

# **Back of Ancoats – Eliza Yard**

## **Environmental Standards and Energy 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 and Demolition, within a conservation area, for Back of Ancoats – Eliza Yard.

The Proposed Development is bounded by Poland Street to the west and Jersey Street to the south to deliver 118 residential units, ground floor commercial floorspace, and ancillary amenity space within an 8 storey building, cycle parking provision, hard and soft landscaping, access and servicing and other associated works.

It should be noted that the site is located within the Ancoats and New Islington area. The regeneration and development that has taken place so far has been guided by the Ancoats and New Islington Development Framework which was originally endorsed by Manchester City Council in October 2014. In July 2020, Manchester City Council endorsed a refreshed Neighbourhood Development Framework which focused on the Poland Street Zone in Ancoats and was prepared to ensure future development preserved the character of the area whilst meeting future housing, sustainability and community needs.

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 Proposed Development can meet the EN6 planning requirement of 15% improvement on Part L 2010, which is approximately 9% over above Part L1 2013 for dwellings, and 6% over above Part L2 2013 for non-dwellings.
- The development adopts "fabric first" approach to developing an efficient, low carbon, comfortable and healthy homes, 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.
- Based upon the SAP calculations carried out at this stage the dwellings of the development aim to achieve an overall **26.6%** improvement over Part L 2013 based upon the carbon factors used within SAP 2012. This exceeds the 9% requirement over Part L 2013 required in policy EN6.

The Ministry of Housing, Communities & Local Government released in January 2022 an updated version of Building Regulation Part L, which is due to come 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.

Whilst the Proposed Development has been designed under the current version of Part L (2013), due to the decarbonisation of the national grid the carbon factors in SAP10 have improved from 0.519kgCO<sub>2</sub>/kWh to 0.136kgCO<sub>2</sub>/kWh. This together with the “fabric first” approach and the use of roof PV arrays enables the development to align with the carbon reductions in the new Part L updates.

## 1.1 Scope of the Document

This Environmental Standards and Energy Statement has been prepared in support of the Application for Full Planning Permission and Demolition, within a conservation area, for Back of Ancoats – Eliza Yard.

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 (Curtins Engineers)
- Waste Management (Buttress Architects)
- Construction Management (Manchester Life Development Company)
- Ecological Survey (Tyler Grange)
- Framework Travel Plan (Hydrock)

## 1.2 Description of Development

The Proposed Development involves the erection of an 8-storey building to provide 118 residential units, ground floor commercial floorspace, and ancillary amenity space, cycle parking provision, hard and soft landscaping, access and servicing and other associated works.

## 1.3 Site Description

The Site is bounded by Poland Street to the west and Jersey Street to the south, located within the Ancoats and New Islington area. The regeneration and development that has taken place so far has been guided by the Ancoats and New Islington Development Framework which was originally endorsed by Manchester City Council in October 2014. In July 2020, Manchester City Council endorsed a refreshed Neighbourhood Development Framework which focused on the Poland Street Zone in Ancoats and was prepared to ensure

future development preserved the character of the area whilst meeting future housing, sustainability and community needs.



**Figure 1-1 Location plan**

## 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. These reviews are in addition to that of the Sustainability Statement that will be included in support of the planning application, which sets out the overarching strategy and vision of Manchester Life for the Proposed Development.

### 2.2 National Policy

#### National Planning Policy Framework (Updated Feb 2019)

The National Planning Policy Framework and relevant planning practice guidance 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:

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

#### 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 27<sup>th</sup> 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 1.5°C (October 2018).

### Part L 2021 Building Regulation and Future Homes Policy (January 2022)

The Ministry of Housing, Communities & Local Government published Part L 2021 in January 2022. A series of energy and carbon targets have been set for the upcoming progressive energy improvement policies towards achieving net zero carbon standard in the future:

- A 31% reduction in carbon emissions over the current standard, achieved through a more minor increase to fabric standards, alongside low carbon heating and/or renewables e.g. PV.
- The intention for an average home built to Future Homes Standard 2025 will have 75-80% fewer carbon emissions than one built to Part L 2013.

The approved document takes effect on 15 June 2022. It does not apply to work subject to a building notice, full plans application or initial notice submitted before that date, provided the work for each building is started before 15 June 2023.

## 2.3 Local Policy

### Core Strategy Development Plan Document (Adopted 11th July 2012):

The Manchester Local Plan guides development within Manchester. The Core Strategy is the key document in Manchester’s Local Plan, covering a period of 15 years from 2012 to 2027. It sets out the long-term strategic policies for Manchester’s future development, forming the framework for planning applications.

Sustainability cuts across the objectives set out within the Core Strategy. A summary of key policies relevant to the Environmental Standards and Energy Statement are summarised below:

| Policy Ref                                                                       | Summary of Requirements                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DM1 Development Management                                                       | <ul style="list-style-type: none"> <li>• Environmental design</li> <li>• BREEAM certification</li> </ul>                                                                                                                                                                                             |
| EN4 Reducing CO2 Emissions by Enabling Low and Zero Carbon Development           | <ul style="list-style-type: none"> <li>• Apply principles of the Energy Hierarchy</li> <li>• Use of building materials with low embodied carbon</li> </ul>                                                                                                                                           |
| EN 6 Target Framework for CO2 reductions from low or zero carbon energy supplies | <ul style="list-style-type: none"> <li>• 15% CO2 emissions betterment on Part L 2010</li> </ul>                                                                                                                                                                                                      |
| EN 8 Adaptation to Climate Change                                                | <ul style="list-style-type: none"> <li>• Minimise flood risk</li> <li>• Reduction in urban heat island effect through use of Green Infrastructure</li> <li>• Control overheating in buildings through passive design</li> <li>• Linked and diverse green space to assist species to adapt</li> </ul> |

|                           |                                                                                                                                                                                                                                                                                                    |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN 9 Green Infrastructure | <ul style="list-style-type: none"> <li>• Maintain and enhance green infrastructure where possible</li> <li>• Encouragement of green roofs, green walls, tree planting and other forms of green infrastructure to allow for the adaptation to climate change in heavily urbanised areas.</li> </ul> |
| EN 14 Flood Risk          | <ul style="list-style-type: none"> <li>• Flood risk assessment in line with PPS25</li> <li>• Minimise surface water run-off, through SuDS and Green Infrastructure</li> </ul>                                                                                                                      |
| 16 Air Quality            | <ul style="list-style-type: none"> <li>• Take measures to minimise and mitigate the impact of emissions from traffic and combustion plant resulting from the development</li> </ul>                                                                                                                |
| EN 17 Water Quality       | <ul style="list-style-type: none"> <li>• Avoid adverse impact on water quality, including during construction</li> </ul>                                                                                                                                                                           |
| EN 19 Waste               | <ul style="list-style-type: none"> <li>• Apply principles of the waste hierarchy (prevention, reduction, re-use, recycling/composting, energy recovery, final disposal)</li> <li>• Waste management plan to minimise construction and demolition waste</li> </ul>                                  |
| T1 Sustainable Transport  | <ul style="list-style-type: none"> <li>• Encourage modal shift away from car travel to public transport, cycling and walking</li> </ul>                                                                                                                                                            |

### **Guide to Development in Manchester Supplementary Planning Document and Planning Guidance (Adopted April 2007)**

The Guide to Development in Manchester is effectively a hybrid document bringing together all the development principles that assist in creating a city which people choose to live, learn, work and relax. It does not create new planning policy but rather complements existing policies by providing additional guidance on compliance. Where policies from the former Unitary Development Plan (UDP) are referenced, these are superseded by the Core Strategy as outlined within Appendix C – Superseded UDP Policies of Manchester Core Strategy 2012-2027. Otherwise, the principles and guidance on the Environmental Standards Statement remain current and complimentary to the Local Plan.

