

Manchester Metropolitan University Library Transformation Project

Environmental Standards Statement

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1 Executive Summary

This Environmental Standards and Energy Statement has been prepared in support of the Application for Full Planning Permission for the Library Transformation Project at the Manchester Metropolitan University.

This Statement seeks to demonstrate how Manchester City Council's (MCC) sustainability policies within the Core Strategy (2012) and Manchester Guide to Development (2007) have informed the Proposed Development. This Statement should be read in conjunction with a separate Sustainability Statement, which aims to address how the Proposed Development is responding to the Zero Carbon and sustainability related policies including Manchester and Greater Manchester Combined Authority.

In summary, the development is actively targeting and achieving the following environmental standards in line with the planning policy and aiming to align with the carbon reductions of new building regulation.

- The development adopts "fabric first" approach Based upon the Part L calculations carried out at this stage the development is capable of achieving compliance with Part L 2021, demonstrating an improvement of 27% over Part L 2021. This, in turn, demonstrates compliance with the EN6 planning requirement of 15% improvement on Part L 2010.
- to developing an efficient, low carbon, comfortable and healthy environment, with heat loss due to building fabric and air leakage being reduced to a minimum.
- The development proposes a large amount of roof mounted PV arrays, further reducing the carbon emissions of the building.

The Ministry of Housing, Communities & Local Government released in January 2022 an updated version of Building Regulation Part L (named Part L 2021), which came into force in June 2022. The update to Part L is designed to provide a stepping-stone to more stringent requirements to meet the Future Homes Standard in 2025 and focuses on a combined approach of improving fabric thermal performance and mitigating the carbon emissions from using fossil-fuel. Due to the decarbonisation of national grid, the new Part L will lead to heat electrification solutions in the UK.

1.1 Scope of the Document

This Environmental Standards and Energy Statement has been prepared in support of the Application for Full Planning Permission for the Library Transformation Project at the Manchester Metropolitan University.

This Statement seeks to demonstrate how Manchester City Council's (MCC) environmental sustainability policies have informed the Proposed Development.

The Statement comprises the following sections:

- **Planning Policy Review** to set the context for the development and identify key present and potential future planning related environmental sustainability targets;
- **Energy Statement** to summarise how the development responds to the carbon reductions, and
- **Environmental Standards Review** to outline how the development will respond to the Environmental Standards set out in Chapter 4 of the Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007), and relevant Core Policies (Adopted July 2012) which form part of the Manchester Local Plan.

It is recognised that sustainable development cuts across a number of issues and disciplines, reference should be made to the accompanying planning documents for further technical details. Of particular note are the following documents:

- Water Management and Weather Resilience (Buro Happold Engineers)
- Waste Management (Hawkins Brown Architects)
- Ecological Survey (Tyler Grange)
- Framework Travel Plan (Buro Happold)

1.2 Description of Development

The proposed overall quantum of development is set out within Table 1.1.

	Proposed Parameters
Site area (inside red line)	C. 6,700 sq m
Use (Library)	21,800 sq m GIA
Use (Terrace)	900 sq m GEA
Height	63 m, ground + 12 storeys
Parking	No car or cycle parking directly associated to the site, utilising the existing Manchester Metropolitan University travel plan.

1.3 Site Description

The Site lies within the City Centre, and within the Regional Centre as defined by MCC's Core Strategy 2012. The Site boundary extends to c.0.7 hectares. The Site is bound to the east by Oxford Road, to the north by the Mancunian Way, Manchester Metropolitan University's Faculty of Business and Law to the west, and All Saints Park to the south.

The Site currently comprises the All Saints Library Building, a seven storey brick building, currently used as a library facility for students and staff of Manchester Metropolitan University, and comprising desk spaces, book clusters and meeting rooms. The Site is currently occupied, and it is intended that part of the site will remain in operation through the five year refurbishment and construction period.

The building's pedestrian access is currently from All Saints Park to the south of the building. There is no car parking associated to the library building.

The Site forms a key site along the Oxford Road Corridor, a priority location for higher education and an opportunity to strengthen and diversify the economy by creating high added value growth in sectors such as Creative and Digital, Health, Science and Innovation, and Advanced Materials and Engineering.

Low rise buildings are located to the east, on the opposite side of Oxford Road, which comprise of shops and commercial properties of approximately 2 to 3 storeys in height. To the south, All Saints Park provides public realm, surrounded by Manchester Metropolitan University Buildings, and St Augustine's Church.

To the west, there are further University buildings, and student accommodation. To the north, Mancunian Way runs east to west, and to the north of that, the Manchester Metropolitan University John R Dalton Building and Circle Square.

2 Planning Policy Context

2.1 Scope of the Policy Review

To better understand the sustainability drivers for this development and set the policy context, a summary of key sustainable development policies at a national and local level has been provided.

2.2 National Policy

National Planning Policy Framework (Updated September 2023)

The National Planning Policy Framework and relevant planning practice guidance has been recently updated in September 2023. This framework sets out the Government's planning policies for England. The presumption in favour of sustainable development is at the heart of the framework, cascading through to local plans and the approval process for planning applications.

Key issues addressed are summarised below:

Building a strong, competitive economy	Achieving well-designed places
Ensuring the vitality of town centres	Protecting Green Belt land
Promoting healthy and safe communities	Meeting the challenge of climate change, flooding and coastal change
Promoting sustainable transport	Conserving and enhancing the natural environment
Supporting high quality communications	Conserving and enhancing the historic environment
Making effective use of land	Facilitating the sustainable use of minerals

25 Year Environmental Plan (2018)

This plan sets out the Government's ambition to '...champion sustainable development, lead in environmental science, innovate to achieve clean growth and increase resource efficiency to provide benefits to both our environment and economy'.

The plan provides fresh impetus for the principles of sustainable development to be at the heart of decision-making, setting out clear objectives and common language for policy and decision makers to adopt.

