



Winners Chapel

Energy Statement for Planning Application

October 2024

Document Revision Control

Revisions	Date	Reason for Issue	By	Approved
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0. Executive Summary

This report has been prepared by Harley Haddow Manchester Ltd in support of the planning application being submitted to Manchester City Council over the public worship building located off Chain Road, Blackley, Manchester – Winners’ Chapel.

The proposal involves the demolition of existing building and erection of Place of Worship, with associated landscaping, parking, and alterations to existing access, with a gross internal area (GIA) of 4,800 m². A Dynamic Simulation Model (DSM) has been conducted to demonstrate compliance with the Building Regulations Part L 2021 (conservation of fuel and power in buildings other than dwellings).

The proposed development is subject to the following national and local policy drivers.

- National Planning Policy Framework (2023).
- Building Regulations UK Part L2, 2021 (with 2023 amendments).
- Places for Everyone: joint development plan document for Bolton, Bury, Manchester, Oldham Rochdale, Salford, Tameside, Trafford, and Wigan (2024).
- Manchester City Council’s Local Development Framework: Core Strategy (2012).



Figure 1: Render of the Proposed Development, Winners Chapel

0.1 Energy Strategy

The energy strategy has been developed based on a fabric-first approach in line with energy hierarchy; ‘Be Lean’, ‘Be Clean’, and ‘Be Green’.

Table 1: Summary of the Proposed Energy Hierarchy

Be Lean	A fabric first approach was adopted for this development, with a strong emphasis on reducing demand passively before exploring active options. Henceforth, the proposed fabric goes beyond the requirements set forth by the Part L2 of English Building Regulations published in 2021. Furthermore, several active energy demand reduction measures are proposed, such as the utilisation of 100% LED lighting and the incorporation of MVHR.
Be Clean	No district heating network is available within the vicinity of the proposed project.
Be Green	Highly efficient heat pump technologies have been proposed, along with allocation of PV on the available south-facing roof space.

Heating, ventilation, and air conditioning (HVAC) systems selection have been based on the latest stage 3 design, and the feasibility of the strategies has been considered and presented within this document.

0.1.1 Results

Table 2 below provides the targeted/predicted reductions against the key targets set out in Part L2, 2021. These predictions are based upon preliminary DSM calculations.

Table 2: Summary of the Building Emission Rate and Primary Energy Rate of the Proposed Development

Emission Rate		
TER (kWh/m²)	BER (kWh/m²)	Reduction over Part L2 2021
5.51	4.88	11.4%
Primary Energy Rate		
TPER (kWh/m²)	BPER (kWh/m²)	Reduction over Part L2 2021
58.43	50.42	13.7%

0.1.2 Overheating Strategy

The overheating mitigation strategy has been developed in line with the cooling hierarchy; ‘minimise’, ‘reduce’, ‘manage’, ‘passive’, ‘mechanical’, ‘active’. This provides an effective strategy to mitigating overheating without the use of energy intensive equipment, encouraging a passive approach.

Dynamic thermal modelling using the CIBSE TM52 methodology has been utilised to assess any risk within the proposed spaces.

1. Introduction

1.1. Approach to the strategy

The aim of this report is to outline the approach to energy efficiency and carbon emissions reduction for the proposed development. The energy strategy has been developed based on a fabric-first approach in line with the energy hierarchy; 'Be Lean', 'Be Clean', and 'Be Green' (illustrated in the image below). This hierarchy is the guiding ethos behind decisions regarding the energy performance of the building, ensuring the energy consumption is reduced as far as possible.

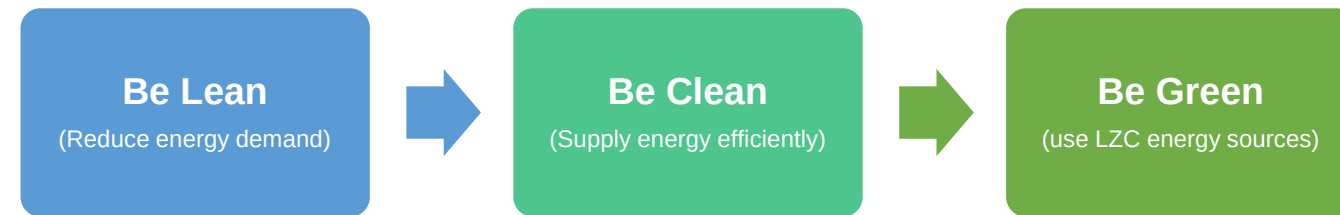


Figure 2: Energy Hierarchy

1.2. Limitations

This report has been prepared based on drawings received in September 2024 from MOJO Architects. Whilst the information used is taken from those drawings and documentation, the final performance will be dependent on the final commissioning results and actual operation of the building.

The Notional and Actual Building calculations use the standard National Calculation Methodology operational parameters. These are not based on the intended 'Real' building usage but allow a 'like for like' against the Building Regulations' baseline performance. The results presented in this report are therefore not reflective of the building's operational performance.

Each of the NCM Operational Templates applies a fixed set of characteristics including:

- Design setpoint temperatures
- Operational hours and profile
- Occupancy densities and loads
- Minimum ventilation rates (except local exhaust flowrate)
- Small power loads
- Domestic hot water loads

Solar loads vary daily depending on seasonal and weather conditions, which will affect loads that are accounted for in the thermal modelling process, such as solar transmission, conduction and building heat transfer. These are represented in the model under the weather data file.

1.3. Location and background

The site is located within the administrative boundary of Manchester City Council, within the suburban area of Blackley in a predominantly residential setting. The site is located south of the M60 outer ring road with an adjacent school to the west of the site.

The proposal involves the development of a circa 5282m² church building that includes a main auditorium/chapel, several Sunday school classrooms for the attendee's children, and staff office spaces.