‘Section 4 Environmental Standards’ sets out the Council’s commitment to making Manchester “the Greenest City in Britain”. An Environmental Standards Statement is required to accompany all planning applications, demonstrating the required environmental standards under the following headings have been met:

- Energy Strategy
- Environmental design
- Water management and weather resilience
- Waste management
- Construction management
- Biodiversity
- Climate resilience

## 3 Energy Strategy

### 3.1 Introduction

This section of the report has been written in accordance with Policy EN6 of the Manchester Core Strategy (2012-2027), which requires an Energy Statement be submitted. As such, the contents of this section adhere to the contents listed within Appendix A of the Core Strategy documentation with a focus on reporting the predicted carbon emissions and regulated energy consumption of the Proposed Development.

#### Project Performance Targets

The Government published in January 2022 an updated version of Part L (Part L 2021), which sets out the progressive energy targets for Part L 2021 representing an approximately 31% improvement over above Part L 2013 standard. The development's carbon targets with respect to the dwellings aim to work towards Part L 2021 to demonstrate the client's commitment to low carbon design.

The commercial and amenity spaces represent a small portion of the development. The target performance for these spaces are in line with those outlined within EN6 of the Manchester Core Strategy (2012-2027):

#### Policy EN6

Policy EN6, Target framework for CO<sub>2</sub> reductions from low or zero carbon energy supplies, of the Manchester Core Strategy (2012-2027) stipulates an improvement of 15% on Part L 2010. Policy EN6 supersedes E1.5 from the UDP as outlined within the SPD thereby reflecting the most current ambitions of the city. The energy statement methodology, as outlined within Appendix A, is detailed below:

- a) Set out baseline information
- b) Calculate the total energy demand of the completed development
- c) Calculate the equivalent annual carbon emissions from the completed development
- d) Apply the appropriate carbon emissions reduction target
- e) Apply the energy hierarchy
- f) Consider all appropriate low carbon, renewable and/or decentralised energy technologies and identify least cost technology

Each of the items above are sufficiently covered within this section of the report.

#### Further Information

Note that further details and information pertaining to the design processes and assumptions outlined within this section are detailed in:

- Appendix A.1 - Part L1A - SAP Calculation Compliance Summary
- Appendix A.2 - Part L2A – Non-Dwelling Compliance Report

### 3.2 Baseline Information

#### Development Summary

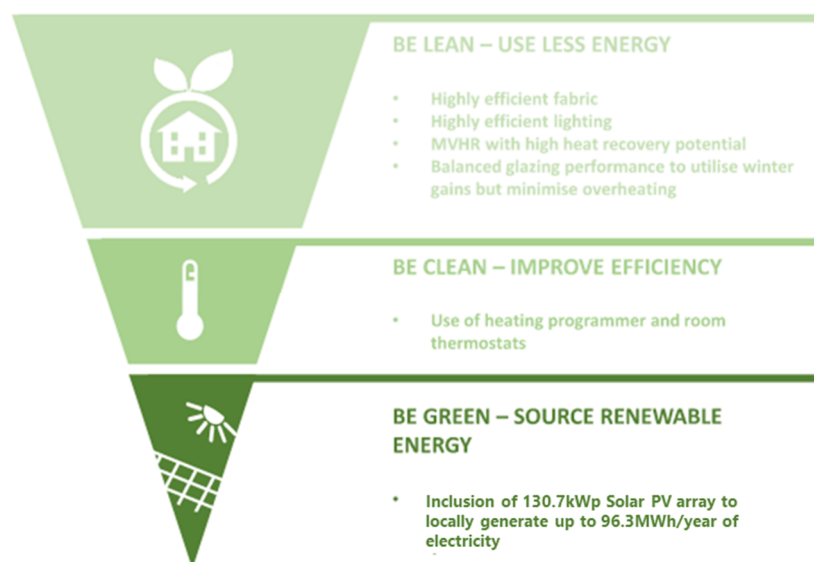
The Proposed Development involves the erection of a 8-storey building to provide 118 residential units, with the ground floor commercial floorspace, and ancillary amenity space. The table below outlines the quantity of each dwelling type and respective area of amenity spaces, areas shown represent average for each typology as they have been modelled within SAP or Dynamic Simulation Modelling:

| Typology                  | Quantity | Typical Modelled Area (m <sup>2</sup> ) |
|---------------------------|----------|-----------------------------------------|
| 1 Bed, 2 Person Apartment | 42       | 51                                      |
| 2 Bed, 4 Person Apartment | 68       | 73                                      |
| 3 Bed, 6 Person Apartment | 8        | 111                                     |
| Amenity Spaces            | 1        | 69                                      |

**Table 3-1 Development Modelling Allowances**

#### Energy Hierarchy

Ensuring optimal performance through passive design measures, commonly referred to as a 'fabric first' approach ensures efficient operation and reduced operational costs for prospective tenants. The energy hierarchy has been applied in order to identify opportunities for carbon emissions reductions:



**Figure 3-1 Energy Hierarchy Summary**

#### Proposed Specification and Servicing Strategy

This section briefly outlines the fabric and fixed services specification identified through the successful implementation of the energy hierarchy, highlighting the use of highly efficient whole house ventilation, delivered through MVHR units and highly efficient LED lighting.

The table below outlines the fabric performance specification and a high-level summary of system performance:

| Construction Element      | Dwelling                                                         | Non-Dwelling                                               |
|---------------------------|------------------------------------------------------------------|------------------------------------------------------------|
| Wall U-Value              | 0.14 W/m <sup>2</sup> K                                          | 0.14 W/m <sup>2</sup> K*                                   |
| Floor U-Value             | 0.1 W/m <sup>2</sup> K                                           | 0.1 W/m <sup>2</sup> K*                                    |
| Roof U-Value              | 0.1 W/m <sup>2</sup> K                                           | 0.1 W/m <sup>2</sup> K*                                    |
| Glazing U-Value (overall) | 1.3 W/m <sup>2</sup> K                                           | 1.3 W/m <sup>2</sup> K*                                    |
| Glazing G-Value           | 0.53 (0.8 Frame Factor)                                          | 0.53 (0.8 Frame Factor)                                    |
| Air Permeability          | 2m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50Pa                      | 2m <sup>3</sup> /(h.m <sup>2</sup> ) @ 50Pa                |
| Ventilation               | MVHR, Low SFP, HR 81%                                            | MVHR, Low SFP, HR 81%                                      |
| Lighting                  | 100% Low Energy                                                  | 100% Low Energy                                            |
| Space Heating             | Electric Panel Heaters                                           | Electric Panel Heaters                                     |
| Water Heating             | Immersion hot water cylinder (electric)                          | Local point of use (electric)                              |
| Space Cooling             | Natural ventilation supplemented by MVHR (no mechanical cooling) | MVHR and highly efficient VRF Split System where required. |

**Table 3-2 Proposed Specification Summary**

\*Note: non-dwelling values are liable to change subject to design development. It will be ensured that the compliance margin required by EN6 will be maintained following any amendment to the design.

5No. commercial facilities, that will be delivered as Shell and Core, will also form a part of this development. Whilst fixed services design will be provided by the fit-out design team and contractor they will benefit from the highly efficient fabric measures identified within this section, thereby ensuring future commercial tenants performance can be met.

### 3.3 Emissions Calculations

#### Baseline: Part L Compliance

Through the use of SAP for dwellings and dynamic simulation modelling (DSM) for non-dwellings the regulated carbon dioxide emissions of the respective spatial typologies can be derived in accordance with the requirements set out within Building Regulations, Part L (2013).

