HOARE LEA

The Poulton.
Manchester.
Mayfield Poulton Limited.

SUSTAINABILITY
STAGE 3 REVISIT REPORT – PART L

REVISION P01 – 18 MARCH 2026

STAGE 3

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
P00	13/03/2026	Stage 3 Redesign Draft	J. Daoud	K. Krasowska	J. Nuttall
P01	18/03/2026	Stage 3 Redesign Issue	J. Daoud	K. Krasowska	J. Nuttall

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Executive summary.

This report has been prepared by Hoare Lea on behalf of U+I (hereafter referred to as 'the Applicant') in order to assess the Part L2021 compliance for the 'Proposed Development' in Stage 3 Redesign.

The Proposed Development.

The proposals seek to utilise the previously cleared industrial site for the construction of a 11-storey office building plus rooftop amenity space of sustainable construction and high-quality design. The building will offer flexible office accommodation which will meet the needs of a range of tenants and also provide basement to ground floor commercial uses which will activate the ground floor frontage creating a unique arrival experience.

Policy, regulations and drivers.

With respect to energy and carbon performance, this project must comply with the following policies and regulations.

National drivers: Approved Document Part L.

Part L of the Building Regulations is the mechanism by which the government is driving reductions in regulated CO_2 emission from new buildings. The Proposed Development has been assessed in accordance with the criteria set out in Part L, Volume 2 2021, which came into force in June 2022.

Planning policy.

The Manchester Core Strategy Policy EN6 states that all other non-residential developments over 1,000m^2 will be expected as a minimum to meet the following targets (*unless this can be shown not to be viable*):

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	+ 10% increase on Part L 2010
Target 3; Micro Generation Area	+ 15% increase on Part L 2010

Table 1 CO_2 Emission Reduction Targets, Manchester Core Strategy

The Current Manchester Core Strategy 2012 requires the building to use BREEAM but does not stipulate a rating. This project is targeting BREEAM UK Offices New Construction 2018 rating of Excellent (shell and core).

Places For Everyone Joint Development Plan was adopted in 21st March of 2024 and applies to developments within Manchester and surrounding areas. The policy document extends until 2039 and seeks to deliver sustainable and inclusive growth in the North region. Policy JP-S2, which is applicable to the Energy Strategy, stipulates the Net Zero Carbon target for Greater Manchester by 2038. The key measures set out in this policy are listed below:

- Minimise energy demand
- Maximise energy efficiency
- Use renewable energy
- Use low carbon energy
- Utilise other energy sources

Please refer to Section 4 of this report which expands on each measure and how it is met throughout the design of the development.

Part L2 Assessment.

The following table provides a summary of the energy strategy for the Proposed Development.

Table 2: Energy strategy summary.

Part L 2021	23.8% regulated CO_2 emissions improvement over Part L 2021 Through passive design, robust fabric, efficient systems and heat pump technologies, the Proposed Development will seek to generate a 23.8% reduction in regulated CO_2 as a minimum to the Part L 2021 Target emissions.
	24.8% regulated primary energy improvement over Part L 2021 The Proposed Development will seek to achieve a 24.8% reduction in Building Primary Energy Efficiency over current Part L 2021 building regulations target.

It has been shown that, The Part L2021 Building Regulations requirements have been met for the Proposed Development.

1. Introduction.

This report has been prepared by Hoare Lea on behalf of Mayfield Poulton Ltd (hereafter referred to as 'the Applicant') in order to assess the Part L2021 compliance for the Mayfield Poulton, otherwise referred to as 'Proposed Development' in Stage 3 Redesign.

Amendments proposed to the Poulton project include the overall building height, massing, and internal layout. The footprint of the building is being extended, with major reconfiguration of the basement, and an additional storey being included in the middle volume of the building to increase the amount of the floorspace.

1.1 The proposed development.

The Proposed Development will provide open plan office spaces allowing spatial flexibility for the tenants. The development will contain one ground floor retail unit to be leased to future tenants (with additional flexible unit adjacent to Main Foyer). The building's core will provide vertical transport, circulation, WC blocks and cleaners cupboards. The extent of the fit-out will include full HVAC, lighting and DHW services to both landlord and tenant spaces. The equipment will utilise high efficiencies to reduce energy consumption, and consequently, CO_2 emissions as far as possible.