Policies and actions are structured around six key areas:

Chapter 1: Using and managing land sustainability
Chapter 2: recovering nature and enhancing the beauty of landscapes
Chapter 3: Connecting people with the environment to improve health & wellbeing
Chapter 4: Increasing resource efficiency and reducing pollution and waste
Chapter 5: Securing clean, healthy, productive and biologically diverse seas and oceans
Chapter 6: Protecting and improving our global environment

Climate Change Act 2008

The Climate Change Act sets out the UK Government's pathway to reduce greenhouse gas emissions by at least 80% (relative to 1990 levels) by 2050. This includes the requirements to set legally binding carbon budgets over five-year periods to act as intermediate milestones.

On 27th June 2019, a more ambitious target of net zero carbon by 2050 was adopted by the UK Government in response to public sentiment and the release of the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5oC (October 2018).

Part L 2021 Building Regulation

Compliance with the new version of Part L2 2021 is necessary, which has come into effect from 15th June 2022. Therefore, an energy model to demonstrate compliance with the new regulations is produced using SBEM-accredited software.

The proposed development is currently aspiring to meet exemplary energy performance targets, such as comply with Building Regulations Part L2 2021. The results shown in this report indicate that the proposed development will meet the conditions required to comply with Building Regulations Part L2 2021, and therefore satisfy the Manchester City Council requirement for a 10% improvement over Part L 2010

The approved document took effect on 15 June 2022 and therefore this development will be developed in line with the updated standard.

2.3 Local Policy

It has been identified that to achieve planning consent the building is to comply with the guidelines set by the MCC described in the Manchester Core Strategy Development Plan Document (DPD). Energy performance requirements are stated under Policy EN6 Target Framework for CO2 reductions from low or zero carbon energy supplies.

The policy stipulates applications for developments over 1,000m² will be expected as a minimum to meet the target shown in the table below, unless this can be shown not to be viable. The proposed buildings fall into Target area 2 – Electrically intense buildings. Note that the policy document was approved and adopted before the Part L2A 2013 came into force. A 10% improvement over above the Part L2A 2010 may be equivalent to achieving 6% compliance with Part L2A 2013 standard, based on the government impact assessment study for the wider sectors.

Target area	Target % minimum improvement	Applicable to the project?
Target 1: Network development area	CHP/District heating anchor or connection Or where feasible, a 15% improvement on Part L2A 2010	No
Target 2 Electricity intense buildings (applies to commercial uses with a high proportion of emissions from electricity use.	10% improvement on Part L2A 2010 (6% improvement on Part L2A 2013)	Yes
Target 3 Micro generation area	15% improvement on Part L2A 2010	No

A target improvement of achieving Part L2A 2013 compliance set as required by the DPD. The proposed building shall achieve the commitment to 10% improvement on Part L2A 2010, as required by 'Target 2' above. A 10% improvement over above the Part L2A 2010 is widely regarded as equivalent to achieving 6% compliance with Part L2A 2013 standard, based on the government impact assessment study for the wider sectors.

3 Energy Strategy

3.1 Introduction

This section describes the steps taken for the proposed Manchester Metropolitan Library Transformation project to achieve all set energy targets and contribute to the achievement of the Greater Manchester Combined Authority's 5-year Environment Plan in a meaningful way.

The following energy hierarchy has been considered for the development:

- **A passive-first approach:** Energy demand reduction has taken the highest priority.
- **Energy efficient HVAC systems** - High efficient air-source heat pumps for heating and cooling, low specific fan powers, demand control ventilation and LED lighting with daylighting dimming control.
- **On-site renewables:** photovoltaic panels

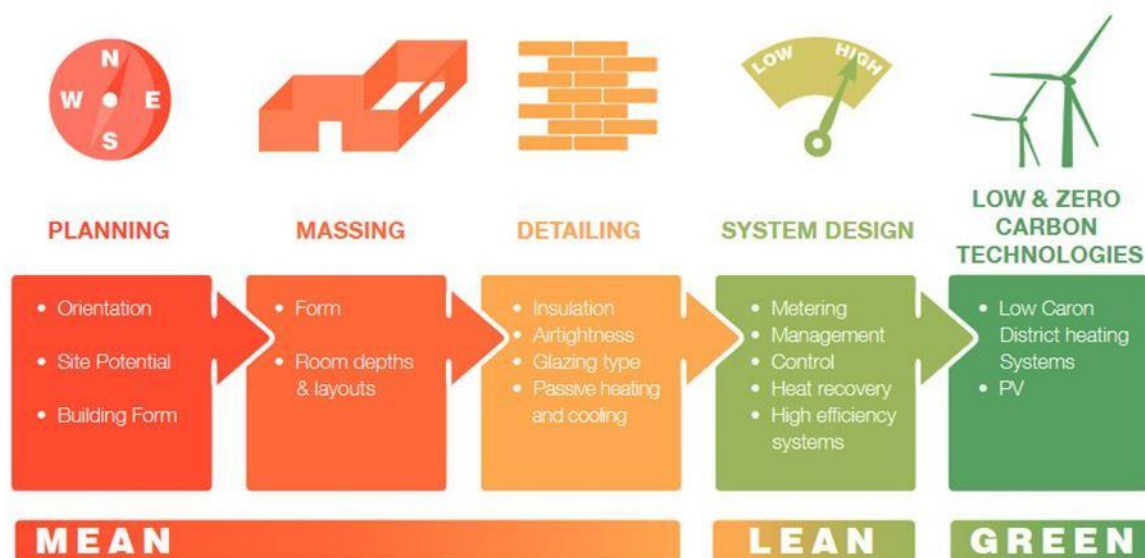


Figure 3—1 Passive design approach

3.2 Passive Design Solutions (Mean)

The design intention is to reduce the building demand for natural resources by utilising passive design measures. This design approach has been applied when developing the building's structure and façade construction. The energy demand of the building can be reduced through optimisation of the building's construction and fabric, and through the implementation of the following passive design measures:

- **Building Fabric** – all externally exposed fabric will be insulated to achieve U-Values surpassing the mandatory standards required by Part L.
- **High Performance Glazing** – high-quality double glazing will be present across the constructions, again achieving U-Values surpassing the mandatory standards required by Part L. Additionally, low-emissivity film could be applied to provide a reduction in solar gains which will reduce risk of overheating during summer months.
- **Improved Air Tightness** - it is proposed that the building's envelope airtightness will be designed to high standards, minimising unintentional inward or outward leakage, and therefore reducing potential for excess heat losses during the winter months.
- **Natural Daylight** – generous glazing areas have been applied to the building's occupied areas, to maximise available natural daylight and reduce the energy consumption of artificial light systems.
- **Zoning** - The control of the HVAC system will be thoughtfully zoned to allow different thermal and fresh air demands to be compartmentalised, permitting optimum flexibility and load balancing.

3.3 Active Design Solutions (Lean)

Energy and carbon demand can be further reduced using energy efficient building services systems, such as:

- **Air Source Heat Pumps (ASHP)** – Specifically selected to meet project requirements, the plant generates heating and cooling at high efficiencies and ensures efficient delivery throughout the building distribution, minimising loss. This compliments the passive fabric strategy and further reducing building energy and fuel use.
- **Heat Recovery** - High efficiency heat recovery devices harness the energy within exhausted air and recirculate it back into the building to reduce heating and cooling loads.
- **Demand Controlled Ventilation** - Methods of controlling ventilation air flow may be utilised to respond to occupancy and internal temperature. These controls will be linked to the building management system and CO₂ and temperature sensors will be provided to occupied zones.
- **Energy Efficient Lighting** - LED lighting can incorporate automatic controls that respond to daylight and human presence to minimise the buildings electrical lighting load.

3.4 Renewable Energy (Green)

Once all options for passive and active systems have been exhausted, low and zero carbon (LZC) technologies may be considered to supply energy to the building.

- **PV Technology** – a PV array shall be installed at roof level of both stage areas, allowing green onsite energy production for the new building.

3.5 Baseline Information

Following the identification of targets and the best system solutions a Part L2A model has been created using approved software package IES VE 2021 by an experienced energy assessor. In terms of Part L2A assessment methodology, testing compliance translates into comparing Actual and Notional building carbon emissions represented by calculated Building Emission Rating (BER) and Target Emission Rating (TER). To achieve minimum compliance, the BER for each building must be lower than its relevant TER.

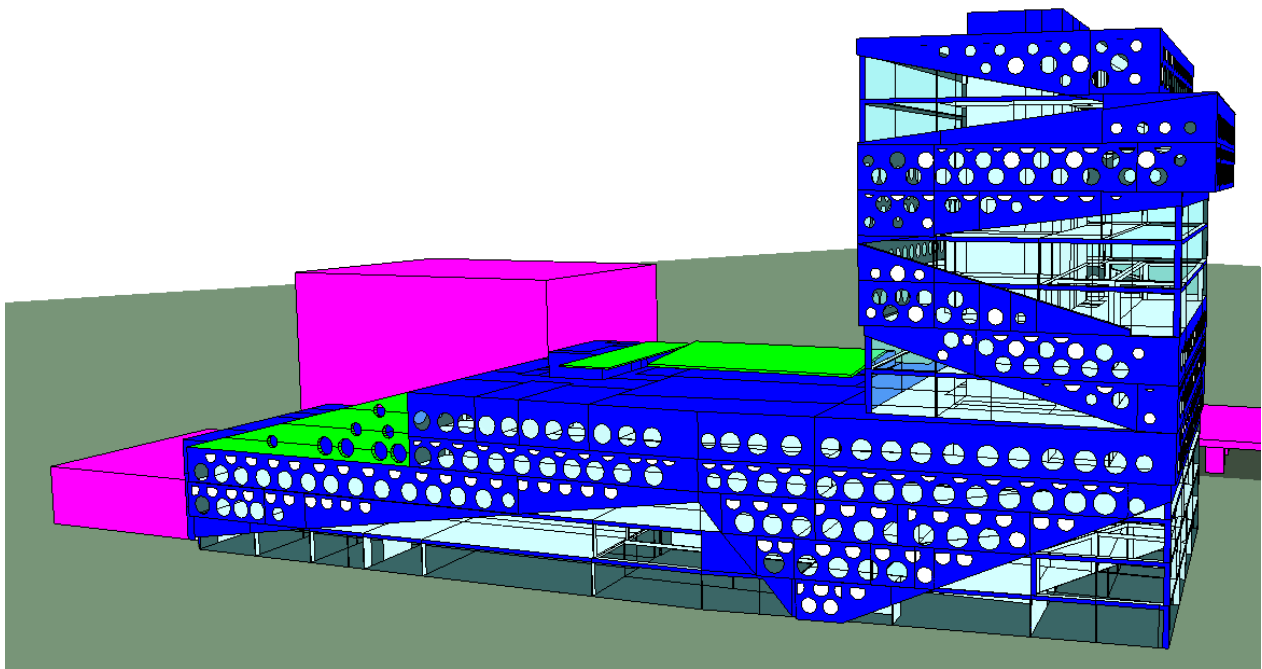


Figure 3—2 The IES model of the proposed building

The following information about the building fabric, mechanical and electrical systems as well as renewable energy sources have been used in the Part L compliance model.