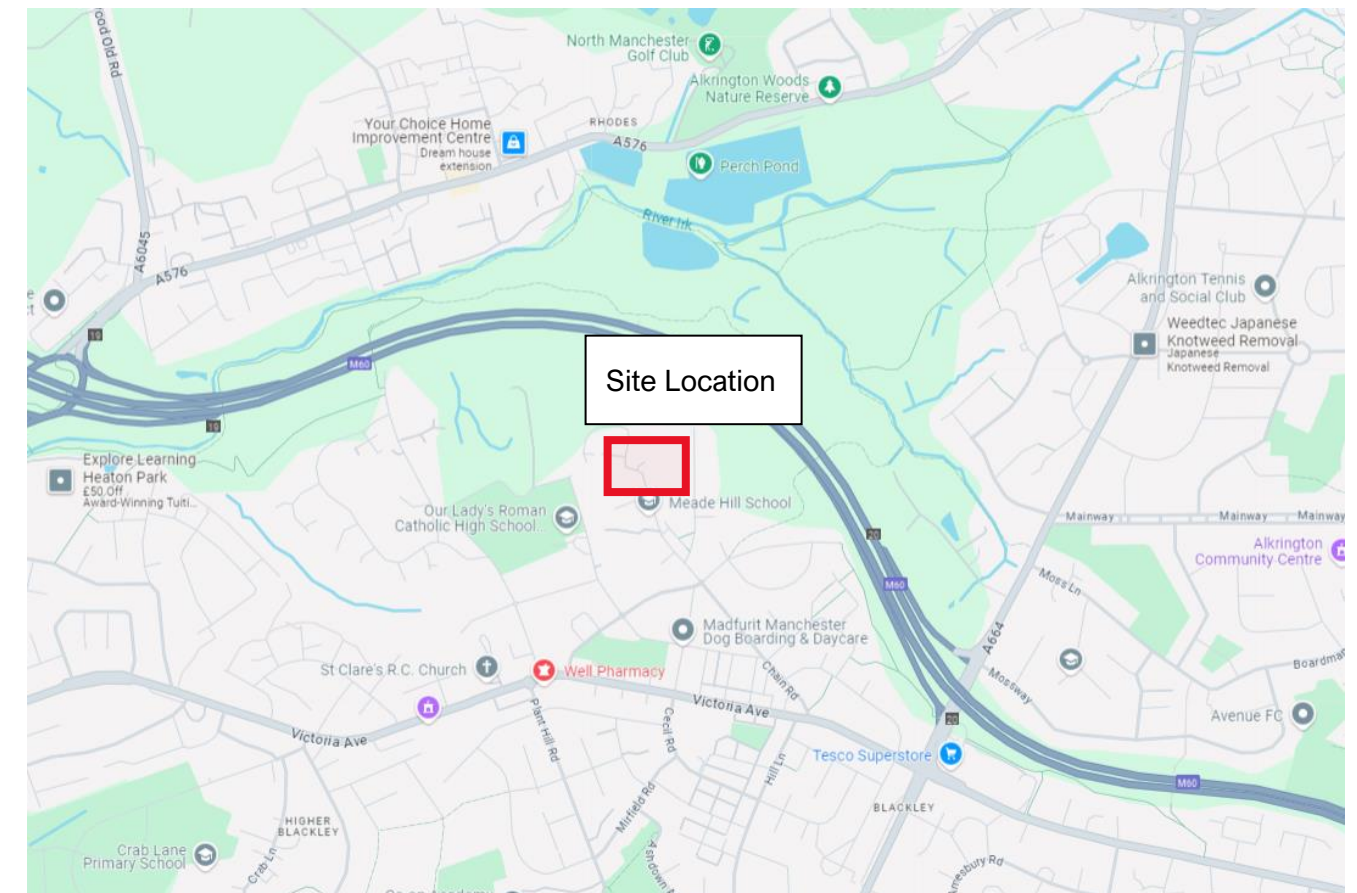


Figure 3: Existing site highlighted by red boundary.

2. Energy Drivers

2.1. National Planning Policy Framework

The National Planning Policy Framework (NPPF) was published in July 2021 (amended in December 2023) and sets out the government’s planning policies for England. The following table sets out the energy standards that are applicable to this development and therefore have been considered.

Table 3: Relevant NPPF Objective

Section	Requirement	Design Response
14. Meeting the challenge of climate change, flooding and coastal change	To support the transition to a low carbon future in a changing climate, taking account of flood risk and coastal change. New development should be planned such that it can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards. Increase use and supply of renewable and low carbon energy and heat.	This report provides an overview of the development’s energy strategy, using the ‘Be Lean, Be Clean, and Be Green’ energy hierarchy principles, to reduce carbon emissions. An overview of existing decentralised energy schemes within the Greater Manchester area and an assessment of the feasibility of future connection to this development is provided in this report. The report also outlines the appropriate low and zero carbon technology that are applicable and feasible to minimise the energy consumption of this development.

2.2. National: Building Regulations: Approved Document Part L

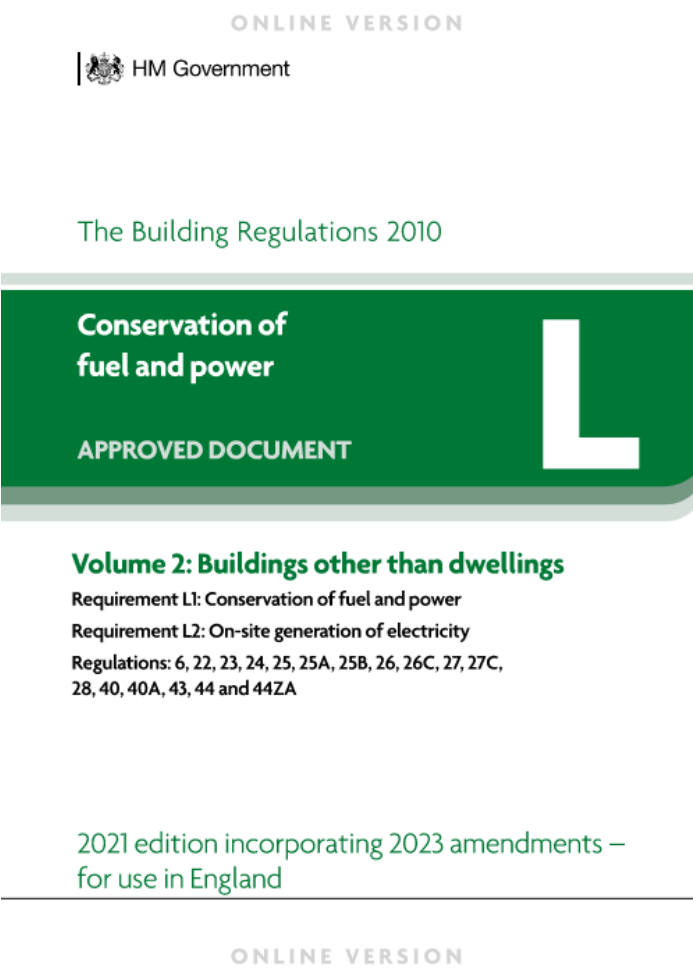


Figure 4: Part L2 (2021 incorporating 2023 amendments)

Approved Document Part L Volume 2 (2021, England edition with 2023 amendments) sets out the requirements of building regulations relating to the conservation of fuel and power in dwellings.

The document covers the requirements for both new buildings, and work to existing buildings.

2.1.1 Key Targets

Newly constructed buildings must be shown to comply with the following targets.

2.1.1.1 Target Emission Rate

The target CO₂ emission rate (TER) defines the minimum allowable standard for the energy performance of a building. It is defined by the annual CO₂ emissions of a ‘notional’ building of the same type, size, and shape of the proposed building. The building emission rate (BER), expressed as kgCO₂/ (m² · year), must display an improvement over the TER to achieve compliance with Part L2 2021 regulations.

2.1.1.2 Target Primary Energy Rating

Finally, the target primary energy rating (TPER) considers, primarily, how much energy (kWh) is required to provide heating and hot water to a newly constructed building. It also includes energy used by lighting, ventilation, and cooling systems. Instead of just looking at energy used within the building itself, TPER also considers the amount of energy required to produce the fuel source in the first place. To achieve compliance, developers must display a reduction in the building primary energy rating (BPER) against the TPER. With the decarbonisation of the grid, this target provides an additional benefit to specifying low carbon or renewable systems for new buildings.

2.3. Places for Everyone Joint Development Plan 2022 to 2039 (March 2024)

The adopted Places for Everyone Joint Development Plan 2022 to 2039 (March 2024) provides a set of guidelines for new development within Greater Manchester. The following relevant sections within the document have been considered and responded in this report.

Table 4: Relevant PfE Policies

Section	Requirement	Design Response
Policy JP-S1: Sustainable Development	This policy addresses climate change and the impact that developments can make on the economic, social, and environmental aspects of sustainability. This includes a target to be carbon neutral by 2038 by supporting low carbon growth and the upscaling of renewable energy generation. Key measurable targets to be achieved are: • New development will need to achieve net zero carbon by 2028, through on-site or off-site renewable energy sources and any remaining to be offset. • Defined pathway to net-zero by following the energy hierarchy and adopting fabric first approach. • Maximise on-site energy generation and where a development has demonstrated that the hierarchy has been followed and there are no reasonable alternatives to meet the minimum carbon reductions, then payment to offset remaining emissions will also be required, to help fund Greater Manchester meet the 5-year environment plan targets.	The proposed development will follow the principles of the Energy Hierarchy by adopting a fabric-first approach, with a high efficiency air-sourced heat pump to supply the clean energy and by maximising on-site renewable energy generation through PV panels. A full energy strategy is provided in section 4 to 6 of this report, in line with the Be Lean, Be Clean, and Be Green hierarchy.
Policy JP-S2: carbon and Energy	This policy focuses on minimising carbon emissions and promoting energy efficiency in Greater Manchester to achieve carbon neutrality no later than 2038, which will be supported through measures including: • Promoting the retrofit of existing buildings. • Promoting use of life cycle cost and carbon assessment tools.	Renewable technologies such as ASHP and PV panels on the south facing roof have been considered and are proposed for this development.