A baseline, or 'Target Emission Rate' (TER), performance model forms the basis of comparison for which building improvements due to fabric, fixed services and renewable technologies are measured. The table below outlines the averaged TER for the dwelling and non-dwelling portions of the development:

| Typology     | TER (kgCO <sub>2</sub> /m <sup>2</sup> /year) |
|--------------|-----------------------------------------------|
| Dwelling     | 22.3                                          |
| Non-Dwelling | 20.8                                          |

**Table 3-3 Baseline TER**

Note that, as stipulated within Section 3.2, Shell and Core areas have not been included within compliance calculations as servicing strategies and fit-out will be further developed in the future.

The energy hierarchy has been utilised leading to the adoption of a fabric-first design approach, supplemented by efficient system design.

Adopting a fabric-first approach results in passive reduction of energy usage associated with heating, which is pivotal in residential development design. Further adding highly efficient MVHR unit for mechanical ventilation and efficient LED lighting the design performance, with respect to emissions, exceeds the requirements of Part L 2013.

Assessment has been undertaken to demonstrate that the use of PV, coupled with a high-performance fabric and an all-electric heating solution has proven to be the most economically effective design for this project from a capital perspective whilst ensuring energy performance targets are met.

The use of renewable technologies on-site as indicated in Figure 3-2 below has reduced the carbon emissions significantly, enabling the dwelling area to achieve a 26.6% improvement over above Part L1 2013, and the non-dwelling area to achieve a 9.6% improvement over above Part L2 2013.

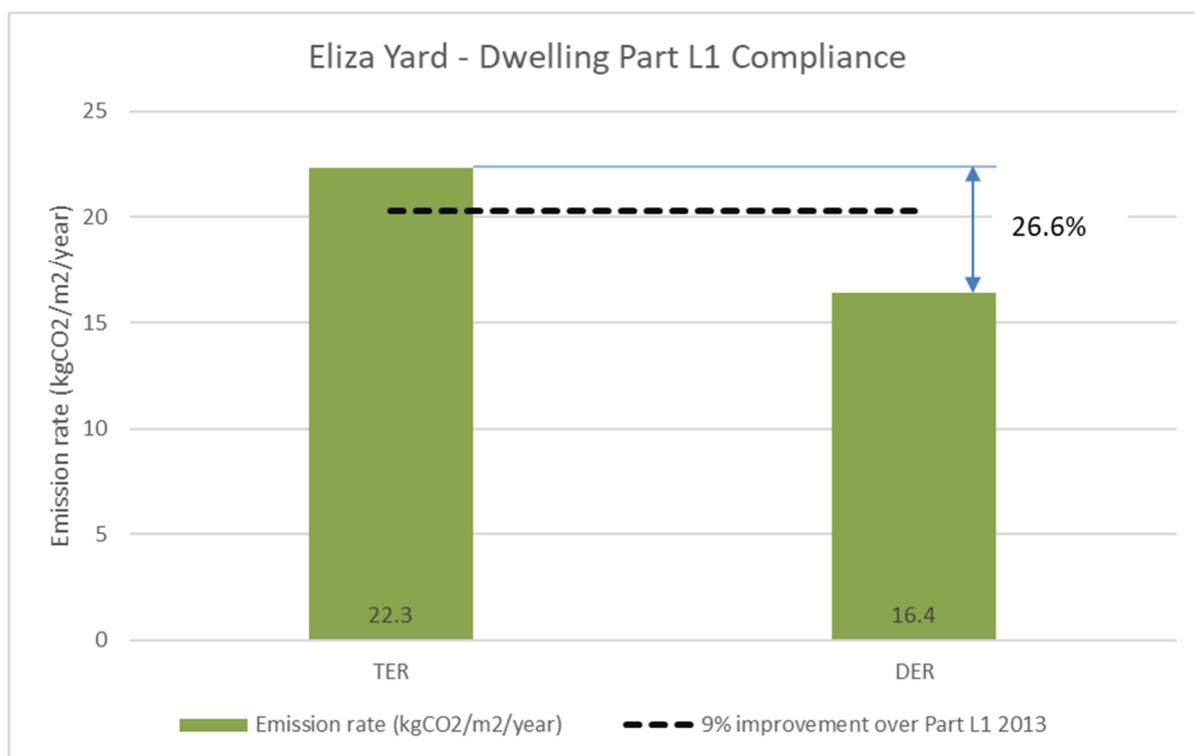


Figure 3-2 Dwelling Part L1 Compliance

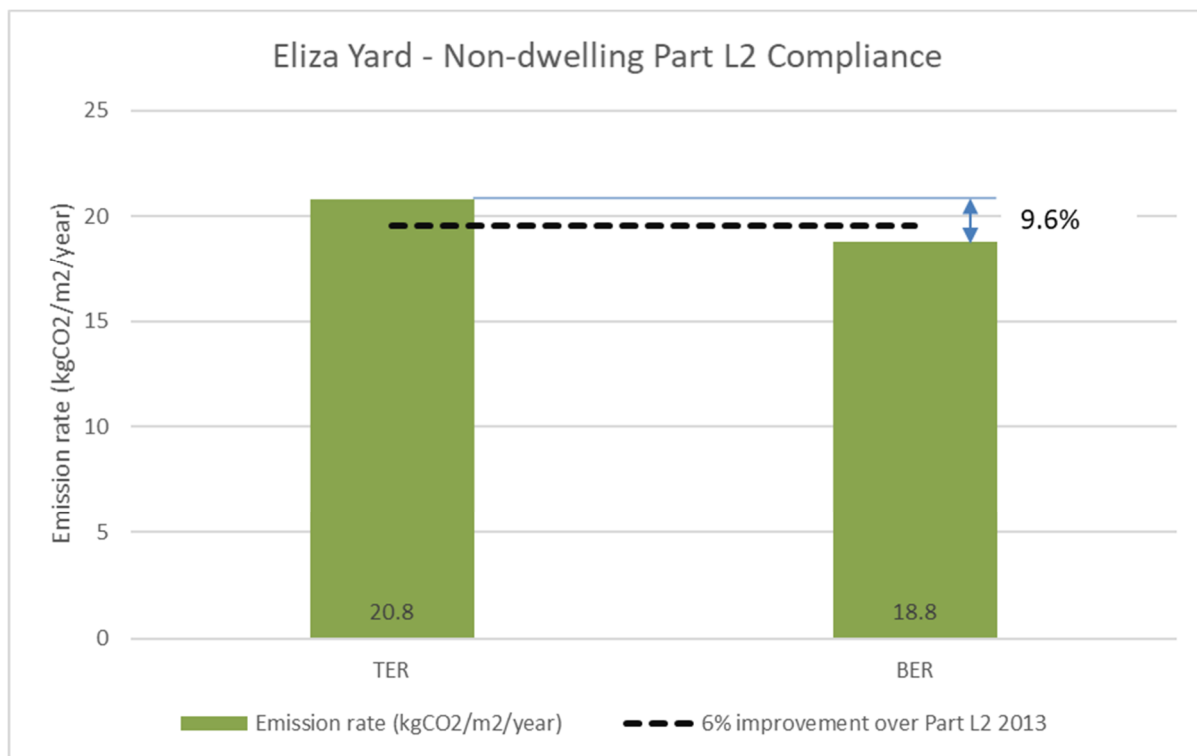


Figure 3-3 Non-dwelling Part L2 Compliance

### 3.4 Conclusion

This energy strategy outlines the performance of the building by adoption of a fabric-first approach, combined with a highly efficient services design that is further supplemented through integrated on-site renewables to meet performance requirements set out by the Core Strategy and the client's ambitions.

