

Caldwell



B0989 Oldham Street Hotel Manchester

Energy and Sustainability Statement

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Contents

1	Executive Summary.....	3
2	Introduction	4
3	General Location.....	5
3.1	Weather	6
4	Review of Planning Requirements	7
4.1	National Planning Policy Framework (2021)	7
4.2	Manchester's Local Development Framework - Core Strategy Development Plan Document Adopted 11th July 2012	7
4.2.1	SO1. Spatial Principles – Meeting Policy Requirements	8
4.2.2	SO6 Environment	8
4.3	Manchester Climate Change Framework 2020-25.....	12
4.4	Manchester Standard 2023.....	12
5	Energy Statement	15
5.1	Baseline Information.....	15
5.2	Dynamic Simulation Model	15
5.2.1	Baseline Model	16
5.2.2	Development Design Model (2021)	16
5.2.3	Development Design Model (2010)	16
5.3	Consideration of Low Carbon Technologies.....	17
5.3.1	Brief review of possible LZC solutions	17
5.4	Most Feasible Option	20
6	Sustainability Commentary.....	21
6.1	Management.....	21
6.2	Energy	21
6.3	Health and Wellbeing.....	21
6.4	Transport.....	22
6.5	Water	22
6.6	Materials	22
6.7	Waste	23
6.8	Land Use and Ecology.....	23



6.9	Pollution	23
7	Summary	24
8	Appendix A.....	25
8.1	Current Development Design Model	26
8.2	Current Development design run in 2010 Part L Regulations	27
8.3	Baseline Model.....	28

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1 Executive Summary

This Energy statement has been prepared in the support of the planning application for the development of land bound on Oldham Street, Manchester. The application site is located within the administrative boundary of Manchester City Council.

This document summaries the relevant planning policies applicable to the development proposals and sets out how the development proposals will address the relevant policy requirements.

After analysis through the AM11 compliant software, it was found the development design offered a carbon reduction of 8% and a 8% reduction in energy demand. When running the model in the 2010 Part L there was a 27% carbon reduction which shows that the model complies with Policy EN6. The development design was also compared against a baseline model which was run with gas serving DHW and minimum efficiencies from Approved Document L 2021. Against the baseline model there is a 77% carbon reduction. This is due the efficient design of the services and thermal elements, predominantly the ASHP being used to supply the DHW. Overall, the design of the development meets and exceeds compliance with Approved Document L 2021 and the relevant planning policies.



2 Introduction

This Energy and Sustainability Statement has been prepared on behalf of Jadebricks Manchester Ltd in support of their full planning application for an aparthotel development at Oldham Street Manchester.

The development is described as:

“Partial demolition of existing buildings, conversion of existing warehouse building, rooftop extension and new building of 10 storeys to create aparthotel and flexible commercial uses (Use Class E)”

There are 117 double bedrooms in total, as well as a gym and two commercial spaces within the ground floor and basement which have been included as part of the whole development. This makes the floor area of the development 5127.1m².



3 General Location

The development is located at the block formed by Oldham Street/Spear Street/Warwick Street in northern Manchester. See below site location.

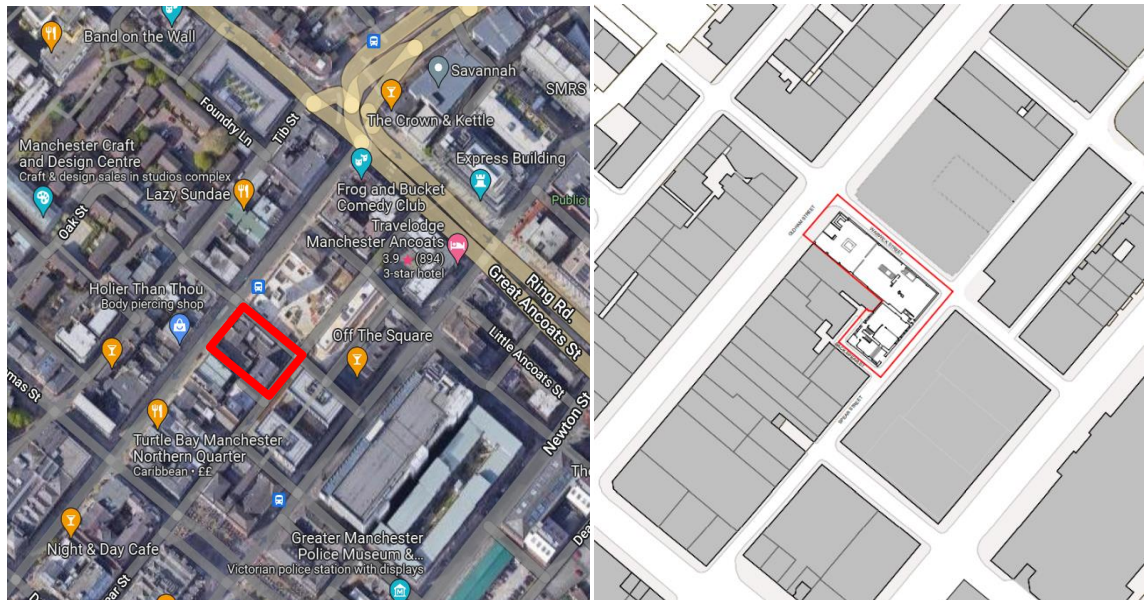


FIGURE 1 – SITE LOCATION AND PLAN

The location has advantages with access to utilities such as electricity and natural gas, connectivity to high-speed internet services and excellent transport options. District heating is not available within the area at present or the foreseeable future.