3.5.1 Fabric standard

Table 3—1 Proposed fabric standard

Building Fabric	Units	Proposed building
External wall	W/m ² K	0.14
Existing Ground floor*	W/m ² K	0.6
New Build Ground floor	W/m ² K	0.10
Roof	W/m ² K	0.10
Rooflight U-value	W/m ² K	1.5 (15% frame)
Rooflight G-value	-	0.30 (LT 60%) 0.16 (LT 31%)
Glazing U-value (including framing)	W/m ² K	1.3 (10% frame)
Glazing G-value	-	0.22 (LT 44%) 0.16 (LT 31%)
Spandrel panel	W/m ² K	0.14
Building Air Tightness	m ³ /m ² h at 50 Pa	2.5

3.5.2 HVAC Systems

The systems parameters described in Table 3-2 have been applied to the thermal model. The systems have been applied to each room as described in the MEP strategy. The DHW system is splitted between water-source heat pump serving the new tower and electric water heaters point of use serving the existing building as described in Table 3-3.

Table 3—2 Proposed HVAC systems

	Units	HVAC systems			
System name	-	<i>Heating by Radiant Panel Cooling by Passive Chilled Beams</i>	<i>Heating & Cooling by FCUs</i>	<i>heating only & ventilation</i>	<i>DX Cooling</i>
Heating					
Generator	-	ASHP			none
NCM system type	-	Passive Chilled Beams	FCUs	Radiators	-
Heating SCOP	Kw/Kw	3.75	3.75	3.75	-
LTHW Pumping	-	Variable speed multiple pressure sensors	Variable speed multiple pressure sensors	Variable speed multiple pressure sensors	-
Cooling					
Fuel	-	-	electricity	electricity	electricity
Generator	-	ASHP	ASHP	ASHP	ASHP
Cooling Seasonal Efficiency	Kw/Kw	5.0	5.0	-	7.6
Terminal Unit SFP	W/l/s	-	0.20	-	-
System control	-	Central Time control			
		Optimum start/stop control			
		Local temperature control			
		Weather Compensation Control			
System metering	-	Yes			

	Units	HVAC systems			
System name	-	Heating by Radiant Panel Cooling by Passive Chilled Beams	Heating & Cooling by FCUs	heating only & ventilation	DX Cooling
Metering warn "out of range" values	-	Yes			
Ventilation					
Local extract rate	ACH	-	-	-	-
Local extract SFP	W/l/s	-	-	0.5	-
Central AHU SFP	W/l/s	1.6	1.6	1.6	-
Heat Recovery Efficiency	-	85%	85%	-	-
Duct air leakage standard	-	Class A			
AHU air leakage standard	-	Class A2			
Vent. control	-	VAV demand control based on indoor CO2 sensor and speed control	VAV demand control based on indoor CO2 sensor and speed control	-	-
	-				

Table 3—33 Proposed DHW system

DHW systems	Option 1 - Centralised ASHP
Generator type	ASHP with SCOP 3.25 (new tower) (@60°C supply temperature) Electric water heaters point of use (refurbishment)
Storage volume (litres)	2000 litres for the new tower 210 litres for the refurbishment

Storage losses (kWh/l day)	0.0021
Secondary circulation loop length – SUPPLY AND RETURN LENGTH (m)	1000
Secondary circulation losses (W/m)	7.0
Secondary circulation pump power (Kw)	0.25

3.5.3 Lighting improvements

When a Compliance assessment is performed, the Actual and Notional buildings are populated with National Calculation Methodology (NCM) templates and properties that may differ from the 'real' operation. The energy modeller has no control over NCM Activity database parameters such as the heating and cooling set points, ventilation rates, occupancy rate etc. However, one aspect users can set is the lighting performance, which typically accounts for a significant proportion of the buildings CO2 emissions and will affect the buildings heating and cooling loads.

As shown in Table 3-4, best practice efficient lighting and control measures such as daylight control, presence and absence detectors have been considered.

Table 3—4 4 Proposed lighting parameters

Space	Controls	Lux level (lux)	Lighting efficacy (lumens/ watt)	Display lighting efficacy (lumens/ watt)
Plant	manual	200	130	
Circulation	presence	100	110	
Entrance reception	daylight + presence	200	110	90
Office/Meeting room	daylight + absence	400	120	
Open plan study areas	daylight + presence	400	120	
Bookable booths	daylight + absence	400	120	
Toilets/showers	presence	200	110	
Enclosed study spaces	daylight + absence	400	120	
Store	presence	100	130	
Gallery	daylight + absence	200	120	90
Café survey BOH	absence	200	130	
Comms	manual	200	130	

Space	Controls	Lux level (lux)	Lighting efficacy (lumens/ watt)	Display lighting efficacy (lumens/ watt)
Kitchenettes	presence	200	110	
Digital/Conversation studio	daylight + absence	400	120	
Poetry/Reading	daylight + absence	400	120	
Flex Events	daylight + absence	400	120	

3.5.4 On-site renewables (PV)

The thermal model includes the renewable energy from 1000m² roof mounted photovoltaic (PV) panels to generate 157.7 MWh/year electricity. The proposed PV array was modelled with the following parameters:

Table 3—5 PV panel details

PV panel area	1000	m2
PV panel efficiency	21	%
Inverter efficiency	96	%
Degradation factor	99	%
Tilt	5	degrees
Orientation	153 (SE)	Clockwise from North

3.6 Emissions Calculations

As soon as the geometry of the building is created and the all the design parameters are put in the model, the carbon emissions can be calculated using the Building Emission Rating (BER) and Target Emission Rating (TER). The results of the Part L2A energy modelling can be found in the table below. As can be seen, for Manchester Metropolitan University Library Transformation Project, the proposed design solution exceeds the target emission rate.

Building	BER (kgCO ₂ /m ² /year)	TER (kgCO ₂ /m ² /year)
Man Met LTP	3.12	4.30

The first and the last page of the BRUKL document can be found in Appendix A. The following two figures illustrate the net carbon emissions as well as per each energy use category for both the actual and the notional building.