Through the adoption of an all-electric strategy, aimed to future proof the development from a carbon perspective by avoiding fossil fuel use on site, using SAP 2012 carbon factors (Part L 2013) the following targets have been achieved, with an overall 26.6% improvement over above Part L 2013 for dwellings and 9.6% improvement over above Part L 2013 for non-dwellings.

|                   | - 15% over above Part L (2010)                                                       | - 9% (dwellings) / 6% (non-dwellings) over above Part L (2013) |
|-------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Relevant Document | MCC Core Strategy 2012-2027<br>(The two carbon standards are equivalent in practice) |                                                                |
| Without Onsite PV | Yes                                                                                  | Yes                                                            |
| With Onsite PV    | Yes                                                                                  | Yes                                                            |

Table 3-4 Summary of Carbon Performance Standards

The table below summarises the Dwellings and Non-Dwellings carbon emissions respectively, as per requirements outlined within Appendix A of the Manchester Core Strategy 2012 to 2027 which supersedes UDP policy E1.5 referenced within the SPD:

| Typology      | Carbon Emissions (kgCO <sub>2</sub> /m <sup>2</sup> /year) | Regulated Energy Consumption (kWh/m <sup>2</sup> /year) |
|---------------|------------------------------------------------------------|---------------------------------------------------------|
| Dwellings     | 16.4                                                       | 25.5                                                    |
| Non-Dwellings | 18.8                                                       | 36.23                                                   |

**Table 3-5 Regulated Energy Consumption and Emissions Summary**

The results indicate that Policy EN6 Target framework for CO<sub>2</sub> reductions from low or zero carbon energy supplies within Manchester City Council's Core Strategy has been met for both dwellings and non-dwellings. Although the modelling results show a lesser improvement over Part L 2013 than the 31% anticipated within the Part L 2021 regulations, the development meets all planning requirements and shows strong potential for a low-carbon future-proofed design. This is due to the decarbonisation of the national grid which has improved electricity carbon factors from 0.519kgCO<sub>2</sub>/kWh to 0.136kgCO<sub>2</sub>/kWh moving from SAP 2012 to SAP10. This together with the "fabric first" approach and the use of roof PV arrays enables the development to align with the carbon reductions in the new Part L updates.

## 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 CO<sub>2</sub> 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 (2013), the Core Strategy (superseding E1.5 from the UDP) and the future Part L 2020 standard. 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 fan within the dwelling Mechanical Ventilation Heat Recovery (MVHR) units
- 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 CO<sub>2</sub> 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:

##### 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

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

Through adopting the 'fabric first' approach summarised above, using SAP 2012, the Proposed Development has the potential to deliver up to 31% CO2 reductions against Part L 2013 compliance, 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 9% reduction against Part L 2013 for dwellings.

This section should be read in conjunction with Section 3 as well as the documents outlined below which outline both the Part L1A and Part L2A performance:

- Appendix A.1 - Part L1A - SAP Block Compliance Summary
- Appendix A.2 - Part L2A – Non-Dwelling Compliance Report

### 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 brick and terracotta. Aluminium windows have been proposed with long warranties and lifespans to support the energy model with good air tightness and thermal qualities.

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 to keep the commercial units in use throughout its useful design life.

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 (Buttress Architects)

### **Policy EN 16 Air Quality**

An Air Quality Assessment has been undertaken for the Proposed Development by Hoare Lea. This concludes:

- The results of the Air Quality Assessment show no significant impacts associated with the construction and operational phase of the Proposed Development; and
- The impacts of construction work have been assessed and appropriate mitigation measures have been identified.

The Proposed Development will take measures to minimise the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself:

- **Traffic** – There will be no on-site parking provision for residents and the Proposed Development will not generate significant vehicle trips, therefore there is not expected to be any impacts to local air quality and no mitigation measures are required.
- **Building Services** - The proposed energy strategy is for an all-electric approach with no combustion systems on-site therefore, there is not expected to be any impacts to local air quality and no mitigation measures are required.

The results of the site suitability assessment indicate pollutant concentrations are below the relevant objectives at the Application Site, therefore no mitigation measures are required.

For further information please refer to:

- Air Quality Assessment (Hoare Lea)
- Framework Travel Plan (Hydrock)
- Ventilation Statement (Buro Happold).

### **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 is located within short walking distance of public transport facilities and numerous local amenities, including a, supermarket, doctors' surgery, public houses, several places of worship,

numerous primary schools and other educational institutions, cafes, restaurants, shops, leisure centres and places of recreational activity such as Ancoats Green and the Islington Marina.

- 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.
- 118 cycle parking spaces have been provided on site. These are to be located in a secure and covered cycle storage area on the building's ground floor accessed off Poland Street and the building's internal circulation. The site is within an accessible 5km cycle route to a number of local areas including the whole of Manchester city centre, Hulme, Rusholme, Cheetham Hill and Longsight.
- The site is located within an approximately 1.2km walking distance of Manchester Piccadilly Rail Station and Victoria 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 across Greater Manchester. 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 pair located on the A62 Oldham Street, approximately 250m north of the site, accessed via Poland Street. 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 Travel Plan, notably:

- The development is being brought forward in conjunction with the Ancoats Mobility Hub. The Hub will contain alternative mobility options including car clubs and car sharing options. Membership of these facilities will be advertised to new residents and Manchester Life will liaise with the Mobility Hub operator to establish promotional discounted rates designed to encourage car club and car sharing uptake.
- The Mobility Hub is being brought forward with a dedicated digital platform which allows services to be accessible to residents from their smart phones.
- From the outset, sustainable travel will be promoted to residents of the development. The Travel Plan will be launched as soon as possible following 40% occupation and will be continually marketed through the provision and updating of travel information, leaflets and communication sessions.
- All residents will also be issued with travel 'Welcome Packs' promoting the alternative transport available from the hub and local area, including details of the public transport, walking and cycling routes between their homes, workplace and surrounding amenities. Details of the Mobility Hubs digital platform will also be included in the welcome pack.
- The 2no parking bays are to be provided with 7kW electric vehicle chargers to promote the usage of electric vehicles.

- In order to integrate the Travel Plan with the wider sustainable travel agenda, the Welcome Pack may be used to promote national and international initiatives such as 'Bike Week', 'Catch the Bus Week', 'European Mobility Week' and 'Walk to Work Week'.

For further information please refer to:

- Framework Travel Plan (Hydrock)

#### 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 drainage strategy has been designed for a 1 in 100 year storm with 40% increase for climate change.
- The development is proposing potential options to include areas of permeable paving within the courtyard, alongside tree pit systems. Areas of hardstanding have been minimized with the introduction of soft landscaped areas to the north of the courtyard and the proposed planting beds. The strategy proposes onsite below ground attenuation of surface water run-off to achieve a restricted maximum flow discharge rate of 5 l/s for storm events. 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.

For further information please refer to:

- Flood Risk Assessment and Drainage Strategy Report (Curtins)

##### 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 only 2 onsite disabled parking spaces and one loading bay and is 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 Buttress for the development, demonstrating compliance with local and national policy. 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:

- Residential refuse provision will be met with a combination of 24x1100l Eurobin located in a dedicated waste storage area. Two small refuse stores are provided within the two building cores, allowing residents to travel downstairs and dispose of waste without leaving the building. A larger refuse store, accessed by management, will act as a holding area for empty/full bins. When bins become full within the residential refuse stores management will replace them with an empty one from the holding area.
- A separate refuse store for commercial bins is included. A combination of 4x1100l will be provided for the commercial refuse use based on the 543 sqm of commercial space of Eliza Yard.
- 50% of the bins in the store will be dedicated to recycling, with flexibility to increase this as recycling rates increase.
- The above is based on an estimated fortnightly waste collection.