	• Taking positive approach to renewable and low carbon energy schemes. • Increase range of nature-based solutions. • An expectation that new development will, where practicable and achievable, be net zero in its regulated operational carbon emissions and from 2028 be net zero in all emissions, and prioritise connection to renewable or low carbon energy networks. • Identify heat networks where available.	
Policy JP-S3: Heat and Energy Networks	This policy covers the importance of heat and energy networks within the Greater Manchester to transition to a low-carbon future. Delivery of renewable and low carbon energy schemes will be supported	Based on the Manchester Local Area Energy Plan (2021), the proposed site does not fall within a district heat network priority area, and it is further explored in Section 5 of this report, which shows that there is no existing heat network within the vicinity of the proposed site.

2.4. Manchester City Council’s Core Strategy (2012)



Manchester's Local
Development Framework

Core Strategy
Development Plan Document

Adopted 11th July 2012

Published by Manchester City Council
planningstrategy@manchester.gov.uk



Figure 5: Manchester Local Plan (2023)

The following local planning requirements from Manchester City Council have been considered during the production of this report:

Table 5: Relevant Manchester City Council Core Strategy Policy

Policy	Applicable Requirement	Design Response
Policy EN4: Reducing CO2 Emissions by Enabling Low and Zero Carbon Development	- Adopting the principles of energy hierarchy. - Energy generation plant to be located and designed to allow opportunities for low and zero carbon energy supplies. - Where appropriate, to allow future connection to any existing or potential decentralised energy schemes.	A full energy strategy is provided in section 4 to 6 of this report, in line with the Be Lean, Be Clean, and Be Green hierarchy. No existing networks nor any planned future heat networks are available within the vicinity of the proposed site; therefore, an on-site low carbon energy

		technology is being proposed, via ASHP.
Policy EN6: Target Framework for CO2 Reductions from Low or Zero Carbon Energy Supplies	Applications for non-residential development over 1000 m2 is required to meet Table 12.2 of Policy EN6. In this case, a 15% reduction over Part L 2010.	The proposed development will meet the latest building regulations requirement Part L 2021, which is a more onerous assessment than Part L 2010. It has also been assessed using Part L 2010 which shows a 43.7% savings.
Policy EN8: Adaptation to Climate Change	All new developments will be expected to be adaptable to climate change, this includes the need to control overheating through passive design.	An overheating risk assessment has been undertaken in line with CIBSE TM52 methodology, which is provided in Appendix B of this report.

3. Cooling and Overheating Drivers

In line with Policy EN8 for climate change adaptability, the building has been assessed for its risk of overheating using the methodology set out in CIBSE TM52. This is to ensure that the proposed mechanical strategy is suitable for hot weather conditions.

CIBSE TM52 sets out guidance on the methodology of overheating risk assessment. Identifying this risk during the design stage is important in order to identify the rooms with high risk and provide mitigation action. This is achieved through the approved dynamic thermal modelling software, IESVE 2023.1. Please see Figure 6 below for the model created within IESVE.

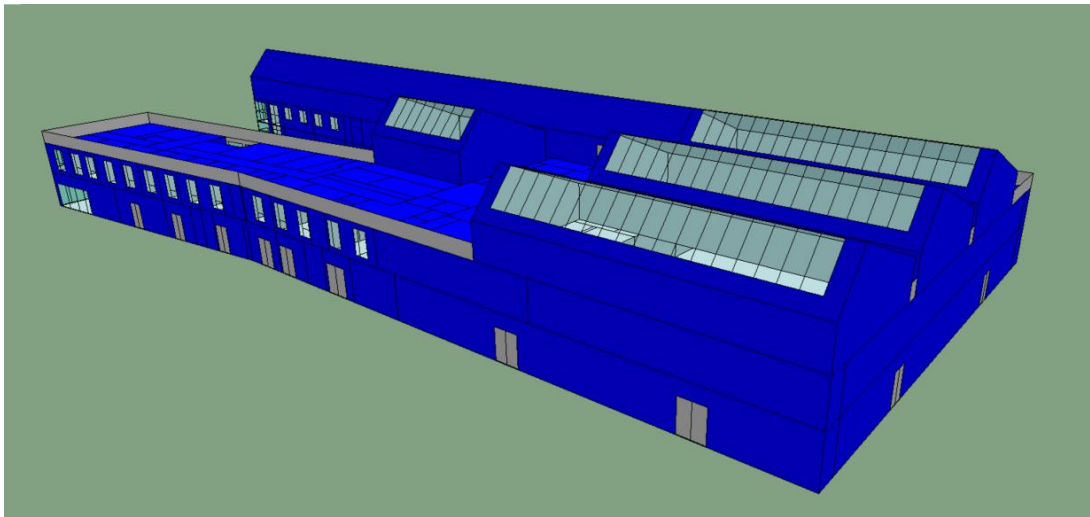


Figure 6: IESVE Dynamic Thermal Model

3.1. Cooling Hierarchy

The ‘cooling hierarchy’, displayed below in Figure 7, has been utilised to inform the overheating mitigation strategy. In doing so, reliance on energy intensive cooling equipment is reduced.

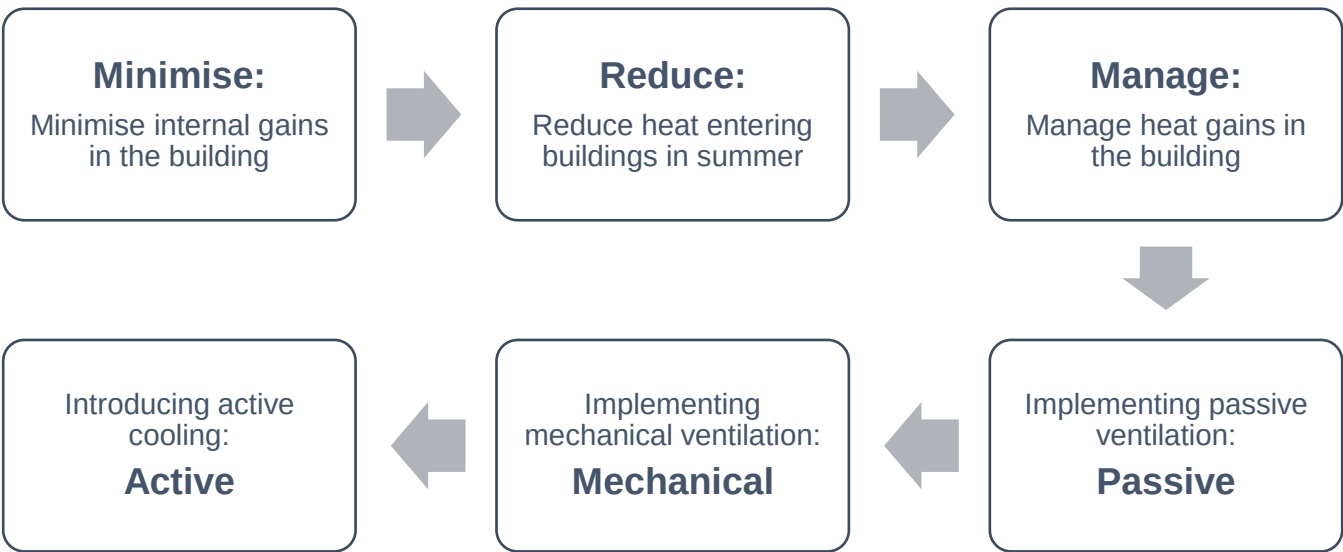


Figure 7: Cooling Hierarchy

3.2. Mitigation Strategy

The mitigation methods displayed in Table 6 will be implemented at the proposed development and are sufficient to achieve compliance against the TM52 requirements for all occupied spaces.