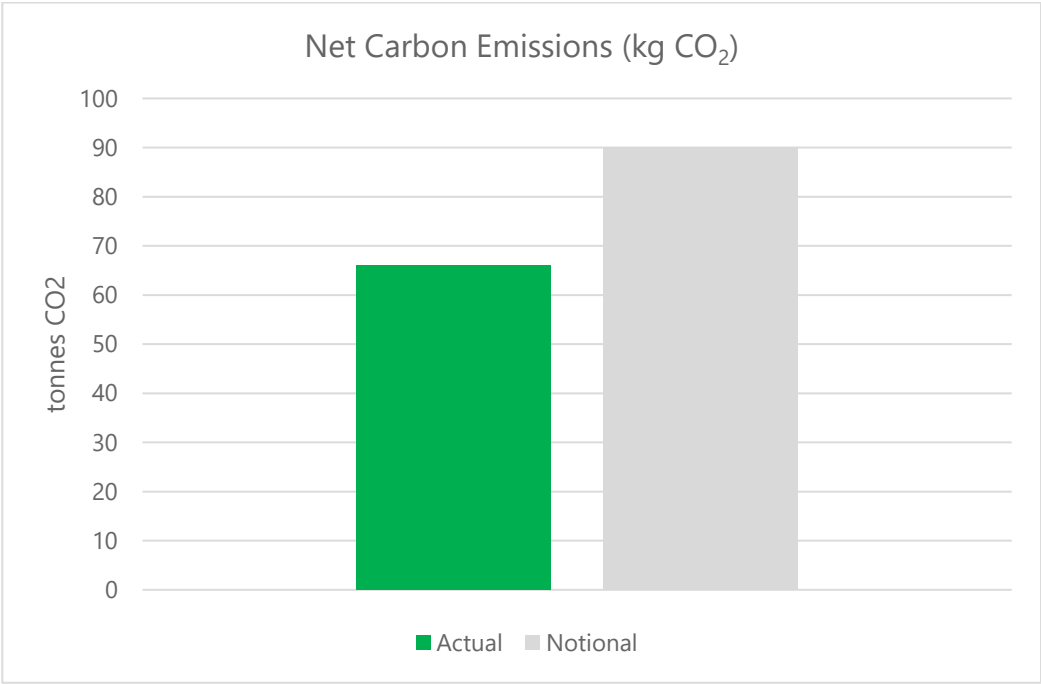


Figure 3—3 Net carbon emissions for both actual and notional building

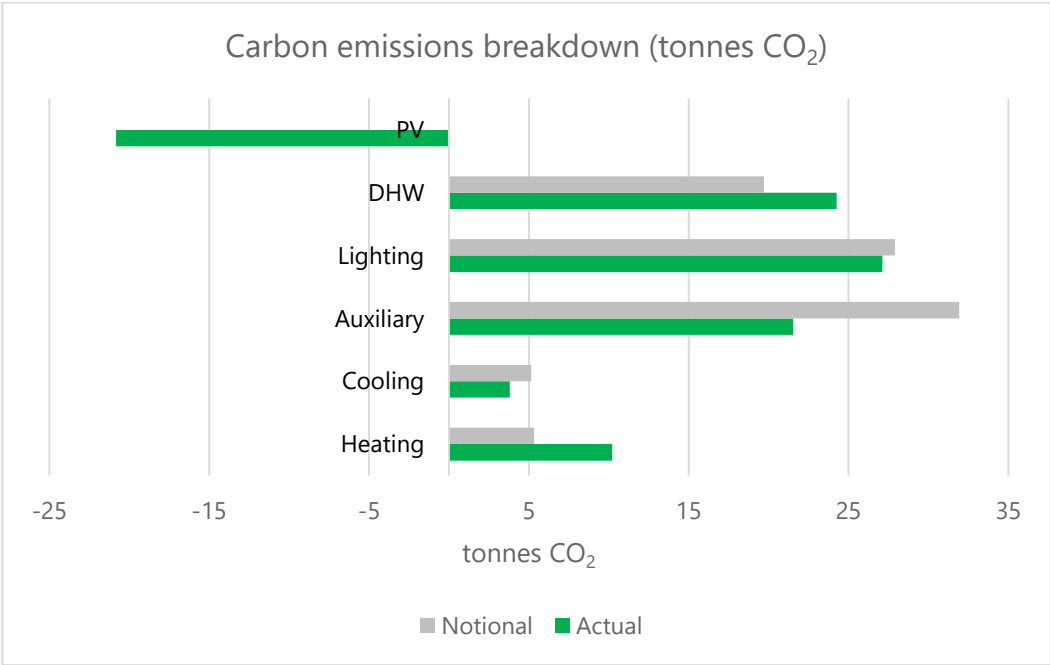


Figure 3—4 Carbon emissions breakdown for each energy use category, actual and notional building

Criterion 3 – Limiting Solar Gains In Summer

For each room that is either occupied or comfort cooled the solar gain through glazing should not exceed limits set by a reference room of the same shape. All occupied and comfort cooled rooms have achieved these requirements by using internal blinds and with an acceptable margin as indicated in the design stage BRUKL.

It should be noted that satisfying this criterion is NOT evidence that the internal climate of the building will be comfortable since factors such as internal gains and ventilation provision that will influence comfort are not tested by this criterion.

3.7 Conclusion

Based on the measures and modelling results detailed in this report, it is anticipated that the development, as proposed, will achieve energy performance requirements as stated within the with MCC Core Planning Strategy Policy EN6 plan that is:

- Compliance with MCC Core Planning Strategy by meeting the 15% over above Part L 2010 standard. The proposed building can achieve an improvement of 27% over above Part L 2021 Building regulations; this equates to an approximately 39% better than Part L 2010 and therefore compliance with the Manchester City Council planning requirements.