Policy EN19 supersedes E1.2 which is outlined within the UDP and referenced within the SPD.

### Construction waste

The development will seek to minimise the use of primary resources and materials and to minimise the generation of waste during construction works. Where feasible, the contractor will incorporate secondary and recycled materials with low embodied impacts.

Production of a Resource Management Plan (formerly known as the Site Waste Management Plan) to set out the strategy for achieving the targets, including procedures to minimise waste to landfill through procurement and site waste segregation and monitoring on site or through a licensed external waste contractor. The RMP is an important tool to improve the environmental performance of a project. It will be used throughout the design process, to promote 'designing out waste'. It will also be used to monitor waste arisings and optimise waste strategy during construction.

For further information please refer to:

- Waste Management Strategy (Buttress)

## 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 CO<sub>2</sub> 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

Core Policy EN15 Biodiversity and Geological Conservation 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 extended Phase 1 habitat survey, preliminary roost assessment (PRA) and subsequent nocturnal bat survey of an area of land and associated buildings of the site were undertaken in August 2020 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:

- No direct impacts are expected to Rochdale Canal, north east of the proposed development. However a Construction Environmental Management Plan (CEMP) should be put in place to prevent dust pollution into the canal which may lead to incidental hydrological impacts to the Rochdale Canal SAC, Rochdale Canal: Stott's Lane – Ducie Street Basin SBI and Ashton Canal (West) SBI.
- Though the site falls within the Sites of Special Scientific Interest (SSSI) risk zone for Rochdale Canal SSSI, Hollinwood Branch Canal and Huddersfield Narrow Canal – the proposed development does not trigger the need for further action for any of these sites.
- The site has negligible ecological value or importance. The development proposals would not result in any net loss in biodiversity.
- The extended habitat survey including nocturnal surveys confirmed the absence of protected and priority species. No further ecological surveys are recommended to accompany the planning application.

- Habitat loss due to potential for birds to nest within the tree present on the site will be compensated through the provision of new nest box features and sensitive landscaping scheme all site clearance works preceded.
- There is opportunity to enhance the site by aiming to implement tree planting in the landscape proposals.
- With the implementation of appropriate mitigation and compensation, it is expected that the development proposals within the site would be in conformance with Local and National Planning Policy in relation to protected/notable species, habitats and sites.

For further information please refer to:

- Ecological Survey and Assessment (Tyler Grange)

## 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. Natural ventilation is also provided for each dwelling via openable windows. The systems are inherently resilient to cope with rising external temperatures due to climate change. Provision has been made for the ground floor commercial units to install cooling units when needed.
- 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 (BuroHappold Engineering)

## Appendix A Part L Pre-assessment

### A.1 Part L1A – SAP Block Compliance summary

| Apartment Type                               | Quantity | TFA (m2) | DER   | TER   |
|----------------------------------------------|----------|----------|-------|-------|
| 1 bed inline SW 5004                         | 5        | 50.04    | 17.11 | 23.61 |
| 1 bed inline NE 5004                         | 8        | 50.04    | 16.01 | 22.49 |
| 1 bed corner NE 5004                         | 10       | 50.04    | 16.01 | 22.49 |
| 1 bed inline SW 5004 ext roof                | 1        | 50.04    | 19.63 | 26.93 |
| 1 bed inline NE 5004 ext roof                | 0        | 50.04    | 18.96 | 26.13 |
| 1 bed corner NE 5004 ext roof                | 2        | 50.04    | 18.96 | 26.13 |
| 1 bed inline SW 5657                         | 5        | 56.57    | 15.74 | 21.95 |
| 1 bed inline NE 5657                         | 0        | 56.57    | 15.17 | 21.33 |
| 1 bed inline SW 5657 ext roof                | 1        | 56.57    | 18.76 | 25.83 |
| 1 bed inline NE 5657 ext roof                | 0        | 56.57    | 18.13 | 25.1  |
| 1 bed inline NE 5004 exp floor conditioned   | 0        | 50.04    | 18.98 | 26.13 |
| 1 bed inline SW 5004 exp floor conditioned   | 1        | 50.04    | 20.06 | 27.44 |
| 1 bed inline SW 5657 exp floor conditioned   | 0        | 56.57    | 18.76 | 25.83 |
| 1 bed corner NE 5004 exp floor conditioned   | 2        | 50.04    | 18.98 | 26.13 |
| 1 bed inline NE 5004 exp floor unconditioned | 2        | 50.04    | 18.93 | 26.13 |
| 1 bed inline SW 5657 exp floor unconditioned | 1        | 56.57    | 18.73 | 25.83 |
| 2 bed corner SW 7038                         | 15       | 70.26    | 16.06 | 21.78 |
| 2 bed corner NE 7038                         | 9        | 70.26    | 16.06 | 21.78 |
| 2 bed corner NE 8048                         | 5        | 80.48    | 15    | 20.42 |
| 2 bed corner SW 7038 ext roof                | 3        | 70.26    | 19.97 | 26.9  |
| 2 bed corner NE 7038 ext roof                | 1        | 70.26    | 18.53 | 25.17 |
| 2 bed corner NE 8048 ext roof                | 1        | 80.48    | 17.19 | 23.4  |
| 2 bed inline NE 7497 ext roof                | 1        | 74.97    | 17.3  | 23.95 |
| 2 bed inline SE 7767                         | 8        | 79.95    | 14.74 | 20.35 |
| 2 bed inline NW 7013                         | 12       | 70.13    | 14.78 | 20.6  |
| 2 bed inline SE 7013                         | 5        | 70.13    | 15.86 | 21.75 |
| 2 bed inline NE 7497                         | 1        | 74.97    | 14.52 | 20.19 |
| 2 bed corner SW 7038 exp floor conditioned   | 2        | 70.38    | 18.78 | 25.43 |
| 2 bed corner NE 7038 exp floor conditioned   | 1        | 70.38    | 18.78 | 25.43 |
| 2 bed corner NE 8048 exp floor conditioned   | 0        | 80.48    | 17.37 | 23.66 |
| 2 bed inline SE 7767 exp floor conditioned   | 2        | 77.67    | 16.92 | 23.46 |
| 2 bed inline NW 7013 exp floor conditioned   | 3        | 70.13    | 17.61 | 24.32 |
| 2 bed corner SW 7038 exp floor unconditioned | 1        | 70.38    | 18.77 | 25.43 |
| 2 bed corner NE 7038 exp floor unconditioned | 1        | 70.38    | 18.77 | 25.43 |
| 2 bed corner NE 8048 exp floor unconditioned | 1        | 80.48    | 17.37 | 23.66 |

|                          |   |        |       |       |
|--------------------------|---|--------|-------|-------|
| 3 bed corner SE ext roof | 1 | 97.34  | 21.42 | 26.4  |
| 3 bed corner SE          | 1 | 97.34  | 18.6  | 22.4  |
| 3 bed duplex NW 6965     | 3 | 112.17 | 14.88 | 19.27 |
| 3 bed duplex SE 6965     | 2 | 112.17 | 17.3  | 21.86 |
| 3 bed duplex SE 7719     | 1 | 133.15 | 15.47 | 19.93 |

| Area weighted average | DER    | TER  |
|-----------------------|--------|------|
|                       | 16.4   | 22.3 |
| % Improvement         | 26.62% |      |

## A.2 Part L2A – Non-dwelling Compliance Report

Project Back of Ancoats – Eliza Yard  
Subject Report Title  
Project no 0047020  
Date [Publish Date]

| Revision | Description               | Issued by | Date     | Approved (signature) |
|----------|---------------------------|-----------|----------|----------------------|
| 00       | Stage 3 Part L Compliance | TSh       | 20/01/21 | MR                   |
| 01       | Updated for Planning      | JW        | 18/05/22 | MR                   |

## Introduction

This report details the compliance of Eliza Yards non-dwelling areas with the 2013 edition of the Building Regulations Part L. Compliance with Part L has been assessed using the Approved Document L2A.