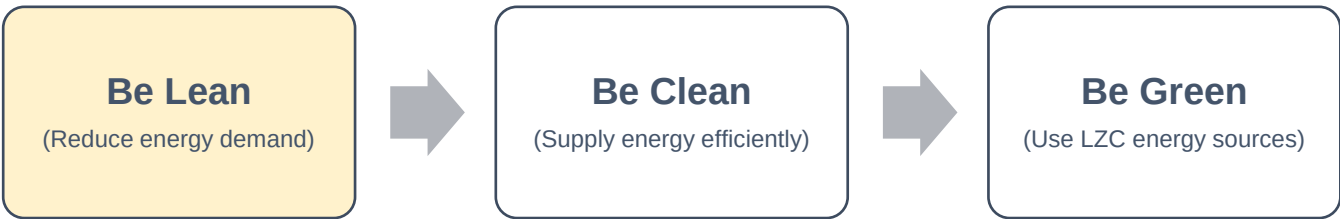
Table 6: Cooling Hierarchy Implementation

Hierarchy Stage	Response
1. Minimising internal heat generation through energy-efficient design	The following mitigation methods will be implemented to minimise internal heat generation through energy-efficient design at the Proposed Development: • Energy efficient lighting (such as LED) with low heat output. • Insulation to hot water pipework and minimisation of dead-legs to avoid standing heat losses from the pipework to the spaces.
2. Reducing the amount of heat entering the building in summer	The proposed development will have fabric properties which exceed the requirements outlined in Part L2 of the English Building Regulations. External glazing and rooflights proposed are going to have low g-values with high visible light transmittance to allow plenty of daylight to the space.
3. Manage heat gains by using thermal mass in building	Due to the design and construction of the building, there will be little thermal mass in the building fabric.
4. Passive Ventilation	Various spaces within the building will utilise natural ventilation via openable windows.
5. Mechanical Ventilation	Spaces with high occupancy density and with no access to windows will be provided with mechanical ventilation.
6. Active Cooling	Active cooling is proposed to spaces with high occupancy density and those with sensitive occupants.

Further details on the preliminary overheating risk assessment are provided **Appendix B** of this report.

4. Reduce Energy Demand - Be Lean

Passive design and energy efficiency measures form the basis for the reduction in overall energy demand and carbon emissions for the proposed development. This energy strategy aims to reduce the energy demand initially by optimising the envelope and building services within the development.



4.1. Building Fabric (Passive Design Measures)

Passive design measures are those which reduce the demand for energy within the building, without consuming energy in the process. For example, these include improving the thermal performances of the proposed fabric or incorporating natural means to heat or cool a building.

The proposed passive measures for the building are summarised below in Table 7.

Table 7: Proposed Passive Design Measures:

	Proposed Design	Part L Limiting Values
External Wall <i>U-Value Target</i>	0.21 W/m².K	0.26 W/m².K
External Window <i>U-Value Target</i>	1.40 W/m².K	1.6 W/m².K
External Window <i>G-Value Target</i>	0.4	-
Rooflight <i>U-Value Target</i>	1.4 W/m².K	2.2 W/m².K
Rooflight <i>G-Value Target</i>	0.35	-
Exposed Floor <i>U-Value Target</i>	0.10 W/m².K	0.20 W/m².K
Roof <i>U-Value Target</i>	0.15 W/m².K	0.18 W/m².K
Infiltration	3.00 m³.h/m² @50Pa	8 m³.h/m² @50Pa
Thermal Mass	Light Weight	
DHW Heating Pipework	All primary pipework to be fully insulated.	
Ventilation and Cooling	Natural ventilation openings to be provided to classrooms and offices with access to windows. Cooling will only be provided to spaces with high occupancy density such as the chapel and multifunction rooms, or rooms with higher internal gains such as restaurant and gym.	

4.2. MEP Systems (Active Design Measures)

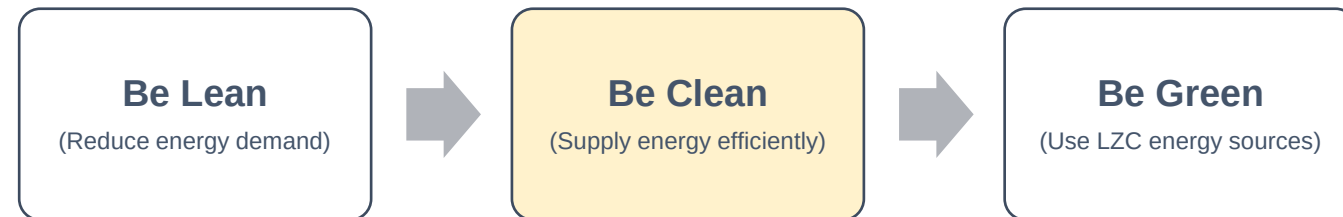
Active design measures are those which reduce the demand for energy via efficient mechanical and electrical systems. Improving the energy efficiency of these systems can result in significant carbon emission reductions.

Table 8: Proposed Active Design Measures

	Proposed Design
Space Heating and Cooling System	ASHP via central VAV, radiators, and VRFs, depending on the space type. - Central VAV to supply heating and cooling to the main chapel and other multi-function halls. - VRF to supply heating and cooling to the restaurant, sensory rooms, server room, and kitchen BOH. - Radiators to supply heating to the rest of the building.
DHW System	Point of use electric hot water, with small storage capacity.
Ventilation System	Central AHU to serve the main chapel and multifunction rooms, with a heat recovery of 75%. MVHR units with heat recovery of 80% to serve other spaces. Classroom, perimeter offices, gym, and bookshop, will be naturally ventilated.
Lighting	High efficiency LED lighting proposed for 100% of spaces, with daylight dimming and occupancy sensors.

5. Supply Energy Efficiently - Be Clean

Supplying energy efficiently refers to the use of decentralised energy systems through district heat networks (DHNs) to provide energy and reduce consumption from the national grid and gas networks.



There is currently no heat existing heat network within the vicinity of the proposed site. Based on the Figure 8 below, a snip taken from the Department for Energy Security and Net Zero, shows that the only operational heat network within Manchester is the Manchester Civic Quarter heat network which is over 2km away from the site.

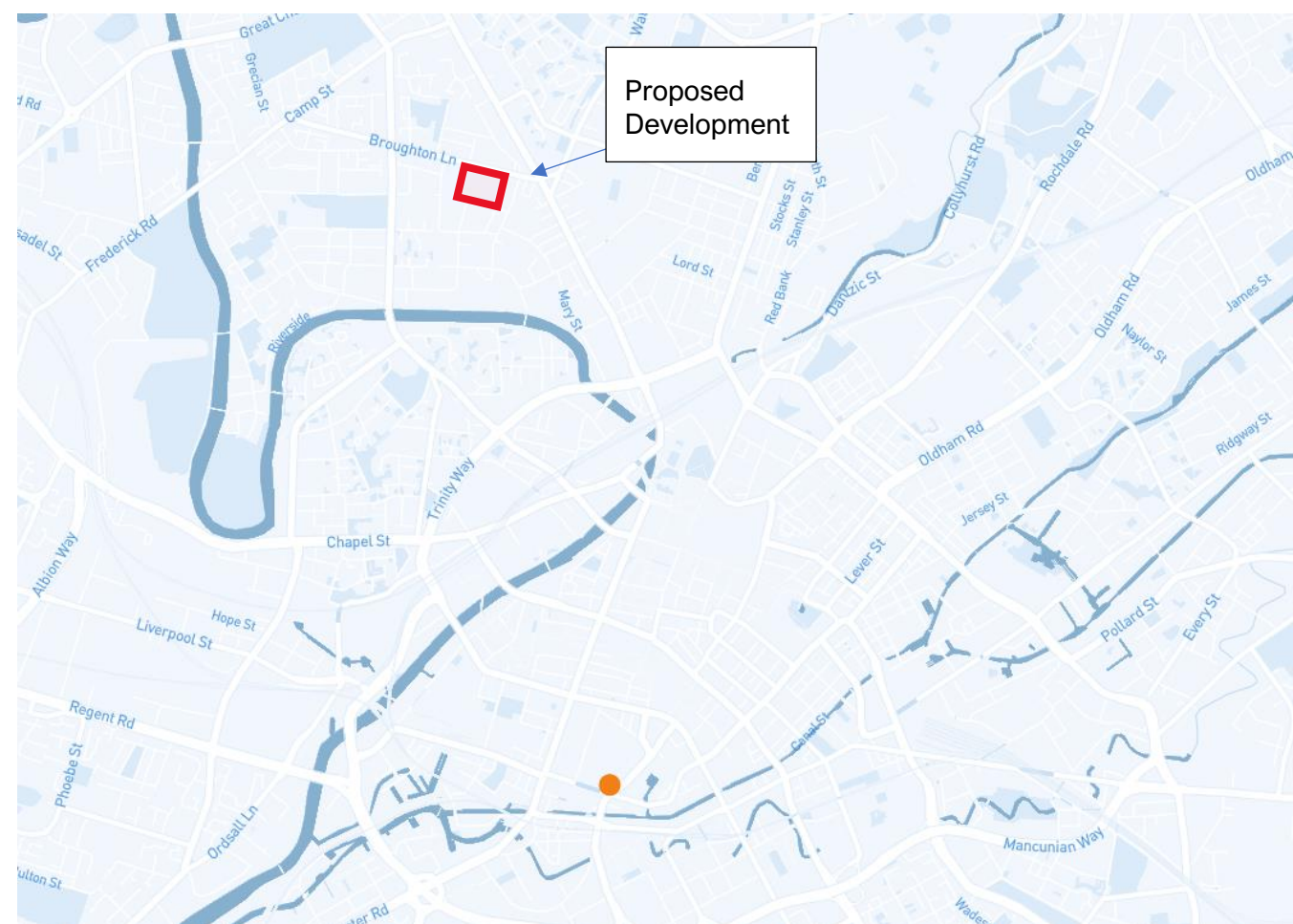
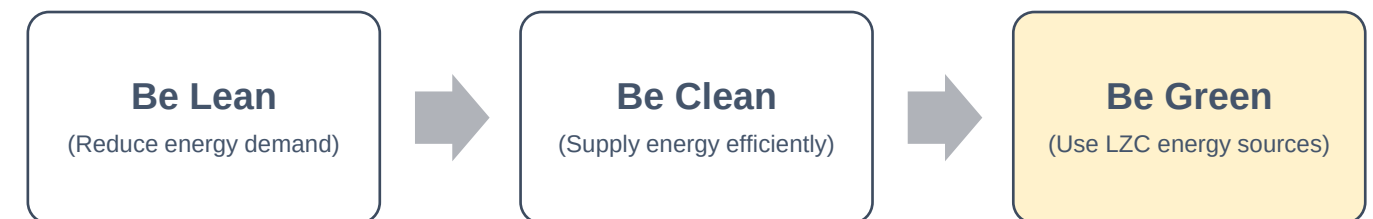


