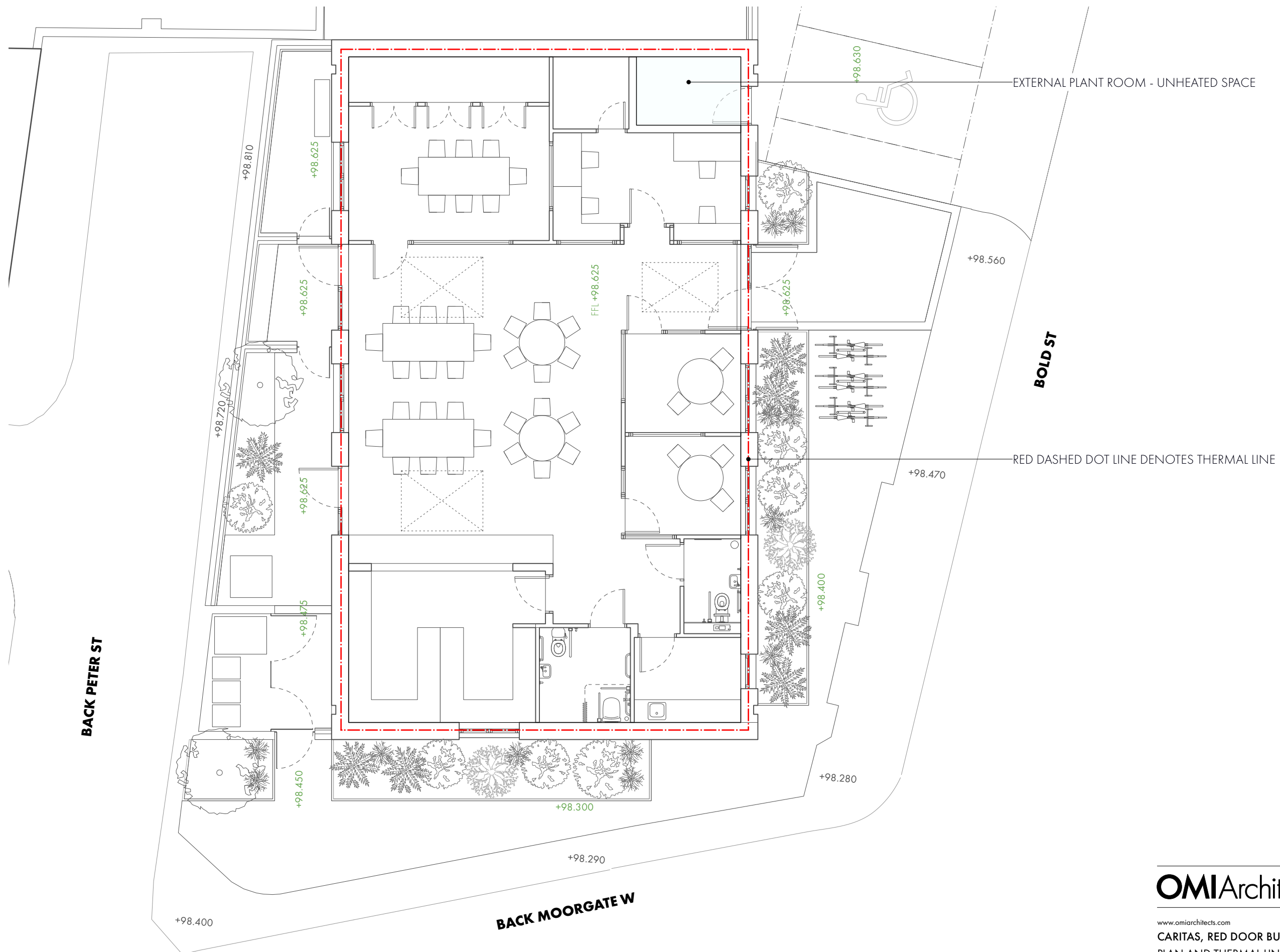
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SECTION AND THERMAL LINE MARK UP 3 OF 4

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PLAN AND THERMAL LINE MARK UP 4 OF 4

1454	SK004.D	OCT'25	1:200	@A3
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PV Strategy Key:

Aiko Neostar Solar PV Panel.

Notes:

1. This drawing is to be read in conjunction with the Hannan Associates Stage 3 report.
2. The solar PV design is to be verified by the contractor at Stage 4 prior to installation on site.

16 x 470W Aiko PV Panels = 7.52KW

1 x Aiko Neostar PV Panel = 1134 (L) x 1757 (W)

P3	03 12 25	Draft issue for planning.	GE	JH
Issue	Date	Description	Drawn	Checked



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Client	Muse Places		
Project	Red Door Day Centre, Bury		
Design Stage	Design Stage 3		
Drawing Title	Solar PV Strategy		
HAN Project Number	4054	Scale @ A1	1:50
Drawing Number	4054 - HAN - DR - XX - DR - E - 04 -01		

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