### 1.1 Objective

The aim of this assessment is to assess design compliance with the Building Regulations Part L (2013) based on the stage 3 design proposals. The following targets have been set for the building:

- Policy EN6, Target framework for CO2 reductions from low or zero carbon energy supplies, of the Manchester Core Strategy (2012-2027) stipulates an improvement of 15% on Part L 2010 (6% improvement on Part L 2013).

This preliminary assessment should be used to ensure best practice design across later design stages and identify key areas for improvement or where performance should be maintained.

### 1.2 Responsibilities

The design team should ensure that going forward their design and specifications aim to meet or exceed the standards set out in this compliance report, so that their designs do not compromise the overall compliance with Part L:

- Building fabric design and specification – Architect
- Mechanical services design and specification – Mechanical Services Designer
- Lighting and power design and specification – Electrical Services Designer

Compliance with the Building Regulations Part L is only achieved upon completion of the building. It is therefore necessary to address the following items during further detailed design stages, construction, and commissioning of the building:

- Achieve the minimum mechanical and electrical systems standards set out in the Non-Domestic Building Services Compliance Guide (2013). **It will be the responsibility of the mechanical and electrical services designers to specify that equipment meets these minimum standards and the mechanical and electrical services contractors to ensure that the equipment supplied and installed meets these standards.**
- Achieve the set building fabric insulation standards and ensure continuity of insulation in the constructed building. **It will ultimately be the responsibility of the contractor to achieve this and provide calculations of the constructed fabric U-values of each element.**
- Commission the building services in accordance with the design intent. **The mechanical and electrical services contractor will be responsible for achieving this and providing enough information for the calculation of ventilation systems specific fan power.**
- Limit building air permeability by maintaining construction quality and reducing unwanted air leakage. **Achievement of this will be the responsibility of the contractor and will be influenced by the architectural detailing.**
- Completion of the building logbook that describes in simple terms how the user can operate the building in an energy efficient manner. This includes the predicted building energy consumption and how the user can measure the building energy consumption. **Achievement of this will be the responsibility of the contractor, with significant input from the design team.**

It is the design and build contractor's responsibility to employ a registered Low Carbon Energy Assessor to complete final design and construction BRUKL and EPC calculations and documentation.

This report has been produced in order to demonstrate Building Regulation Part L compliance for the proposed ground floor residential amenity spaces as part of the RIBA Stage 3 deliverables. Figure 4-1 shows the 3D representation of the Part L model. Following the assessment methodology, any spaces that are open to the outside, or not heated or mechanically ventilated are not considered within the calculation.

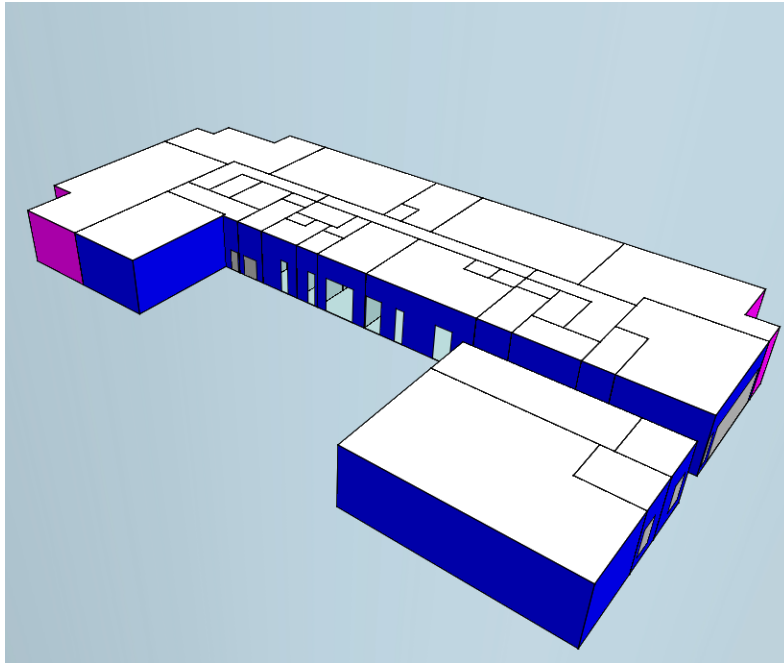


Figure 4-1 - Model Geometry

### 1.3 Summary

To comply with the Building Regulations Part L, the new building must achieve a BER that is less than the TER. An improvement of 9.6% has been identified at Stage 3 based on a simplified model with the assumptions detailed within this report. Further geometric, system efficiency and thermal line clarifications will be made at later stages which may result in a reduction (or improvement) in output.

The current design shows a reduction in CO<sub>2</sub> emissions from the notional building Part L Assumptions in accordance with MCC requirement of 15% improvement over Part L 2010 (6% Improvement over Part L 2013).

### Building Geometry

Table 4-1 - Building Geometry

| Model Origin        | Date of submission | Model description |
|---------------------|--------------------|-------------------|
| Buttress Architects | 23/03/21           | Frozen Stage 3    |

### Building Fabric Standards

The tables below summarise the minimum building fabric standards that has resulted in a building regulations Part L compliant scheme.

Table 4-2 - Building Fabric

| Building Fabric                  | Units              | U-Value | Notes                                                                                                                             |
|----------------------------------|--------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------|
| External Wall                    | W/m <sup>2</sup> K | 0.14    | Including all walls adjacent to untreated, naturally ventilated spaces. Thermal line strategy to be developed further at Stage 4. |
| Ground Floor and Exposed Floor   | W/m <sup>2</sup> K | 0.1     |                                                                                                                                   |
| Roof                             | W/m <sup>2</sup> K | 0.1     |                                                                                                                                   |
| General Glazing/ Curtain Walling | W/m <sup>2</sup> K | 1.3     | Including Frames                                                                                                                  |

Table 4-3 - Daylight Factors

| Orientation | Light Transmission | G Value |
|-------------|--------------------|---------|
| General     | 0.7                | 0.53    |

Table 4-4 - Permeability Factors

| Air Permeability and thermal bridging |                                           |                                            | Notes                                        |
|---------------------------------------|-------------------------------------------|--------------------------------------------|----------------------------------------------|
| Air Permeability                      | m <sup>3</sup> /(hr.m <sup>2</sup> )@50Pa | 2                                          |                                              |
| Thermal Bridging                      |                                           | 10% of the overall building fabric U-value | Default value as not specifically calculated |

### Room Activity Definition

Room activities have been set based on the planning class, these are set as:

- Others: Miscellaneous 24hr Activities for Comms Rooms, reception and circulation areas
- B1 Offices and Workshop Businesses for ground floor resident lounge and office areas

Please note that the residential corridors above GF are not intended to be heated and are therefore exempt from inclusion with Part L2A modelling.

Please note that it is currently assumed that plant facilities with fixed louvred panels sit outside of the buildings thermal line and that the walls between habitable spaces and plant rooms are insulated to the standards outlined under 'external wall'.