Figure 8: Proposed Heat Network as shown on the UK Heat Network Planning Database

The proposed heating and hot water provision is therefore to use a centralised air sourced heat pump system to provide a local low-carbon heating solution for the building, with point-of-use hot water to minimise storage and circulation losses.

6. Low and Zero Carbon Technology - Be Green

On-site renewable energy generation and/or Low and Zero Carbon (LZC) technologies have been reviewed and considered for the proposed development, in line with Part One: Manchester City Council's Local Plan (2023).



6.1. Technology Review

The following renewable energy technology was considered:

- Solar photovoltaics panels (PV)
- Solar hot water
- Air sourced heat pump (ASHP)
- Ground sourced heat pump (GSHP)
- Micro wind power
- Biomass boiler

However, upon consideration on the feasibility, usage, and scale of the development, PV and ASHP have been selected to be the most appropriate technologies.

6.1.1 Air Sourced Heat Pump System

ASHP works by utilising electricity to extract heat from the air and transfer it to the building to be used to heat the space or heat hot water. This also works in the reverse, where heat from inside the building is removed and transferred to the outside, which provides cooling to the building. The efficiency of ASHP is measured by the Coefficient of Performance (COP), that is the ratio of heat output for each unit of electricity used.

This technology has been proposed for the development, to provide space heating connected to the main AHU, radiators, underfloor heating, and VRF units via LTHW pipework.

6.1.2 Photovoltaic (PV) Panels

Solar PV panels convert sunlight to electrical power. As there are no moving parts in a PV cell, the units tend to be low maintenance, however, they must be kept clean as efficiency can drop. This is reduced if the panels are installed at an angle, therefore allowing for cleaning via rainfall, as well as locating the panels away from trees to mitigate fouling caused by leaves and debris.

On-site electricity generation will be maximised on site, via a PV panel array on the roof area. A minimum of 500m² of PV panels are required in order to achieve compliance with Part L of the Building Regulations.

7. Energy Assessment Result

Dynamic thermal simulations rely on hourly weather data, including radiation, temperature, humidity, sunshine duration, wind speed and direction, to accurately model a building's thermal response. The analysis for compliance with Part L2 2021 of the Building Regulations utilized a CIBSE Test Reference Year (TRY) for Manchester, following National Calculation Method requirements.

The following result of the Part L compliance model has been calculated using the parameters provided previously, adopting the principles of the Be Lean, Be Clean, and Be Green approach.

Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	5.51
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	5.37
Target primary energy rate (TPER), kWh _{PE} /m ² .annum	58.43
Building primary energy rate (BPER), kWh _{PE} /m ² .annum	55.58
Do the building's emission and primary energy rates exceed the targets?	BER =< TER BPER =< TPER

Figure 6: BRUKL Report Result

Baseline modelling shows a Part L2 2021 Building Standards Target Emission Rate (TER) of 5.51 kgCO₂/m² with a Building Emission Rate (BER) of 4.88 kgCO₂/m², and Target Primary Energy Rate (TPER) of 58.43 kWh_{PE}/m² with a Building Primary Energy Rate (BPER) of 50.42 kWh_{PE}/m² which meets the requirements of the 2021 building standards, with a 11.4% reduction over the notional target emission. This is achieved through utilising PV panels, of circa 500 m², equivalent to 100.5 kW rated power.

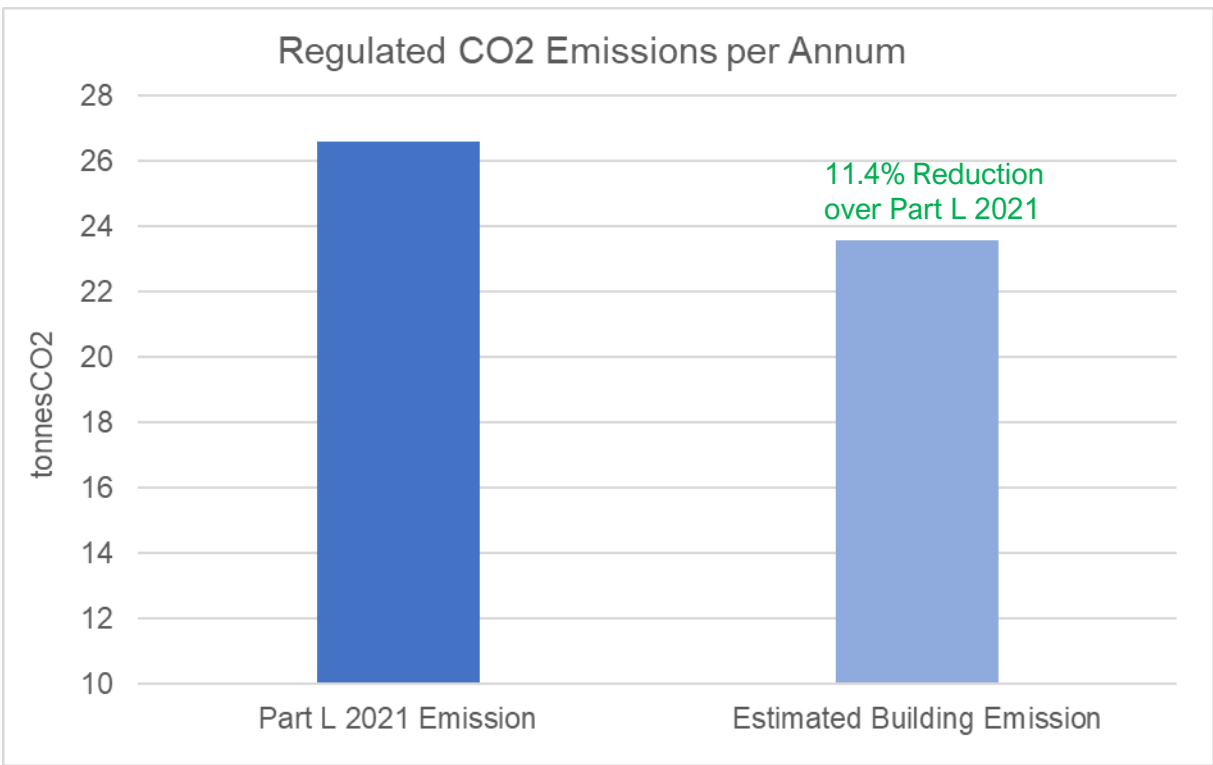


Figure 9: Total Regulated CO2 Emission Reduction in tonnes CO2/annum over Part L 2021.