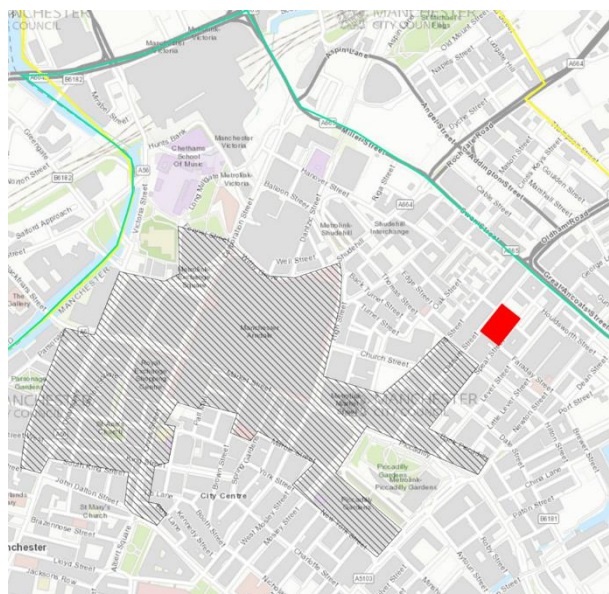


FIGURE 2 – DEVELOPMENT ON MAP BROWSER FROM MANCHESTER CITY COUNCIL

Figure 2 shows the proposed development in red on the Local Development Framework Area Map Browser from Manchester City Council. As shown by the light blue line this project is within the city centre boundary and shown in yellow (overlapping the city boundary) is the regional centre. When referred to in the policies, the proposed development will be evaluated against any area specific sections relating to the city centre or regional centre.



3.1 Weather

The Manchester area is classified by ASHARE as a 5A location i.e., Cool and Humid and by the Koeppen-Geiger¹ Classification system as Cfb i.e., Humid temperate (mild winters), Fully humid; no dry season, Warm summer (marine), Mild winters with heavy precipitation, warm/short/dry summers, on western continental coasts.

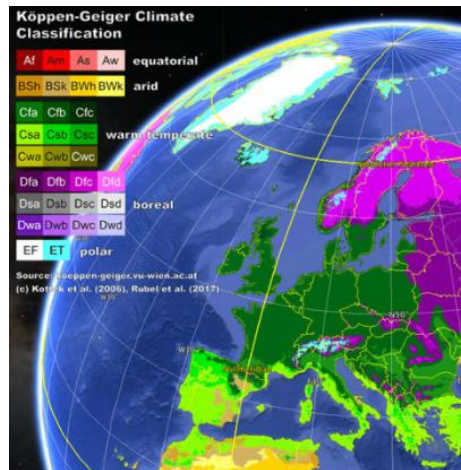


FIGURE 3 - CLASSIFICATION MAP - PRESENT CLIMATE

This classification is expected to remain, even with climate change predictions.

Therefore, the approach to sustainability can be informed by this and so winter is potentially most dominant in terms of energy. Although in global terms the summer is cool it can still have significant impact with the solar radiation on south/east/west walls and roof areas being significant

Some metrics are shown in Figure 4 - Climate weather metrics, they show that the August is the warmest month and February the coldest. In recent years, the pace of climate change has been more noticeable with recent very hot spells and unpredictable cold weather. However, it is still expected that the general format of the metrics will remain.

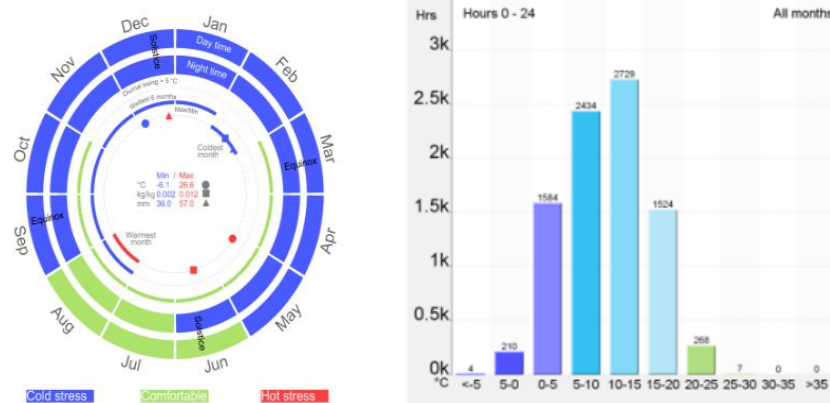


FIGURE 4 - CLIMATE WEATHER METRICS

¹ <http://koeppen-geiger.vu-wien.ac.at/present.htm>



4 Review of Planning Requirements

4.1 National Planning Policy Framework (2021)

The National Planning Policy Framework 2021 sets out the Government's planning policies for England. It provides a framework within which locally prepared plans for proposed developments can be used. The framework does not contain specific policies for projects but forms part of the wider planning system to contribute to the achievement of sustainable development. The United Nations defines Sustainable Development:

"As meeting the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainable Development is achieved through the 3 pillars of sustainable development, this is also referred to as the "triple bottom line of sustainability".

The 3 pillars are:

- Social
- Economic
- Environmental

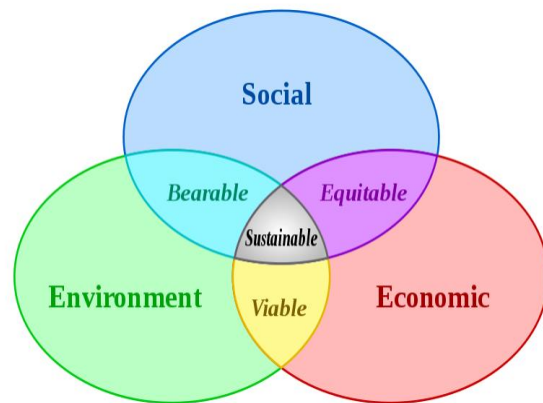


FIGURE 5 - 3 PILLARS OF SUSTAINABLE DEVELOPMENT

4.2 Manchester's Local Development Framework - Core Strategy Development Plan Document Adopted 11th July 2012

The Core Strategy that was adopted in 2012 covers a fifteen-year period to 2027 and has six key objectives which headline the planning policies. The objectives cover the topics of Spatial Principles, Economy, Housing, Centres, Transport and Environment. These objectives along with the specific policies will be fully evaluated within this sustainability statement.

This report evaluates the following policies:

SP 1 Spatial Principles	EN 5 Strategic Areas for LZC
EN 1 Design Principles	EN 6 Target Framework for CO2 reductions
EN 4 Reducing CO2 Emissions	EN 7 Energy Infrastructure opportunities



4.2.1 SO1. Spatial Principles – Meeting Policy Requirements

This objective reads as follows:

“Provide a framework within which the sustainable development of the city can contribute to halting climate change.”

Under this headline are the specific policies which related to certain aspects of the objective, not all of which relate to sustainability or energy. These will be the policies recognised in this report.