### HVAC standards

HVAC standards that have been applied can vary greatly depending on location within the building and adjacent spaces. As such, whilst this section outlines a condensed list of assumptions derived from design team information, further sources of information regarding design strategies adhered to within the compliance model will be referenced within this section:

**Table 4-5 - HVAC Systems – Heating and Cooling**

| Heating and Cooling         | Units | Office/Wellbeing         | Amenity | Reception |
|-----------------------------|-------|--------------------------|---------|-----------|
| NCM System                  |       | Split/Multi Split System |         |           |
| System                      |       | VRF System               |         |           |
| Heating Seasonal Eff        |       | SEER – 3, EER – 3        |         |           |
| Cooling Seasonal Efficiency |       | SEER – 3, EER – 3        |         |           |
| Emitter                     |       | Air Supply Grilles       |         |           |
| Fuel                        |       | Electricity              |         |           |
| Generator                   |       | Outdoor Condensing Unit  |         |           |
| Emitter                     |       | Indoor Unit/Cassette     |         |           |
| Terminal Unit SFP           | W/l/s | N/A                      |         |           |

**Table 4-6 – HVAC Systems – No Cooling**

| Heating and Cooling | Units | Toilets                           | Circulation                       | Plant Areas                       |
|---------------------|-------|-----------------------------------|-----------------------------------|-----------------------------------|
| NCM System          |       | Other local room heater: unfanned | Other local room heater: unfanned | Other local room heater: unfanned |
| System              |       | Electricity                       |                                   |                                   |
| Seasonal Eff        |       | 1.00                              |                                   |                                   |
| Emitter             |       | Panel Radiator                    |                                   |                                   |

**Table 4-7 - DHW System**

The table below outlines the DHW systems:

| DHW                    | Units |                       |
|------------------------|-------|-----------------------|
| Fuel                   |       | Electric              |
| Generator              |       | Local Electric Heater |
| Main System Efficiency |       | 1                     |

|                                   |           |   |
|-----------------------------------|-----------|---|
| Storage Capacity                  | Litres    | 0 |
| Storage Loss Factor               | kWh/l/day | 0 |
| Secondary Circulation Pipe Losses | W/m       | 0 |
| Secondary Circulation Pipe Length | m         | 0 |

Table 4-8 - Ventilation System Efficiencies and Control

| Ventilation                 | Units | Amenity Space/<br>Office/ Staff<br>Welfare/ Main<br>Reception | WCs / Heated<br>Plant Areas | Light<br>Plant<br>Rooms                                                     | Circulation spaces<br>(Corridors) |
|-----------------------------|-------|---------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------|-----------------------------------|
| AHU SFP                     | W/l/s | MVHR – 1.2                                                    | MEV - 0.6                   | Outside of<br>assumed<br>thermal<br>line (to be<br>developed<br>at Stage 3) | N/A – Naturally<br>Ventilated     |
| Extract air volume          | ACH   | NA                                                            | 10 WCs<br>2 - Plant Areas   |                                                                             | N/A                               |
| Local Extract SFP           | W/l/s | NA                                                            | 0.6                         |                                                                             | NA                                |
| Heat Recovery<br>Efficiency | %     | 81                                                            | NA                          |                                                                             | NA                                |
| Ductwork leakage            |       | Class A                                                       | Class A                     |                                                                             | NA                                |
| AHU CEN<br>Classification   |       | Class L2                                                      | Class L2                    |                                                                             | NA                                |
| Ventilation control         |       | Demand Control<br>Variable Speed                              | No Demand<br>Control        |                                                                             | No Demand                         |

## Electrical Services

With regards to lighting at Stage 3 an efficacy of 100W/lm with a LOR of 1.00 has been used, this will be developed further at Stage 4.

## Metering

Table 4-9 - Sub-Metering Allowances

| Sub-meter    | Provision                                                                                             | Comments                                                            |
|--------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| Sub-Metering | Automatic monitoring and targeting software with alarms for out of range values to include a complete | Building Energy Monitoring and Targeting Software must be installed |

|                         |                                                                                                                                                                                                                                                     |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|                         | installation that measures, records, transmits, analyses, reports, and communicates meaningful energy management information from all building energy meters and sub-meters to enable the building operator to manage the energy the building uses. |                                                                                                                                               |
| Heating                 | Heat meter all heating                                                                                                                                                                                                                              |                                                                                                                                               |
| DHW                     | Meter cold water feed to major DHW supplies                                                                                                                                                                                                         |                                                                                                                                               |
| HVAC                    | Meter all MCC Panels                                                                                                                                                                                                                                |                                                                                                                                               |
| Cooling                 | Meter electrical supply to refrigerant based cooling units and air-cooled chillers                                                                                                                                                                  |                                                                                                                                               |
| Lighting                | Metering on a distribution board by distribution board basis                                                                                                                                                                                        |                                                                                                                                               |
| Small Power             | Metering on a distribution board by distribution board basis                                                                                                                                                                                        |                                                                                                                                               |
| Power Factor Correction | Above 0.90                                                                                                                                                                                                                                          | Power factor monitoring equipment must be installed. Should the stated power factor not be achieved power factor equipment must be installed. |

## 2 Part L Results

### 2.1 Achieving the energy and emissions targets set for the building

#### Building Regulations Part L

To comply with the Building Regulations Part L, the new building must achieve a BER that is less than the TER. Current calculations as indicated in Figure 4—2 below. An improvement of 9.6% has been identified.

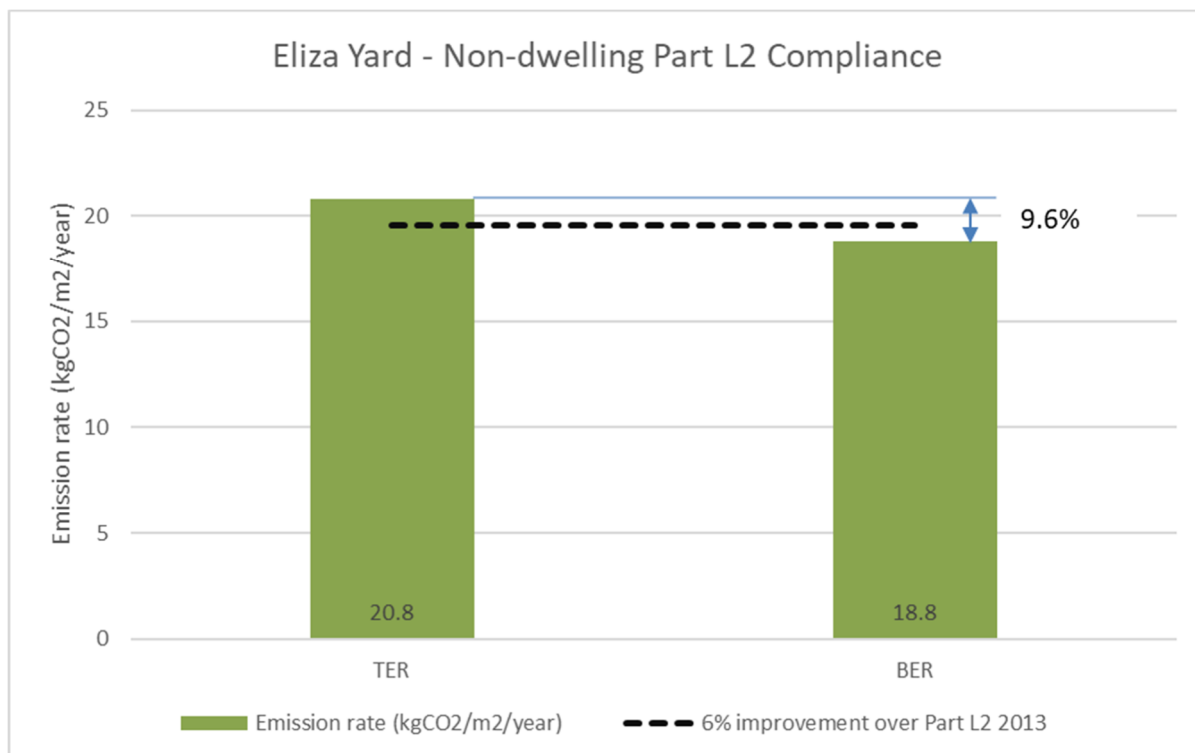


Figure 4—2 Building Emission Rate

#### Energy contribution from on-site renewables

At this stage, no PV has been allowed for at Stage 3, owing to the more onerous energy requirements for Dwellings the sites PV installation will be allocated to them.