As part of Manchester City Council's Core Strategy Policy EN6, the model has also been assessed against Part L 2010 to ensure that the minimum 15% carbon emission reduction is met.

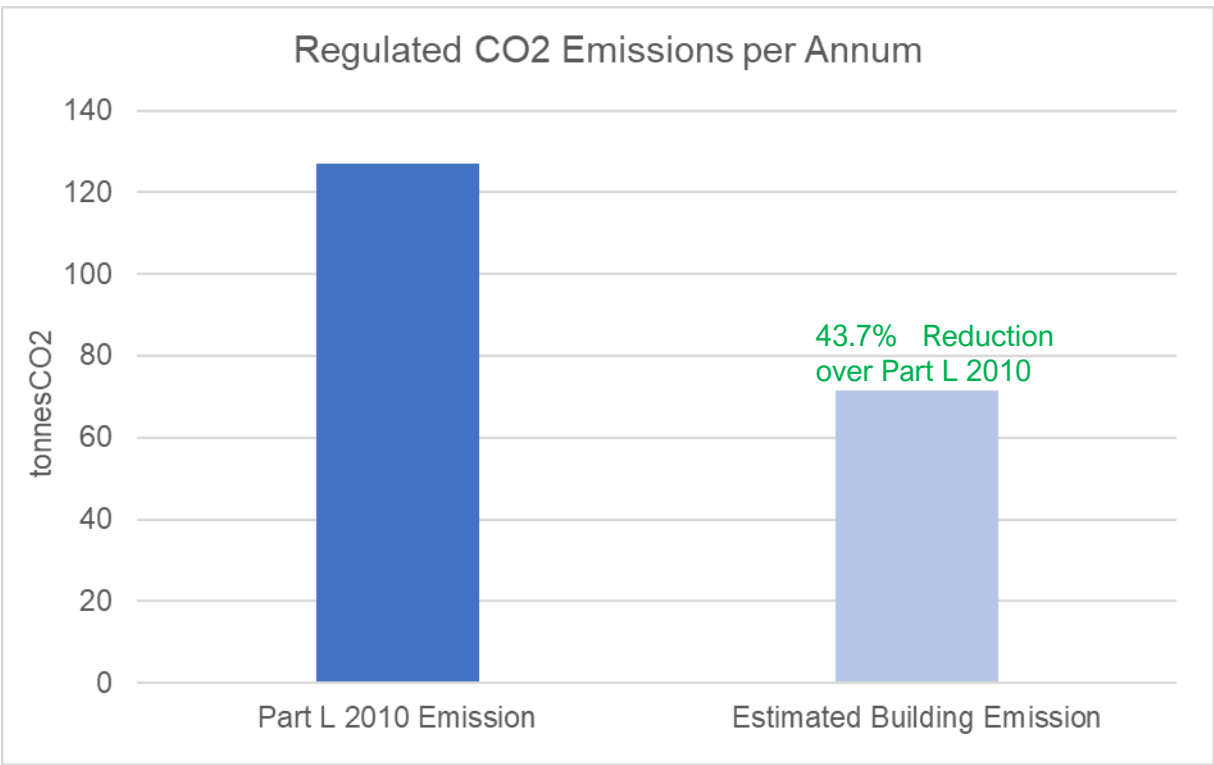


Figure 10: Total Regulated CO2 Emission Reduction in tonnes CO2/annum over Part L 2010.

The development proposal meets local policy and has included the following passive and active measures to reduce the annual energy consumption:

- Good performing building fabric,
- Energy efficient lighting,
- High efficiency mechanical ventilation with heat recovery,
- Low air leakage,
- High efficiency ASHP for heating and cooling, and
- Provision of PV panels for on-site renewable energy generation.

8. Conclusion

This document has been prepared in support of planning for the proposed development, Winners Chapel. The proposal involves the development of a circa 5282 m² community church building, with its associated offices and classroom spaces.

This energy statement summarises the relevant national and local regulatory and planning policies applicable to the proposed development and sets out how the proposed design can feasibly surpass the relevant policy requirements.

The building has been designed to follow the energy hierarchy of Be Lean, Be Clean, and Be Green, through a fabric first approach. The proposed U-values and g-value of the external windows have been designed to minimise heat loss through fabric and minimise excess solar gains, whilst maximising natural daylight through windows. The building has also been designed to reduce the risk of overheating by utilising natural ventilation through window openings.

The building will be provided with heating and cooling via a high efficiency communal ASHP which will be connected to the different room emitters, depending on the types of space:

- Central VAV to supply heating and cooling to the main chapel and other multi-function halls, with perimeter radiators for background heating.
- VRF to supply heating and cooling to the restaurant, sensory rooms, server room, and kitchen BOH.
- Radiators to supply heating to the rest of the building.

The possibility to connect to a district heat network has been explored, however this has been discounted as there is currently no existing heat network within the vicinity of the proposed site. There is also currently no proposed heat network within the vicinity to be built in the near future.

The preliminary result of the Part L dynamic simulation modelling shows that in order to meet compliance, circa 500m² of PV is required.

The above proposed strategy shows a 11.4% savings of the overall regulated carbon dioxide emissions per year over the current Part L 2021 Building Regulations, and a 43.7% savings over the Part L 2010 Building Regulations which is in compliance with the requirements set out in Policy EN6 of the Manchester City Council's Core Strategy.

Appendix A - Technical Parameters

The technical basis for the assessments is detailed in this section.

Table A1: Technical background information and disclaimers

Parameter	Details
Compliance software and procedure	The Proposed Development has been assessed using The National Calculation Methodology for demonstrating compliance with Approved Document Part L. A dynamic simulation model was created to assess the design of the Proposed Development. The results presented in this report were calculated using the approved compliance software IES VE 2023 (v2023.5.2.0). The IES model for the Proposed Development was drawn to geometry received from Mojo Architects.
Modelling Disclaimer	It should be noted that the data generated by this work is obtained using computer simulations based on the standard National Calculation Methodology operational parameters. These are not based on the intended 'Real' building usage but allow a 'like for like' against the Building Regulations' baseline performance. The actual energy usage for the building once occupied will vary from the calculated values. These differences will occur due to several parameters varying between the modelled building and the actual building. Such differences will include the hours of operation, levels of occupancy, how the plant and other systems are used, and the design criteria with regards to how the rooms are environmentally controlled. Whilst the simulations have been undertaken in good faith using reasonable skill and care, Harley Haddow Ltd can take no responsibility for differences between the computer simulations and the actual performance of the completed building due to the inherent complexity and variability of the physics and operational factors in a building and its environment, and the limitations of the required methodology.

Appendix B – CIBSE TM 52 Overheating Risk Assessment

B.1 Introduction

Conducting an overheating risk assessment is crucial in ensuring a comfortable range of temperature during the occupied hours of the naturally ventilated spaces, in addition to adhering with Policy EN8. This assessment has been carried out in accordance with the CIBSE TM52 guide. The study was conducted on the regularly occupied naturally ventilated spaces, such as classrooms and offices. Naturally ventilated circulation areas and the bookshop are not assessed for overheating as they are transient spaces. As design progresses, overheating risk assessment will be updated to reflect the latest design strategy or occupants requirement.