4.2.1.1 Policy SP1 – Spatial

Under this policy there is reference to ensuring that natural resources are used efficiently and if able, to reuse developed land. There is mention to minimise emissions also. Under section 6.8 of the core strategy the policy encourages that the use of heritage and the natural environment to create a recognisable space for the community. Importance surrounding CO2 emissions has been mentioned in section 6.9 of the core strategy, regarding meeting the needs of a growing population and economy. This is further evaluated in later sections which go into more detail about energy and sustainability.

Justification: The current planning of the proposed development shows the use of existing building has been partially retained and built upon for the new construction. This supports SP1 in reference to reusing developed land and indirectly minimises emissions that would have been produced in construction if the building had to be built entirely from scratch. Furthermore, the use of the existing façade helps to maintain familiar landscape.

4.2.2 SO6 Environment

This objective reads as follows:

“Protect and enhance both the natural and built environment of the City and ensure the sustainable use of natural resources, in order to mitigate and adapt to climate change, support biodiversity and wildlife, improve air, water and land quality, recreational opportunities and provide networks of high quality green infrastructure, ensuring that the City is inclusive and attractive to residents, workers, investors and visitors.”

In accordance with the Planning Policy Statement 1 as per the government planning policies, Manchester is expected to follow the seven design principles:

1. Character: a place with its own identity
2. Continuity and enclosure: a place where public and private places are clearly distinguished



3. Quality of the public realm: a place with attractive, and successful outdoor areas
4. Ease of movement: a place that is easy to get to and move through
5. Legibility: a place that has a clear image and is easy to understand
6. Adaptability: a place that can change easily
7. Diversity: a place with variety and choice

4.2.2.1 EN4 – Reducing CO₂ Emissions by Enablin Low and Zero Carbon Development

This policy indicates that the development must follow the energy hierarchy:

- To reduce the need for energy through design features that provide passive heating, natural lighting, and cooling
- To reduce the need for energy through energy efficient features such as improved insulation and glazing
- To meet residual energy requirements through the use of low or zero carbon energy generating technologies

Overall, the key takeaway from this policy is that the development should show a reduction in carbon emissions through the design.

There is a national reduction in CO₂ emissions of 80% by 2050 and there is vision to see Manchester as one of the leading cities in Europe for its economy which means that it is vital to reduce emissions in line with the national targets as a Low Carbon Economic Area.

Justification: The current design of the model under the Approved Document L 2021 Building Regulations has a 8% carbon reduction and primary energy reduction on the target rates, shown in figure 6 below. This has been achieved by a total improvement over the minimum requirements of the values in the Approved Document L 2021 and the incorporation of heat pumps for space heating/cooling and for the domestic hot water (DHW). With the current strategy laid out in this

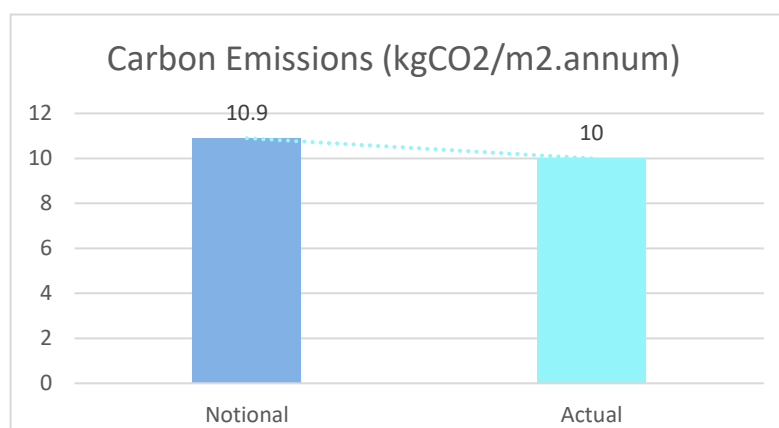


FIGURE 6 - CARBON EMISSION REDUCTION OF ACTUAL BUILDING IN COMPARISON TO THE NOTIONAL



report the development has shown to be in line with the vision of Manchester as a city that is growing with reduction in carbon emissions. The results in figure 6 have been taken from the Design BRUKL in Appendix A with the Target Emissions Rating referred to as the Notional building, and the Building Emissions Rating referred to as the Actual building.

4.2.2.2 *EN5 – Strategic Areas for low and zero carbon decentralised energy infrastructure*

This policy refers to the strategic areas, of such the regional centre falls under. It is expected that developments in these areas will have detailed energy proposals to show a low/zero carbon design. This is due to these areas being the focus for “new development and population growth” and so it is fundamental to include these proposals at an early design stage. The energy proposal will be used to evaluate the most viable renewable opportunities to maximise carbon reduction whilst remaining cost effective.

Justification: As this development falls under the regional centre, it is expected to follow EN5 and therefore an energy proposal has been undertaken in chapter 5. As shown in the justification for EN4 there has been a 8% reduction of carbon on the Approved Document L 2021 notional model which shows compliance with this policy. EN6 further evaluates the comparison between the baseline model and the current design model to show further reductions in carbon emissions.

4.2.2.3 *EN6 – Target Framework for CO₂ reductions from low or zero carbon energy supplies*

This policy sets out framework to follow to show CO₂ reductions and expects an energy statement for this. There are three target areas which apply to non-domestic developments.

Non-domestic CO ₂ emissions reduction targets	
Table 12.2	
Target	% Minimum requirement
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 (Applies to commercial uses with a high proportion of emissions from electricity use (>45 kg CO ₂ /m ²))	+10% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

FIGURE 7 – TARGET FRAMEWORK EN6

The policy further suggests that in the expectation that there are future revisions for Part L since the 2010 edition then the reduction of carbon must be what is required from the building regulations. An energy statement is required from this policy using Appendix A for guidance.



There is reference to the governments preferred energy hierarchy which follows a pyramid diagram from ‘allowable solutions’ to ‘energy efficiency’.

Justification: As shown under EN4 there is a 8% carbon reduction over the building regulations target which complies with EN6 based on the future revision for Part L adaptation. The energy statement is included in chapter 5 of this report. The adoption of the energy hierarchy within this development can be seen in figure 8 which shows a comparative graph of the baseline model which follows building compliance, and the actual development design which shows major improvement. A baseline model with a gas boiler serving the DHW and minimum efficiencies from Approved Document L were used to compare the “allowable solutions” needed to be compliant with building regulations, in contrast to the actual design or “energy efficient design” which uses renewable energy and better thermal elements, details can be seen in chapter 5 and in Appendix A.