#### Key Risks

The following risks to achieving compliance have been identified by this assessment:

- Compromising achieving the efficient lighting design, daylight, and occupancy sensing controls.
- Compromised specific fan power and heat recovery for ventilation systems
- Compromised fabric efficiency and air permeability

Appendix 1 – BRUKL Output Stage 3

## BRUKL Output Document



Compliance with England Building Regulations Part L 2013

## Project name

Eliza Yard Plot B - Non-Dwellings

As designed

Date: Wed May 18 11:00:35 2022

## Administrative information

## Building Details

Address: Address 1, Manchester, Postcode

## Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.13

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.13

BRUKL compliance check version: v5.6.b.0

## Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Criterion 1: The calculated CO<sub>2</sub> emission rate for the building must not exceed the target

|                                                                                                    |                     |
|----------------------------------------------------------------------------------------------------|---------------------|
| CO <sub>2</sub> emission rate from the notional building, kgCO <sub>2</sub> /m <sup>2</sup> .annum | 20.8                |
| Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum               | 20.8                |
| Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum             | 18.8                |
| Are emissions from the building less than or equal to the target?                                  | BER ≤ TER           |
| Are as built details the same as used in the BER calculations?                                     | Separate submission |

## Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

## Building fabric

| Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | U <sub>a</sub> -Limit | U <sub>a</sub> -Calc | U <sub>i</sub> -Calc | Surface where the maximum value occurs*  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------|----------------------|------------------------------------------|
| Wall**                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0.35                  | 0.13                 | 0.15                 | GR000005:Surf[4]                         |
| Floor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.25                  | 0.1                  | 0.1                  | GR000005:Surf[0]                         |
| Roof                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.25                  | -                    | -                    | UNKNOWN                                  |
| Windows***, roof windows, and rooflights                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2.2                   | 1.3                  | 1.3                  | GR000005:Surf[1]                         |
| Personnel doors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2.2                   | 2.01                 | 2.2                  | GR00000A:Surf[1]                         |
| Vehicle access & similar large doors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1.5                   | -                    | -                    | No Vehicle access doors in building      |
| High usage entrance doors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.5                   | -                    | -                    | No High usage entrance doors in building |
| U <sub>a</sub> -Limit = Limiting area-weighted average U-values [W/(m <sup>2</sup> K)]<br>U <sub>a</sub> -Calc = Calculated area-weighted average U-values [W/(m <sup>2</sup> K)]<br>U <sub>i</sub> -Calc = Calculated maximum individual element U-values [W/(m <sup>2</sup> K)]<br>* There might be more than one surface where the maximum U-value occurs.<br>** Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.<br>*** Display windows and similar glazing are excluded from the U-value check.<br>N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool. |                       |                      |                      |                                          |

| Air Permeability                             | Worst acceptable standard | This building |
|----------------------------------------------|---------------------------|---------------|
| m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa | 10                        | 2             |

Technical Data Sheet (Actual vs. Notional Building)

| Building Global Parameters                                                                        |        |          | Building Use |                                                                    |
|---------------------------------------------------------------------------------------------------|--------|----------|--------------|--------------------------------------------------------------------|
|                                                                                                   | Actual | Notional | % Area       | Building Type                                                      |
| Area [m²]                                                                                         | 684.6  | 684.6    |              | A1/A2 Retail/Financial and Professional services                   |
| External area [m²]                                                                                | 1738.4 | 1567.2   |              | A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways             |
| Weather                                                                                           | MAN    | MAN      | 60           | <b>B1 Offices and Workshop businesses</b>                          |
| Infiltration [m³/hm²@ 50Pa]                                                                       | 2      | 3        |              | B2 to B7 General Industrial and Special Industrial Groups          |
| Average conductance [W/K]                                                                         | 388.63 | 479.98   |              | B8 Storage or Distribution                                         |
| Average U-value [W/m²K]                                                                           | 0.22   | 0.31     |              | C1 Hotels                                                          |
| Alpha value* [%]                                                                                  | 8.16   | 10       |              | C2 Residential Institutions: Hospitals and Care Homes              |
| * Percentage of the building's average heat transfer coefficient which is due to thermal bridging |        |          |              | C2 Residential Institutions: Residential schools                   |
|                                                                                                   |        |          |              | C2 Residential Institutions: Universities and colleges             |
|                                                                                                   |        |          |              | C2A Secure Residential Institutions                                |
|                                                                                                   |        |          |              | Residential spaces                                                 |
|                                                                                                   |        |          |              | D1 Non-residential Institutions: Community/Day Centre              |
|                                                                                                   |        |          |              | D1 Non-residential Institutions: Libraries, Museums, and Galleries |
|                                                                                                   |        |          |              | D1 Non-residential Institutions: Education                         |
|                                                                                                   |        |          |              | D1 Non-residential Institutions: Primary Health Care Building      |
|                                                                                                   |        |          |              | D1 Non-residential Institutions: Crown and County Courts           |
|                                                                                                   |        |          |              | D2 General Assembly and Leisure, Night Clubs, and Theatres         |
|                                                                                                   |        |          |              | Others: Passenger terminals                                        |
|                                                                                                   |        |          |              | Others: Emergency services                                         |
|                                                                                                   |        |          | 40           | <b>Others: Miscellaneous 24hr activities</b>                       |
|                                                                                                   |        |          |              | Others: Car Parks 24 hrs                                           |
|                                                                                                   |        |          |              | Others: Stand alone utility block                                  |

| Energy Consumption by End Use [kWh/m²]                                                                |        |          |
|-------------------------------------------------------------------------------------------------------|--------|----------|
|                                                                                                       | Actual | Notional |
| Heating                                                                                               | 10.46  | 30.85    |
| Cooling                                                                                               | 2.96   | 0.44     |
| Auxiliary                                                                                             | 2.76   | 1.88     |
| Lighting                                                                                              | 19.6   | 18.31    |
| Hot water                                                                                             | 0.45   | 0.47     |
| Equipment*                                                                                            | 74.7   | 74.7     |
| TOTAL**                                                                                               | 36.23  | 51.95    |
| * 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                     | 0      | 0        |
| Wind turbines                            | 0      | 0        |
| CHP generators                           | 0      | 0        |
| Solar thermal systems                    | 0      | 0        |

| Energy & CO <sub>2</sub> Emissions Summary                                                   |        |          |
|----------------------------------------------------------------------------------------------|--------|----------|
|                                                                                              | Actual | Notional |
| Heating + cooling demand [MJ/m²]                                                             | 56.09  | 113.84   |
| Primary energy* [kWh/m²]                                                                     | 111.23 | 99.92    |
| Total emissions [kg/m³]                                                                      | 18.8   | 20.8     |
| * Primary energy is net of any electrical energy displaced by CHP generators, if applicable. |        |          |



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