To achieve the targets, the following LEAN and GREEN energy efficiency strategies are proposed in the design including:

- Improving the proposed envelope thermal performance over the requirements of Part L
- Optimise the façade form to reduce unwanted solar gain whilst maximising the potential for daylight.
- Efficient heat recovery within the central ventilation system
- Utilisation of highly efficient integral heat pumps to temper air supply from air handling units (AHUs)
- Efficient lighting and lighting controls
- Energy efficient fans and pumps
- Metering and monitoring provisions for all systems.

The following GREEN energy generation strategy is proposed:

- Roof mounted PV to generate electricity for use in the building.

As the detailed design is developed the elements in the above strategy will be fine-tuned such that the final as-constructed building achieves the targets set.

4 Environmental Standards Review

4.1 Overview

This section summarises how the Proposed Development has, as a minimum, responded to Section 4 Environmental Standards of the Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007) and environmental sustainability policies set out in the Core Strategy (2012).

As environmental sustainability cuts across a number of issues and disciplines, references have been made to accompanying planning submission documents for technical details. Summaries of these documents against the policies set out in the Core Strategy are provided below, organised under the Section 4 Environmental Standards headings within the Guide to Development in Manchester.

4.2 Energy Efficiency and Renewable Energy

Policy EN4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development

Energy Strategy in Section 3 has set out the route to compliance with current Building Regulations Part L (2021) and the Core Strategy (superseding E1.5 from the UDP). The design of building adopts the “fabric first” approach with key proposals summarised as follows:

- Improving the envelope thermal performance
- Building envelope and glazing enhanced for thermal insulation, acoustics & air permeability
- Optimise the façade form to reduce unwanted solar gain whilst maximising the potential for daylight
- Efficient heat recovery and fans within the mechanical ventilation system
- Use of low energy lighting fittings and intelligent lighting controls
- Metering and monitoring provisions for all systems
- Roof mounted PV to generate electricity for use in the building

Policy EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies

Applications for residential developments are expected to meet the targets set out in Policy EN6 as a minimum, note that EN6 from the Manchester Core Strategy supersedes E1.5 as outlined within the UDP and referenced within the SPD:

Non-Domestic

Target 1 (Network Development Area): CHP/district heating anchor or connection or where not feasible, a 15% increase on Part L 2010

Target 2 (Electricity Intense Buildings): 15% improvement on Part L 2010 (equivalent to 6% improvement on Part L 2013)

Target 3 (Micro Generation Area): 15% improvement on Part L 2010

Through adopting the ‘fabric first’ approach summarised above the Proposed Development has the potential to achieve Part L 2021 which equates to a 27% improvement over Part L 2013. This is driven by the client aspiration for a

future proof building - well above the Core Strategy requirement of 15% improvement on Part L 2010, which is approximately 6% reduction against Part L 2013.

This section should be read in conjunction with Section 3.

4.3 Environmental Design

This section aims to summarise key headlines on how the Proposed Development has addressed Core Policy DM 1 Development Management which supersedes those outlined within the UDP.

Sustainable and Efficient use of Materials

Reducing the environmental and social impact of the material used for the development has been considered by the design team and been informed by the early engagement and consultation with contractors. This is further discussed in the waste section. This has included undertaking:

- With regards to material efficiencies, the design has been developed using an efficient grid with columns running generally full height through the floors, avoiding the need for transfer structure at the lower levels. In terms of end of life / recycling opportunities, whilst the frame cannot be deconstructed and re-used elsewhere, the reinforcement can be recycled and the concrete can be crushed and re-used as an aggregate for future mixes.
- To minimise the frequency of replacement and maximise material optimisation, the durability and resilience of key finishes and components has been considered from the early stages of the project. Consideration has been given to the longevity, and therefore sustainability, of materials and is reflected within the outline specification.

As the project progresses, the proposal will continually be reviewed to identify any areas vulnerable to damage both internally and externally and where possible the risk will be removed. During the concept design and spatial coordination stages of the project, the external envelope was developed to utilise robust, long lasting, and sustainable materials through the incorporation of ultra high performance concrete.

Internal areas which will see high levels of pedestrian traffic such as main entrances, public areas and circulation routes will be well detailed to ensure durability. In these zones hard-wearing and easily maintainable finishes will be specified.

The structure design has maximised the opportunities for functional adaptability

In addition to the above, sustainable procurement and responsible sourcing will be considered at detailed design and during construction.

Reference should be made to the following documents for further details:

- Design and Access Statement (Hawkins Brown)

Policy T1 Sustainable Transport

Policy T1 from the Core Strategy supersedes a series of sustainability related guidance from the UDP policy as referenced within the SPD.

The Proposed Development benefits from excellent existing sustainable transport options and local amenities, notably:

- The site has a Greater Manchester Accessibility Levels (GMAL) of 8 and is therefore considered to be highly accessible by sustainable modes.
- The site is located within short walking distance of public transport facilities and numerous local amenities, including supermarkets, public houses, several places of worship and other educational institutions, cafes, restaurants, shops, leisure centres and places of recreational activity such as All Saints Park.
- Existing high quality pedestrian facilities, including footways, street lighting and signalised crossing points linking the Proposed Development to the surrounding area and beyond to key pedestrian routes.
- Cycle parking spaces have been provided across the ManMet campus. These spaces are provided in secure and covered cycle storage areas.
- The site is located within an approximately 0.4km walking distance of Manchester Oxford Road Rail Station and 1.4km walking distance from Manchester Piccadilly Station which provide frequent regular trains for both regional commuting and access to the national rail network, as well as acting as transport interchanges for local rail services and Metrolink services. The stations are easily accessible through pedestrian friendly walking and cycling routes in the city centre and free Metroshuttle buses connecting all parts of the city centre.
- The site benefits from a high number of bus stops located within 800m, with the closest located on Oxford Road, approximately 100m south-east of the site. The proximity of the site to the local bus network provides opportunities to travel further afield using linked trips. This enables access to be gained to a variety of local destinations.