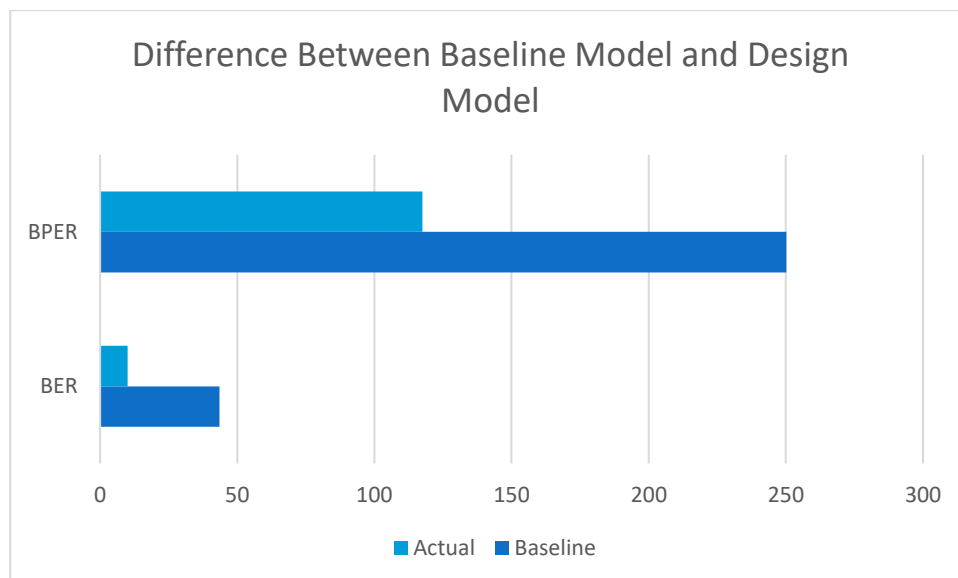


FIGURE 8 – DIFFERENCE BETWEEN THE BASELINE MODEL AND DESIGN MODEL

4.2.2.4 EN7 – Energy Infrastructure opportunities

This policy references the considerations of a heating and cooling system which can facilitate a future connection. There is also consideration to the integration of any substations of plant rooms on the development so to not impact on the landscape of the area.

Justification: Considerations have been made within the plant room for future connections, however at present no district connections have been considered due to costing and sustainable feasibility. The substation and plant rooms have been cleanly integrated into the envelope of the building



4.3 *Manchester Climate Change Framework 2020-25*

This framework introduced in 2020 was designed to support the city's goal of achieving net zero carbon emissions by 2038 and builds upon the draft document *Manchester Zero Carbon Framework 2020-38*. This is split into four main objectives:

1. Stay within our Carbon Budget
2. Climate Adaptation and resilience
3. Health and Wellbeing
4. Inclusive, zero carbon and climate resilient economy

The principle of this framework is to set objectives in line with the Paris agreement, contribute to the overall environmental goals and encourage development within Manchester whilst maintaining the commitment to become net zero carbon.

The relevant section to this report discusses how renewable energy plays a key role in achieving net zero carbon by 2038. This development achieves this by being a completely fossil fuel free building, powered solely by electricity. The use of heat pumps for space heating/cooling and to supply the DHW follows the option for replacing gas with another renewable heating technology. Comparing the development design to the baseline model there is an evident reduction in carbon emissions, 75% reduction in carbon and 53% in primary energy.

4.4 *Manchester Standard 2023*

Embodied carbon is described as all the CO₂ emitted from the materials used to create a product, this includes the emissions produced during the manufacturing process.

Under the *Manchester Climate Change Framework 2020-25* and *A Roadmap to Net Zero Carbon New Buildings in Manchester* the reduction of embodied carbon is seen as a key component of achieving net zero carbon. These documents reference *The Future Building Standard 2025* and have adopted their own 'Manchester Standard' which expects that new buildings should operate as Net Zero Carbon from 2023. This also states that there must be a significant reduction in embodied carbon for 2023.

The development has been designed to achieve the Manchester Standard 2023 Non – Domestic listed in the roadmap:



TABLE 1 – TARGET JUSTIFICATION (MANCHESTER STANDARD 2023)

Target		How target is achieved
Reducing Demand	Energy	There are currently no RIBA Energy Use targets for hotels, but an operational energy report has been included in BREEAM to encourage energy demand reduction.
Reducing Carbon	Embodied	A whole lifecycle carbon calculation has been included under BREEAM using the RIBA target of <800kgCO ₂ e/m ² with aspiration to achieve the 2030 target of <625kgCO ₂ e/m ² .
Measuring Performance	In-use	The development will be operated with a BMS to monitor the energy use of the building. This feed back will be part of the Operational Energy section of BREEAM. Also, under BREEAM an Indoor Air Quality credit has been targeted, as well as a Thermal Comfort report which will ensure the mitigation of overheating.
Low-Carbon Supply	Energy	There are no fossil fuels used on this development. PV is not applicable for this development due to the lack of space on the roof, however an ASHP has been included as a renewable energy source. There has been consideration for new energy networks and there is potential for a connection in the future. There is on-site energy generation using ASHP technology to supply DHW.
Zero Carbon Balance		This development has not yet achieved net zero carbon, however, is working towards this goal and therefore in line with the targets.

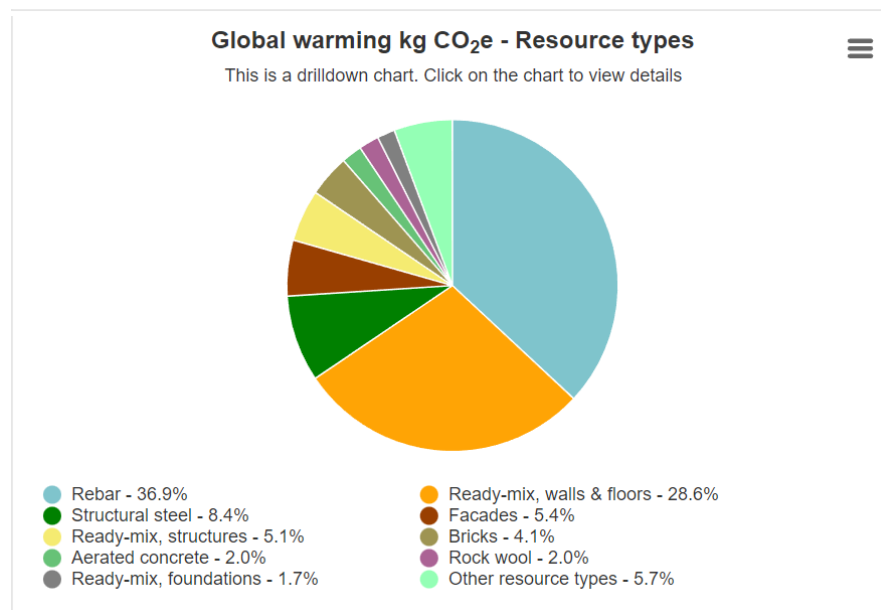


FIGURE 9 – RESOURCE TYPES OF DEVELOPMENT FROM ONE CLICK LCA

Figure 10 above shows an example of information from the Life Cycle Assessment conducted as part of BREEAM which follows the target of Manchester Climate Change Framework 2020-25 evaluating the reduction of embodied carbon under the RIBA targets.