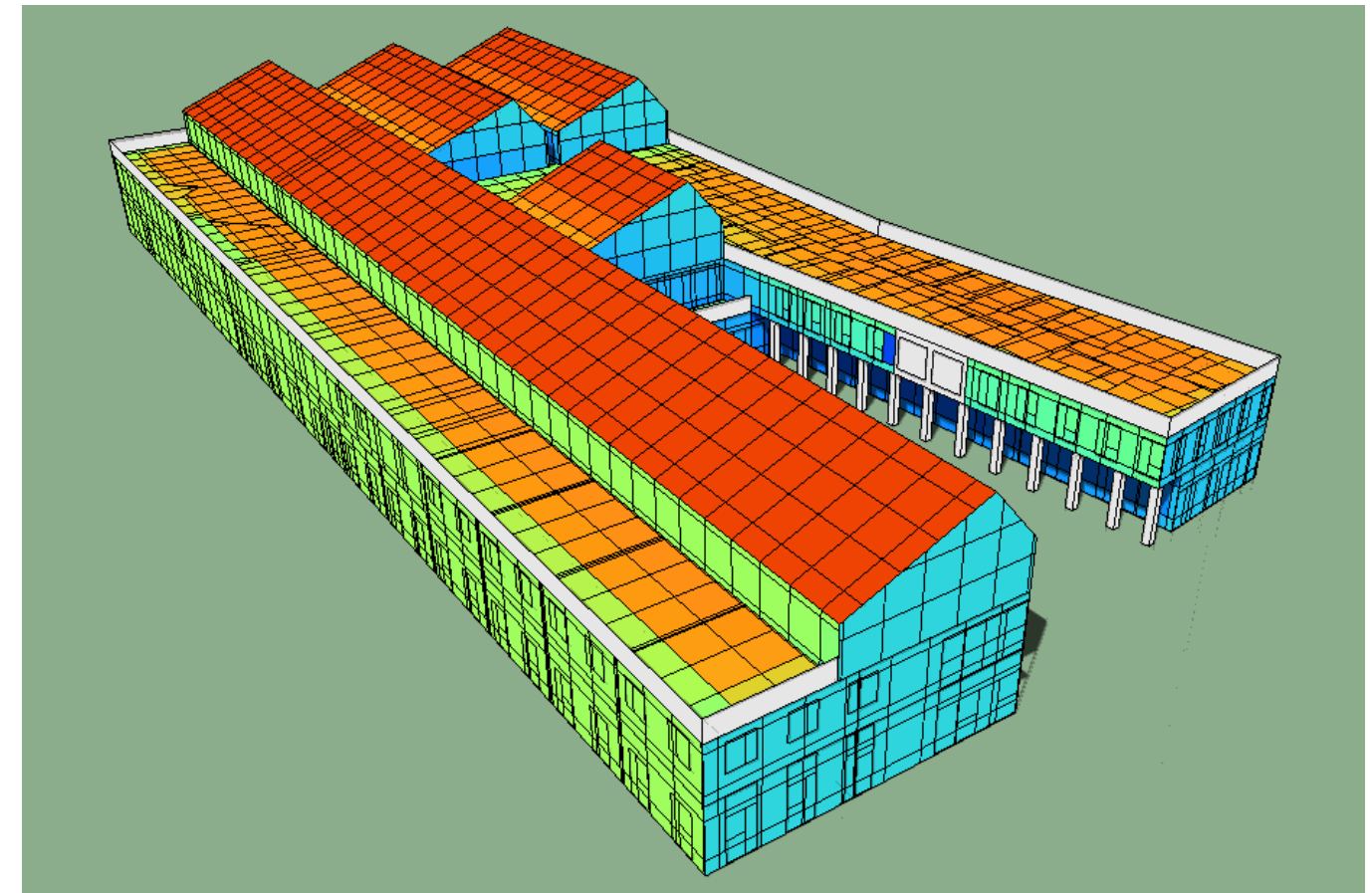


Figure 11: Solar Exposure Analysis of Winners Chapel

B.2 Methodology

The development was assessed using the criteria for overheating in free-running buildings under the CIBSE TM52 guide. This means that rooms that fail two out of the three following criteria are classed as overheating:

1. Criterion 1: Hours of Exceedance (He)

Sets a limit on the number of hours that the operative temperature can exceed the threshold comfort temperature by 1K or more during the occupied hours of a typical non-heating season (1 May to 30 September).

2. Criterion 2: Daily Weighted Exceedance (We)

The severity of overheating within any one day, which can be as important as its frequency, the level of which is a function both of temperature rise and its duration. This criterion sets a daily limit for acceptability.

3. Criterion 3: Upper Limit Temperature (T_{upp})

This criterion sets an absolute maximum daily temperature for a room, beyond which the level of overheating is unacceptable.

The weather file used for this overheating risk assessment is Manchester DSY1 2020 High Emission 50th Percentile. Future weather files will also be used at later stage in order to satisfy BREEAM HEA 04 credits.

B.3 Internal Gains Assumptions

The following table shows the internal gains assumed for each room type.

Table B1: Internal Gains Assumptions

	Occupancy (people)	Lighting (W/m ²)	Equipment (W/m ²)	Profile
Classroom	40	12.5	5	Sunday only, as shown in Figure 12 below
Office	1	7.5	15	8 am to 5 pm Monday to Friday
Meeting room	4	7.5	15	8 am to 5 pm Monday to Friday

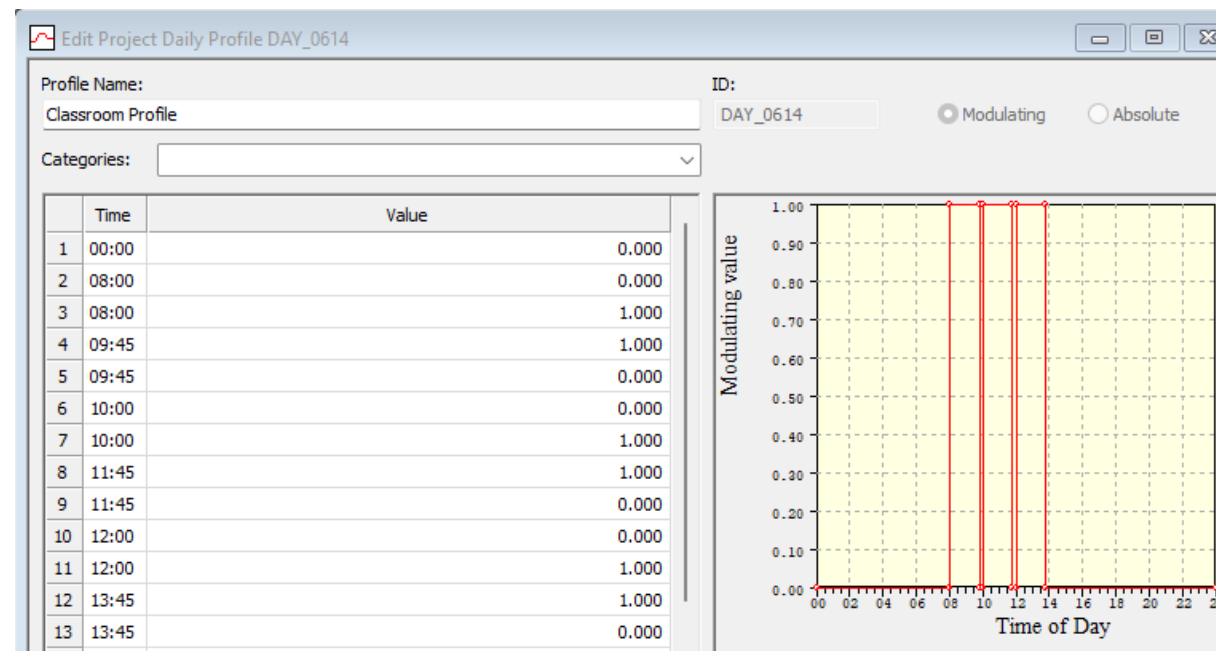


Figure 12: Classroom Occupancy Profile

B.4 Windows Opening

The following image is taken from IES VE, showing windows have been assigned as openable in the thermal model (all other colours outside red are openable windows). These windows have been assumed to be openable with 300mm restriction for safety purposes.