As part of the Proposed Development, further initiatives to support and encourage sustainable modes of travel are outlined in the MMU Travel Plan (which includes the library), notably:

- Provide on-campus cycle parking capacity that matches present demand, with a plan to increase capacity to meet future expected upward trend in journeys made by bike.
- Improve the quality of cycle parking across the campus considering safety, accessibility, and customer expectations and needs (for example, improving the lighting of cycle shelters).
- Improve facilities for showering, changing and locker storage in all university buildings.
- Support the region's plans to make getting around the city-region by public transport easy, accessible, and affordable, for example by enhancing the interest free loan scheme for public transport for employees, and exploring additional and / or better corporate discounts schemes for public transport for employees.
- Work with operators, Transport for Greater Manchester (TfGM) and The Union to deliver and where possible enhance student ticket offering, particularly for commuting students.
- Deliver activities and communications that promote the use of public transport to employees and students including employee welcome fair events, launch a 'try the tram' initiative and effective internal communications through appropriate channels for employees and students.
- Deliver communications and engagement initiatives that promote and encourage cycling and walking amongst employees and students, including Cycle to Work events, as well as cycle training and maintenance events.

- Deliver a consolidation programme to remove unnecessary fleet vehicles and replace petrol and diesel vehicles with fully electric vehicles (subject to operational requirements).
- Support the micro-mobility agenda, including the provision of charging facilities for e-bikes and ensuring the financial limit on the Cycle to Work Initiative supports the purchase of e-bikes.
- Continue to manage on-campus car parks through ANPR control systems, utilising data, and reports from the system to improve the effectiveness of demand managed car parking.

To further support and encourage sustainable modes of travel to the library, the following have been included in the design:

- No car parking is proposed as part of this development.
- Secure and covered cycle parking is provided throughout the MMU campus, including to the north of the site under Mancunian Way.

For further information please refer to:

- Framework Travel Plan (MMU)
- Transport Statement (Buro Happold)

4.4 Water Management and Weather Resilience

Policy EN14 Flood Risk

A Flood Risk Assessment (FRA) has been undertaken as part of the planning application in line with national and local policy. This concludes the proposed development is at low risk of flooding from all sources and represents no risk of flooding to adjacent areas. Notably:

The site is located entirely within Flood Zone 1, according to the national flood map produced by the Environment Agency (EA), which is classified as having a low risk of fluvial flooding. The site remains at a low risk from fluvial flooding in the future allowing for the impact of climate change. The site is also at a low risk from surface water, sewer flooding, groundwater and artificial sources of flooding.

- The drainage strategy has been designed for a 1 in 100 year storm with 30% increase for climate change.
- The strategy proposes onsite below ground attenuation of surface water run-off to achieve a restricted maximum flow discharge rate providing betterment to existing conditions. With the proposed strategy in place, the overall surface water flood risk at the site is considered low.
- Nature-based sustainable drainage features are not feasible. Systems such as infiltration trenches and soakaways were considered as part of the surface water management strategy however, the ground conditions and the results of the falling head permeability testing indicate limiting permeability of the underlying clay. Therefore, infiltration systems are not considered suitable for the site. In addition, the site is tight therefore above ground storage, such as swales and attenuation ponds, are not practical. Green/Blue roofs were considered for the site however, found not viable due to all available roof area being utilised for Photovoltaic (PV) panels and the existing/retained structure not capable of supporting the additional weight of a blue roof.

For further information please refer to:

- Flood Risk Assessment and Drainage Strategy Report (Buro Happold)

Policy EN 17 Water Quality

The development recognises the importance of mitigating against any adverse impact on water quality, in line with Policy EN 17. Since there are no onsite parking spaces and no other significant sources of potential water pollution, such as chemical stores, no measures to minimise pollution are considered necessary.

Construction site impacts will be managed for the Contractor to provide copies of their pollution prevention policies and demonstrate how these are implemented on site, for example through site specific procedures, tool box talks and site noticeboards. This will be managed through a conditioned Construction Management Plan.

4.5 Waste Management

Policy EN 19 Waste

A Waste Management Strategy has been prepared by Hawkins Brown Architects for the development, demonstrating compliance with local and national policy. All new developments must meet the requirements of Part H6 of the Building Regulations 2000 (solid waste storage) which states:

- Adequate means of storing solid waste shall be provided; and
- Adequate means of access should be provided for people in the building to the place of storage, and, from the place of storage to a collection point agreed by the waste collection authority.

Waste streams and quantities have been estimated to ensure sufficient space has been allocated for storage and collection, as well as opportunities to minimise waste and facilitate high recycling rates. Key waste proposals from the Waste Management Strategy are summarised below:

- The volume of waste produced was modelled considering the proposed number of occupants, type of business activities and MCC GD04 Waste and Collection Guidance for new developments Version 6.00 along with the University's pay by weight data provided by their waste contractor. Data from peak times (October & November 2022) shows that 13440l capacity is required on site to service the buildings at current capacity.
- As a result of the modelling exercise, the University will increase storage to 16 x 1100 Eurobins and 4 x 240l Wheelie bins. This is an increase of 26% capacity compared with the current provision (12 x 1100 Eurobins and 4 x 240l Wheelie bins) and 38% more than modelled as the maximum required.
- Based on the model outcomes, the overall Eurobin provision should be a minimum of 50% for general waste and 50% for recyclable waste, the proposal is to provide the following capacity for all the buildings (All Saints Building and All Saints Library) serviced:
 - 8 x 1100l Eurobins for general waste.
 - 5 x 1100l Eurobins for paper and card.
 - 3 x 1100l Eurobins for plastic bottles and tin cans.
 - 2 x 240l Wheelie bin for glass.
 - 2 x 240l Wheelie bin for food waste.
 - 2 x 770l bins for clinical & hygiene waste will also be located in this area.
- When collected at the maximum proposed schedule, this will equal 71840 litres of waste capacity collected each week.