5 Energy Statement

5.1 Baseline Information

The main use of the development falls under C1: Hotel, predominantly Hotel bedroom and bathroom. The development has 11 floors of which 9 floors are bedrooms.

The proposed servicing strategy is DHW fully served by ASHP and VRF for the heating and cooling with supply and extract fans. All fixed M&E services are compliant with the Approved Document L 2021.

5.2 Dynamic Simulation Model

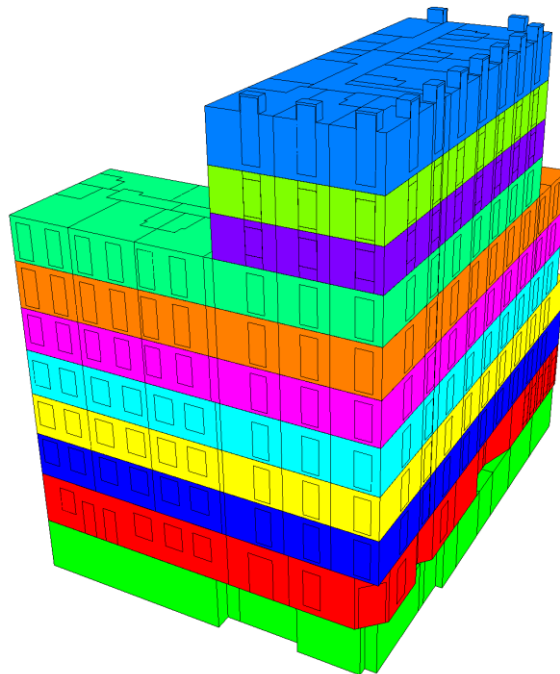


FIGURE 10 – DYNAMIC SIMULATION MODEL

To explore these stages, we developed a range of Dynamic Simulation Models for the development using IESVE 2021 which is an AM11 compliant simulation software package. The simulations are of level 5 quality with simulation points calculated every 10 minutes and recorded in a data file every hour for a full year. The simulation year weather file used was the CIBSE Test Reference year for Manchester.

IESVE module VE Compliance was used for the Part L Calculations which use the NCM methodology.



The baseline model and the development design model settings can be seen in appendix A. The design model was also run under the 2010 Part L regulations to estimate the percentage reduction of carbon had the development been built under this compliance, which correlates with the EN6 policy targets.

All BRUKL reports can be seen under Appendix A with the model settings table.

5.2.1 *Baseline Model*

The baseline model was created and used as part of the energy hierarchy, to show a development which passed building regulations with the minimum compliance, and no renewable energy sources. The DHW was run as a LTHW gas boiler with an efficiency of 0.93. Full model settings can be seen in Appendix A and minimum compliance can be seen in the Approved Document L 2021.

This model produced 43.5 kgCO₂/m²/annum.

5.2.2 *Development Design Model (2021)*

The development was designed to improve on the baseline model, using an ASHP for the DHW as a renewable energy source with an efficiency of 4.0. As well as improved efficiencies across other services and improved fabrics – shown in Appendix A.

This model produced 10 kgCO₂/m²/annum while the target emissions produced 10.9 kgCO₂/m²/annum.

5.2.3 *Development Design Model (2010)*

Due to the reference to the Part L 2010 within the policies the model was run under the 2010 regulations to estimate if the development would pass the 15% carbon reduction that is required. The model achieved a 27% carbon reduction over the target emissions rating and produced 39 kgCO₂/m²/annum. The emission is higher in the 2010 model due to the carbon factor of electricity being 0.517, however in the 2021 model the carbon factor for electricity is 0.136.



5.3 Consideration of Low Carbon Technologies

Our approach to sustainability follows the overarching sustainable hierarchy as illustrated below:

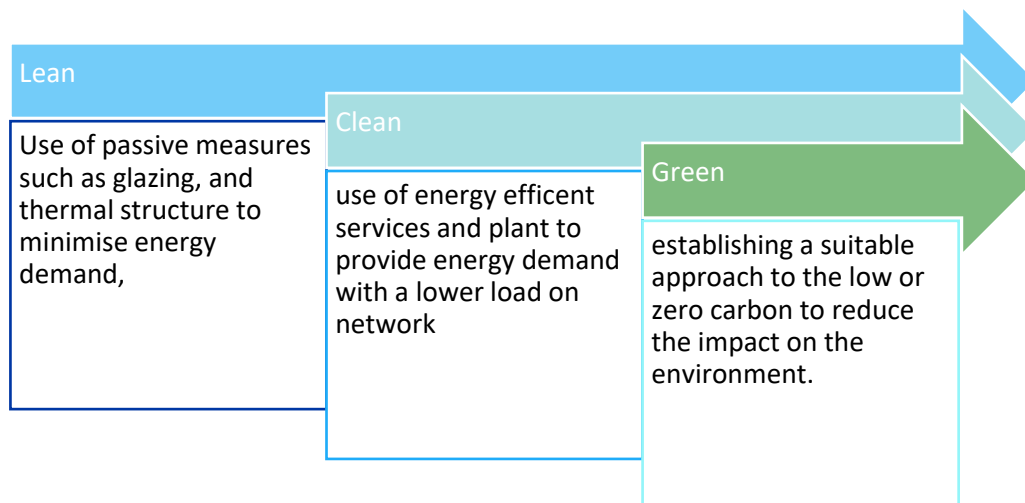


FIGURE 11 - LEAN CLEAN GREEN GRAPHIC

5.3.1 Brief review of possible LZC solutions

The use of low or zero carbon (LZC) technologies can have a positive impact on the development. It's important that any development does not simply provide LZC as a token and that each could be considered as a benefit to the environment and the building users. In the summary the use of heat pumps and PV is proposed.