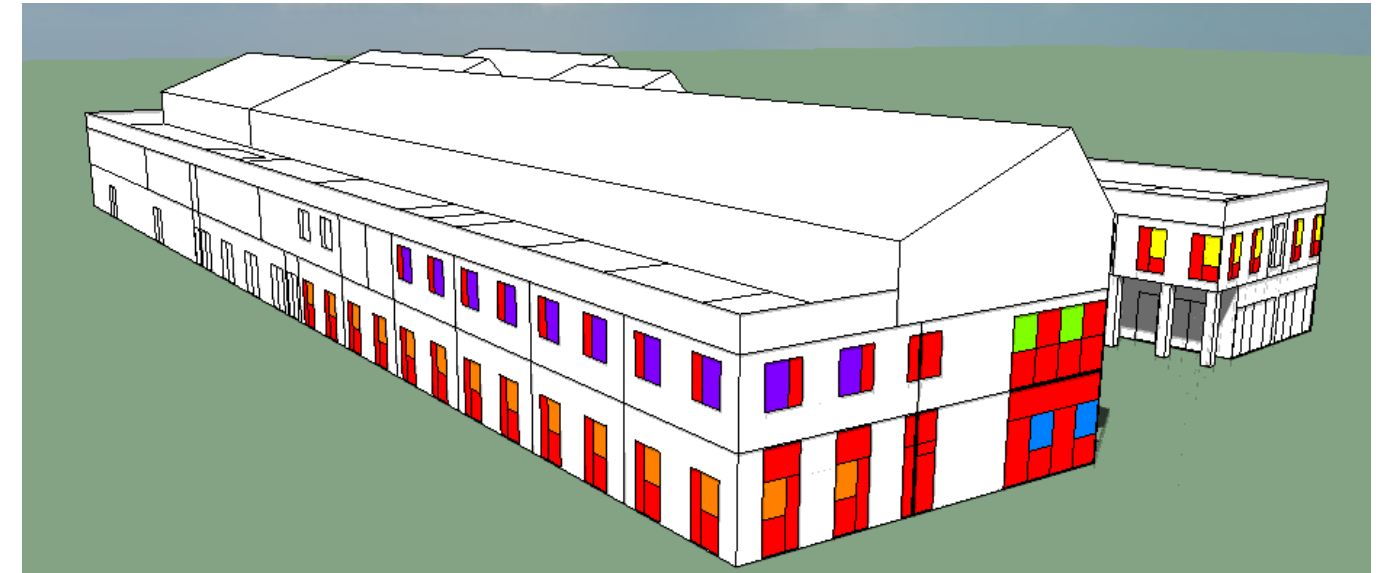


Figure 13: South-east Elevation of Winners Chapel

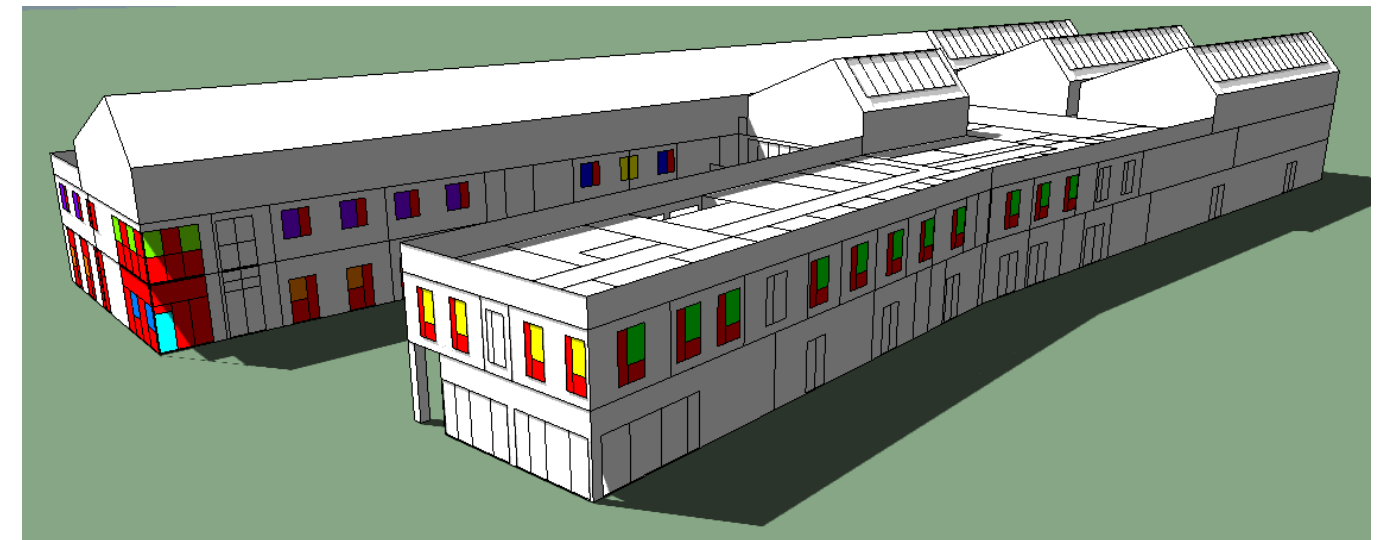


Figure 14: North-east Elevation of Winners Chapel

B.5 Results

The following table shows the result of criteria 1 to 3 for all rooms that have been assessed. This shows that all rooms have passed and are at low risk of overheating.

Table B2: CIBSE TM52 Overheating Risk Assessment Results

Room Name	Criteria 1	Criteria 2	Criteria 3	PASS/FAIL
L00 - 3-4 Yr Classroom 01	3	6	2	PASS
L00 - 3-4 Yr Classroom 02	0.8	1	1	PASS
L00 - 3-4 Yr Classroom 03	0.8	1	1	PASS
L00 - 5-7 Yr Classroom 01	1.5	2	1	PASS
L00 - 5-7 Yr Classroom 02	5.3	6	3	PASS
L00 - 5-7 Yr Classroom 03	5.3	6	3	PASS
L00 - CSR Office	2.8	9	2	PASS
L00 - Toddler Classroom 01	3.8	5	2	PASS
L00 - Toddler Classroom 02	3.8	5	2	PASS
L00 - Toddler Classroom 03	4.5	6	3	PASS
L01 - 8-10 Classroom 01	0.8	1	1	PASS
L01 - 8-10 Classroom 02	0.8	1	1	PASS
L01 - 8-10 Classroom 03	0	0	0	PASS
L01 - 11-12 Classroom 01	1.5	2	1	PASS
L01 - 11-12 Classroom 02	1.5	2	1	PASS
L01 - 11-12 Classroom 03	0.8	1	1	PASS
L01 - ARP Office	0.1	1	1	PASS
L01 - Asist Youth Pastor's Office	0	0	0	PASS
L01 - Board Room	1.8	8	2	PASS
L01 - Breakout	0.8	1	1	PASS
L01 - Counting Room	1.4	5	1	PASS
L01 - Finance Office	2.6	8	2	PASS
L01 - Meeting Room	1.8	5	2	PASS
L01 - Office 01	0	0	0	PASS
L01 - Office 02	0.1	1	1	PASS
L01 - Office 03	0.1	1	1	PASS
L01 - Office 04	0.1	1	1	PASS
L01 - Office 05	0.1	1	1	PASS
L01 - Pastor's Office	0	0	0	PASS
L01 - Statutory Body 01	2.5	8	2	PASS
L01 - Statutory Body 02	1.6	4	2	PASS
L01 - Statutory Body 03	1.4	4	2	PASS
L01 - Youth Pastor's Office	0	0	0	PASS

Appendix C – Building Regulations UK Part L Document

See attached BRUKL document.

Appendix D - References

Documents used for the assessments are referenced in this section.

Source	Link
National Planning Policy Framework	NPPF, 2023
Conservation of fuel and power: Approved Document L2, 2021	Approved Document: Part L2, 2021
Places for Everyone Greater Manchester (2024)	Places for Everyone
Manchester City Council’s Core Strategy (2012)	Manchester Core Strategy