4.6 Construction Management

Construction impacts will be minimised through Contractor's Construction Management Plan. Such a Construction Management Plan will be prepared prior to the commencement of development that will specify the best practice measures, which will be implemented to minimise potential impacts.

This is likely to include:

- Adopt responsible construction management practices, including registration with the Considerate Constructor Scheme and implementation of the Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.
- Monitoring of construction site energy and water consumption
- During construction, best practice measures will be implemented to minimise potential impacts to sensitive local receptors resulting from emissions to air and water, noise and vibration and from site lighting.
- Recording of CO2 emissions associated with construction site vehicles (deliveries and waste removal)

Contractual targets will be set to minimise the generation of construction waste, and a Resource Management Plan required before commencement on site to set out how any waste produced will be diverted from landfill through consideration of re-use and recycling opportunities.

4.7 Biodiversity

Policy EN15 Biodiversity and Geological Conservation

This policy requires the protection and enhancement of sites of biodiversity value in line with Manchester's Biodiversity Strategy.

Tyler Grange have been appointed as the Ecologists for the Proposed Development. An Ecological Assessment including a desk study, an extended Phase 1 habitat survey and a preliminary bat roost assessment for the site were undertaken throughout early 2023 to identify any potential ecological constraints, remit of mitigation required and opportunities to include biodiversity enhancements through the Proposed Development.

A summary of the ecological value of the existing site and recommendation for enhancement are as follows:

- The site is considered to be of low ecological value. The project is located within the footprint of the existing hardstanding and buildings.
- A preliminary bat roost assessment (PRA) was undertaken in January 2023 and found low bat roosting potential features in the onsite building, however, due to the site being in an urban location and survey limitations it is recommended that no nocturnal surveys will be required. However, pre commencement checks will be carried out by a suitably qualified ecologist prior to any site works affecting the building. Off-site trees also had low bat roosting potential and if tree loss of these is required soft felling techniques will be followed.
- All impacts are therefore anticipated to temporary and reversible in the short term. With implementation of the recommended precautionary working methods, no significant ecological effects are expected on statutory or non-statutory wildlife sites, notable habitats or protected or notable species.

4.8 Adaptation to Climate Change

Policy EN 8 Adaptation to Climate Change

The design team acknowledge that climate change presents one of the biggest global challenges of our time and welcome the leadership demonstrated by the Council by encouraging local solutions through Core Strategy Policy EN 8 Adaptation to Climate Change.

Steps taken to increase climate resilience of this development include:

- The drainage strategy has been designed for a 1 in 100 year storm with 40% increase for climate change.
- The building is mechanically ventilated using heat recovery for providing background ventilation. The systems are inherently resilient to cope with rising external temperatures due to climate change.
- The building's adaptation to climate change will be further enhanced by the future landscaped green corridor and the green park nearby as part of Neighbourhood Development Framework. The proximity to the green infrastructure would benefit the proposed development with biodiversity and water management.

For further information please refer to:

- Drainage Strategy (Curtins)
- Ventilation Statement (Buro Happold Engineering)

Part L Preliminary Assessment - BRUKL

BRUKL Output Document



Compliance with England Building Regulations Part L 2021

Project name

MMU Library Planning

As designed

Date: Mon Oct 16 16:52:53 2023

Administrative information

Building Details

Address:

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.19

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.19

BRUKL compliance module version: v6.1.e.0

Foundation area [m²]: 1776.86The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² ·annum	4.3
Building CO ₂ emission rate (BER), kgCO ₂ /m ² ·annum	3.12
Target primary energy rate (TPER), kWh _{eq} /m ² ·annum	46.72
Building primary energy rate (BPER), kWh _{eq} /m ² ·annum	32.95
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 _{s-Limit}	U _{s-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.14	0.14	04000042:Surf[21]
Floors	0.18	0.39	0.59	00000000:Surf[0]
Pitched roofs	0.16	0.14	0.14	08000017:Surf[3]
Flat roofs	0.18	0.11	0.18	0100001E:Surf[10]
Windows** and roof windows	1.6	1.2	1.33	0000001D:Surf[0]
Rooflights***	2.2	1.56	1.58	04000042:Surf[20]
Personnel doors ^Δ	1.6	-	-	No personnel doors in building
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 _{s-Limit} = Limiting area-weighted average U-values [W/(m ² K)] U _{s-Calc} = Calculated area-weighted average U-values [W/(m ² K)] U _{i-Calc} = Calculated maximum individual element U-values [W/(m ² K)] * 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. Δ For fire doors, limiting U-value is 1.8 W/(m ² K) 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	2.5

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters			Building Use	
	Actual	Notional	% Area	Building Type
Floor area [m²]	20952	20952		Retail/Financial and Professional Services
External area [m²]	18238.9	18238.9		Restaurants and Cafes/Drinking Establishments/Takeaways
Weather	MAN	MAN		Offices and Workshop Businesses
Infiltration [m³/hm²@ 50Pa]	3	3		General Industrial and Special Industrial Groups
Average conductance [W/K]	9238.86	6751.2		Storage or Distribution
Average U-value [W/m²K]	0.51	0.37		Hotels
Alpha value* [%]	23.41	10		Residential Institutions: Hospitals and Care Homes
				Residential Institutions: Residential Schools
			100	Residential Institutions: Universities and Colleges
				Secure Residential Institutions
				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

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	3.21	1.68
Cooling	1.52	2.12
Auxiliary	7.46	11.24
Lighting	9.34	9.68
Hot water	8.38	6.91
Equipment*	23.78	23.78
TOTAL**	29.91	31.63

* 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/m²]

	Actual	Notional
Photovoltaic systems	8.21	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	8.21	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	64.46	52.21
Primary energy [kWh _{PE} /m²]	32.95	46.72
Total emissions [kg/m²]	3.12	4.3

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