5.3.1.1 Heat pumps

The use of Air-to-Air heat pumps is currently in the proposal to provide heating and cooling for the development. Heat pumps have advanced to a very high degree with improved efficiency at part load and most can overtake the ground source heat pump. An Air-to-Water heat pump will also be used to provide the part - full load for the domestic hot water system. These also reduce the energy demand of the development due to their very high efficiency drawing less energy than delivered.

The Seasonal Coefficient of Performance (SCOP) used in the model is based on typical commercially available products heating and represents the amount of energy provided in comparison with the energy drawn by the unit. System Seasonal Energy Efficiency Ratio (SSEER) is a similar figure is used for cooling energy This would be calculated in full once actual installed mix of internal units and external units are fixed during the technical design and construction stages. For building regulations calculations if SCOP is not available the use of COP is allowed as this is a worst-case scenario, similarly EER can be used instead of SSEER.



OUTDOOR UNITS		PURY-P200YNW-A
CAPACITY (kW)	Heating (nominal)	25.0
	Cooling (nominal)	22.4
	High Performance Heating (UK)	25.0
	COP Priority Heating (UK)	22.8
	Cooling (UK)	20.0
POWER INPUT (kW)	Heating (nominal)	4.71
	Cooling (nominal)	4.43
	High Performance Heating (UK)	5.93
	COP Priority Heating (UK)	4.71
	Cooling (UK)	2.57
COP / EER (nominal)		5.30 / 5.05
SCOP / SEER*		-

FIGURE 12 - EXAMPLE VRF MANUFACTURERS DATA

Above is an example of a manufacturer data showing COP and EER at 5.3 and 5.05 respectively. In this energy assessment the levels have been set at conservatively at 4 for SCOP and 5 for SSEER to comply with the Approved Document L 2021.

The air-to-water heat pump is proposed for the 100% of the Domestic Hot Water System (DHW) an example system is illustrated below:

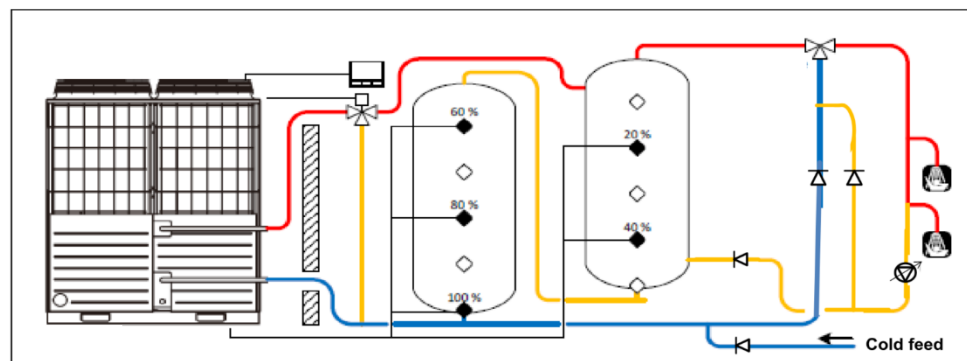


FIGURE 13 - TYPICAL HEAT PUMP ARRANGEMENT USED IN DHW



The SCOP is based on the external weather, and this will use a SCOP based on the external conditions and manufacturers data. An example from a similar student accommodation building is shown below.

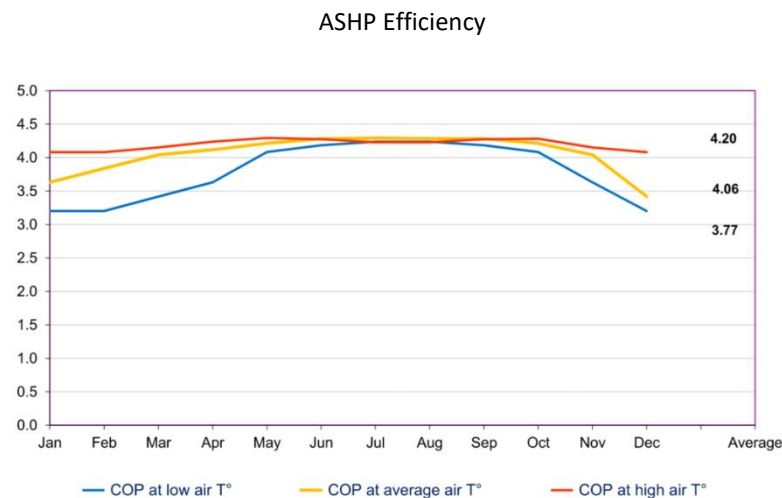


FIGURE 14 - EXAMPLE MANUFACTURERS COP VALUES OVER A YEAR

The exact values would be determined based on the manufacturer installed, technical design and construction arrangement. The SCOP's used in the model are set conservatively with a SCOP of 4 to allow for future design development flexibility.

5.3.1.2 Combined Heat and Power Plant (CHP)

CHP is not currently in the proposal as the electricity generated would not result in a significant carbon reduction when viewed in the SAP 10 carbon factors that have been implemented in the Building Regulation changes in June 2021. Also, the DHW ASHP is already meeting the main demand of the CHP.

5.3.1.3 Wind Power:

Significant wind power for this urban site is not practical due to limitations of the roof area and the lack of a consistent strong wind speed i.e. 3.7 m/s average less than 5 m/s average suggested for viable wind power.

5.3.1.4 Solar thermal water heating

Solar water heating has a potential use for the DHW demand however this will compete with the air source heat pump, which is anticipated to have higher carbon emission savings. Solar thermal water heating is not part of the development.



5.3.1.5 *Solar Photovoltaic*

Solar PV has the potential to feed into all electrical systems. However, roof space is limited due to plant requirements as such PV is not included in the proposal as the yield would be minimal when compared to the annual carbon emissions.

5.3.1.6 *Biofuel*

Biomass can have a significant impact on carbon emissions however the location could impact on the air quality aspects of the biomass fuel emissions with respect to local pollution limits. The reaction times of biomass are slow and may suffer in responding to a spiked demand profile. Also, the deliveries of fuel would be problematic for plant areas. Bio diesel type solutions we consider to be not yet fully developed commercially and that the ethical issues surrounding energy crops are still to be fully resolved. Biomass is not proposed for the development.

5.3.1.7 *Green Energy Tariffs:*

Although not considered a renewable as part of any offsetting calculations the possibility for building occupants to avail of green energy tariffs can be considered during the assessment of utility providers.

5.4 *Most Feasible Option*

For this project it is most feasible cost wise and for the most carbon reduction to add an Air Source Heat pump into the development for DHW and for space heating/cooling. As seen as a comparison to the baseline model and the building control compliance there is a high reduction of carbon by incorporating an ASHP into the development.



6 Sustainability Commentary

The development focuses on sustainability throughout. The BREEAM approach is covered in a separate BREEAM pre-assessment report and below is a summary of some of the main items that will be incorporated as part of the sustainable approach.

6.1 *Management*

The project delivery stakeholders will meet to identify and define their roles, responsibilities, and contributions for each of the key phases of project delivery.

A BREEAM AP will be involved in the project to work with the project team to assist them in maximising the project's overall performance against BREEAM.

An entire asset Life Cycle Cost (LCC) will be carried out.

The construction site will be managed in an environmentally and socially considerate, responsible, and accountable manner.

A schedule of commissioning and testing will be prepared. The schedule will identify and include suitable timescales for commissioning and re-commissioning of all complex and non-complex building services and control systems and for testing and inspecting building fabric.

6.2 *Energy*

Operational energy will be analysed to help guide the design development to match anticipated real-life load and then measured against the targets to help reduce any performance gap.

Energy sub-metering will be installed to facilitate the monitoring of operational energy consumption.

An energy specialist will be appointed to complete a low and zero carbon feasibility study with the aim of finding the most appropriate energy sources and LZC technologies for the development.

Where lifts are specified, an analysis of the transportation demand and usage patterns will be carried out to determine the optimum number and size of lifts. The energy consumption will be estimated using the appropriate standard and the system with the lowest energy consumption will be specified.

6.3 *Health and Wellbeing*

An indoor air quality plan will be produced with the objective of minimising indoor air pollution during occupation of the building.



Thermal modelling will be carried out during the design stage with the aim of providing appropriate levels of thermal comfort.

A suitably qualified security specialist will be appointed to conduct an evidence-based Security Needs Assessment (SNA). The purpose of the SNA will be to identify attributes of the proposal, site and surroundings which may influence the approach to security for the development.

6.4 *Transport*

A site-specific transport plan and assessment has been prepared for the site to encourage building occupiers to travel sustainably to the site, cyclist storage facilities will also be provided to encourage users to be less reliant on cars as a means of transport to and from the hotel.

The site is also located centrally and so close to shops and restaurants.

6.5 *Water*

The consumption of potable water will be reduced where possible including the specification of water efficient sanitary ware where possible.

To further reduce the consumption of water a water meter will be specified on the mains water supply. This will allow water consumption to be monitored and therefore better managed.

A leak detection system which can detect a major water leak on the utilities water supply, will be installed.

6.6 *Materials*

A building life cycle assessment will be carried out. This will help optimise the selection of products with a low environmental impact, including embodied carbon, over the life cycle of the building.

All timber and timber-based products used on the project are 'Legal' and 'Sustainable' as per the UK Government's Timber Procurement Policy (TPP).

A sustainable procurement plan will be used by the design team to guide specification towards sustainable construction products.

Protection measures will be incorporated into the building's design and construction to reduce damage to the building's fabric or materials in case of accidental or malicious damage occurring.



6.7 *Waste*

A pre-demolition audit of the existing buildings will be completed. This is to determine whether refurbishment or reuse is feasible and to maximise the recovery of material for subsequent high grade or value applications.

A Resource Management Plan will be developed covering the non-hazardous waste materials including demolition and excavation waste.

6.8 *Land Use and Ecology*

A suitably qualified ecologist has been appointed and carried out an ecology appraisal of the site to determine the ecological baseline of the site and identify possible measures to protect local ecology throughout construction and where possible enhance the ecological value of the site because of the development.

6.9 *Pollution*

A noise impact assessment has been prepared by a suitably qualified acoustic consultant and if applicable, noise attenuation measures will be specified.



7 Summary

This document summaries the relevant planning policies applicable to the development proposals and has set out how these proposals will respond the to the relevant policy requirements with justifications related to the specific sections. Focus on the sustainable approach was demonstrated with the adoption of energy efficient measures.

A review of how the development contributes to the sustainability related polices: SP1, CC4, CC8 and EN1-7 referenced the Local Plan. It was made aware in this sustainability statement that this project will show energy efficiency and overall improvement to the building which supports the Climate Change framework 2020-25 and Core Strategy Development Plan 2012-2027. An assessment of low carbon energy was undertaken of the site under the feasibility statement which indicated how ASHP for DHW and VRF technology would be utilised and helped to contribute to lowering carbon emissions. Furthermore, this allows the development to have its energy demand supplied for a clean fuel that will continue to become cleaner over time.

The building showed a 77% reduction in carbon from the baseline model, furthermore the Current design model showed an additional 8% reduction in carbon from the Approved Document L Compliant Model.

In conclusion, we consider that the project is in accordance with the planning polices and will provide a vibrant, sustainable and carbon efficient development within Manchester.



8 Appendix A

TABLE 2 - MODEL SETTINGS

	Baseline	Actual	
U - Values (w/m2.K)		Aparthotel	Commercial
External Wall			
Existing	0.26	0.26	0.26
New	0.26	0.2	0.2
Floor	0.18	0.18	0.18
Roof	0.18	0.18	0.18
Glazing New	1.6 (0.4 g)	1.6 (0.4g)	1.6 (0.4g)
Glazing Retained	3.2 (0.7g)	3.2 (0.7g)	3.2 (0.7g)
Mechanical Services			
DHW:	Gas Boiler	ASHP	Electric Heater
Storage (L):	2000	2000	100
SCOP:	0.93	4	1
Heating and Cooling	VRF	VRF	
Serving the bedrooms and FOH and Commercial Spaces			
SCOP:	2.5	5	
SEER:	4	5	
Heating and Cooling	Electric Radiators		
Serving BOH, WC's and stair cores			
Ventilation:	MVHR	MVHR	
SFP:	2.3	1.2	
Heat Recovery (%):	65	75	
Extract SFP:	0.4	0.4	
Serving Refuse, WC's, storerooms			
Electrical Services			
Lighting (lm/W)	95	100	



8.1 Current Development Design Model

BRUKL Output Document



Compliance with England Building Regulations Part L 2021

Project name

Oldham Street Manchester

As designed

Date: Tue Sep 06 15:10:51 2022

Administrative information

Building Details

Address: Manchester,

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.16

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.16

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

Certifier details

Name: Alan Geddis

Telephone number: 02890699720

Address: Unit 6 Forestgrove Business Grove,
Newtownbreda, BT8 6AW

Foundation area [m²]: 315.02

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	10.92
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	10.04
Target primary energy rate (TPER), kWh/m ² .annum	118.2
Building primary energy rate (BPER), kWh/m ² .annum	108.68
Do the building's emission and primary energy rates exceed the targets?	BER <= TER BPER <= TPER

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	138.84	109.36
Primary energy [kWh/m ²]	108.68	118.2
Total emissions [kg/m ²]	10.04	10.92

FIGURE 15 – DESIGN MODEL BRUKL



8.2 Current Development design run in 2010 Part L Regulations

BRUKL Output Document



HM Government

Compliance with England and Wales Building Regulations Part L 2010

Project name

Oldham Street Manchester

As designed

Date: Mon Aug 08 16:16:07 2022

Administrative information

Building Details

Address: Manchester,

Certification tool

Calculation engine: Apache

Calculation engine version: 6.4.0.16

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 6.4.0.16

BRUKL compliance check version: v4.1.h.0

Certifier details

Name: Alan Geddis

Telephone number: 02890699720

Address: Unit 6 Forestgrove Business Park,
Newtownbreda, BT8 6AW

Criterion 1: The calculated CO₂ emission rate for the building should not exceed the target

1.1	CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	53.1
1.2	Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	53.1
1.3	Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	39
1.4	Are emissions from the building less than or equal to the target?	BER =< TER
1.5	Are as built details the same as used in the BER calculations?	Separate submission

Energy & CO₂ Emissions Summary

	Actual	Indicative Target
Heating + cooling demand [MJ/m ²]	130.12	161.87
Primary energy* [kWh/m ²]	220.05	306.2
Total emissions [kg/m ²]	39	53.1

FIGURE 16 – DESIGN MODEL RUN IN 2010 PART L REGULATIONS BRUKL



8.3 Baseline Model

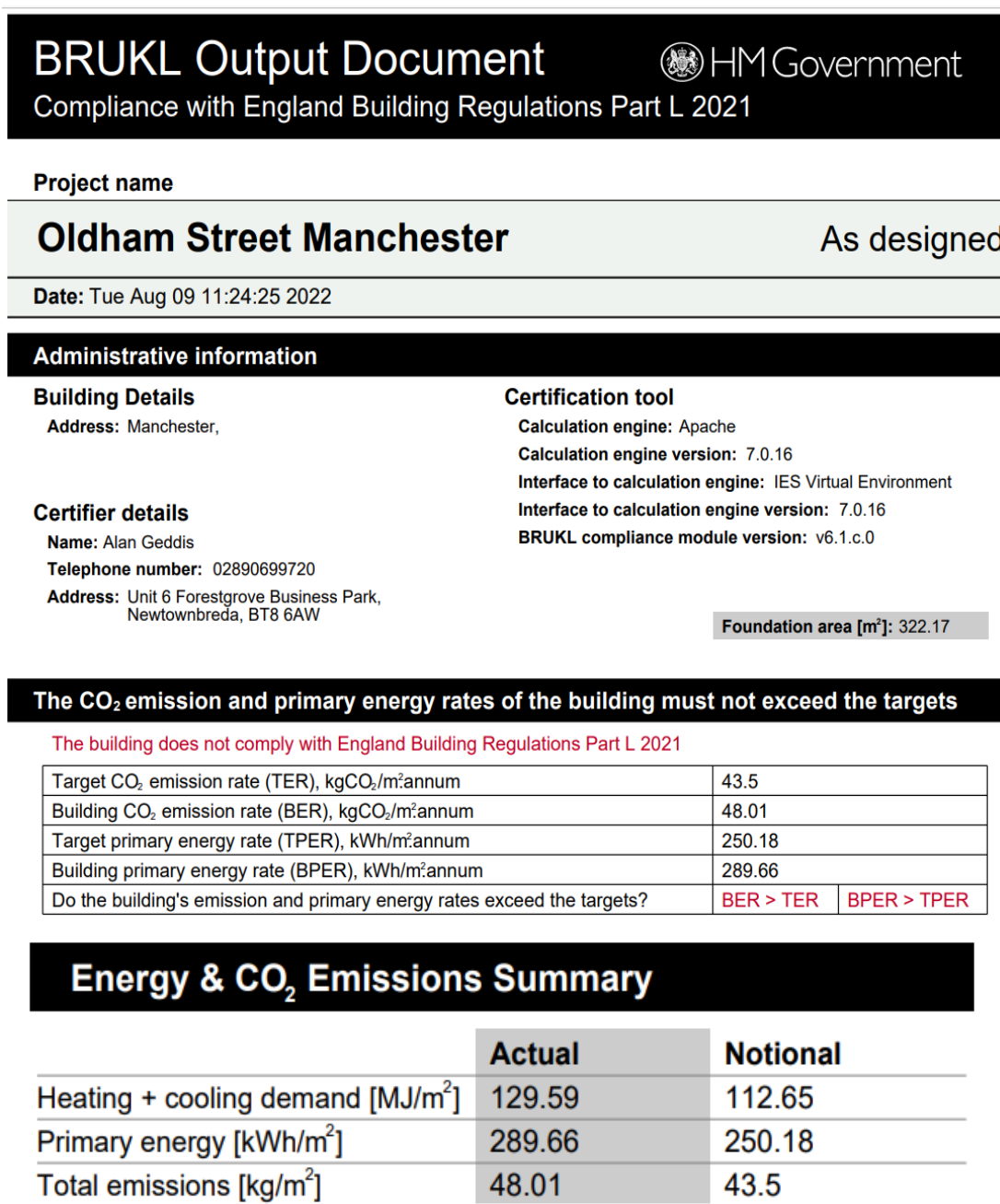


FIGURE 18 – BASELINE MODEL BRUKL