Area schedule

Table 2 sets out area schedule for the development that has been used to inform the energy strategy.

Table 3: The GIA of the Proposed Development.

Building	Total Gross Internal Area (GIA)*
Mayfield Poulton	13,312 m^2

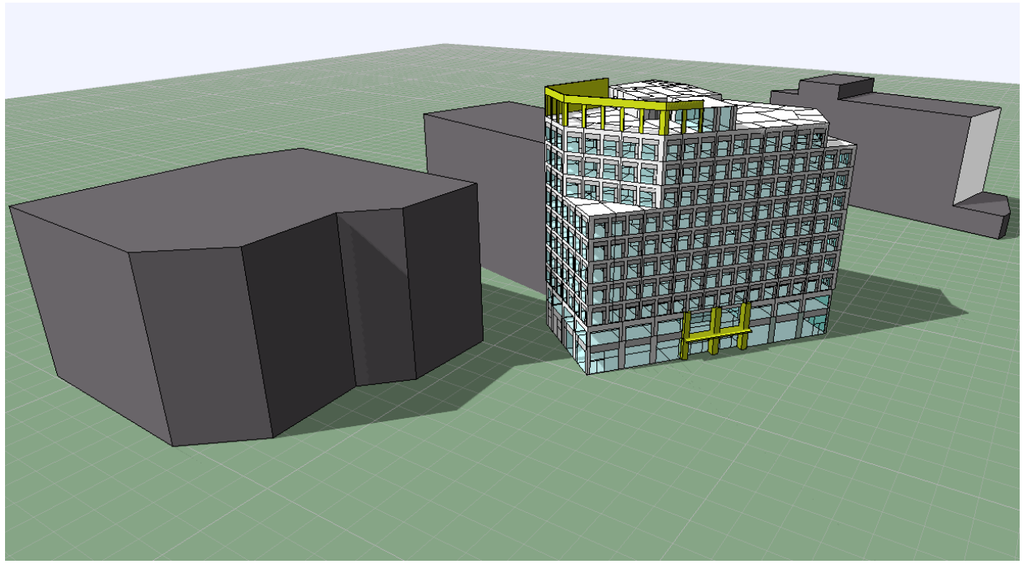


Figure 3: IES Model of the Proposed Development.

1.2 Approach to the statement.

This Energy Statement proposes recommendations regarding the approach to reducing carbon dioxide (CO_2) emissions and optimising energy efficiency within the development. This statement summarises the pertinent regulatory and planning policies applicable to the Proposed Development, and sets targets commensurate with these policies, which the Proposed Development will seek to achieve.

1.3 Definitions and limitations.

Definitions:

The following definitions should be understood throughout this statement:

- **Energy demand:** the 'room-side' amount of energy that must be input into a space to achieve comfortable conditions. In the context of space heating, this is the amount of heat that is emitted by a radiator, or other heat delivery mechanism.
- **Energy requirement:** the 'system-side' requirement for energy (fuel). In the context of a space heating system using a gas boiler, this is the amount of energy combusted (e.g. gas) to generate useful heat (i.e. the energy demand).
- **Regulated CO_2 emissions:** the CO_2 emissions emitted as a result of the combustion of fuel, or 'consumption' of electricity from the grid, associated with regulated sources (those controlled by Part L of the Building Regulations).

Limitations:

The appraisals within this statement are based on benchmark Part L data from similar developments and should not be understood as a predictive assessment of likely future energy requirements or otherwise. Occupants may operate their systems differently, and / or the weather may be different from the assumptions made by Part L approved calculation methods, leading to differing energy requirements.

2. Assessment Methodology.

The Proposed Development has been assessed using The National Calculation Methodology to demonstrate compliance with Building Regulations Part L2 (2021). The following is a summary of the data used and inputs/ assumptions made.

2.1 Site context

The site is located close to Piccadilly Station, Manchester and features good transport links due to its city centre location.

The Mayfield site has been earmarked for a mix of Residential, Office and Commercial development, with Manchester's first Public City Centre Park central to the design.

Figure 1: Location of the Mayfield Plot O development shown on the existing site and against the proposed wider site-plan.

Architectural drawings.

The geometry used to assess Proposed Development was determined by the following information received from Bennett Associates on 17/02/2026.

Table 4: Architectural Information.

Source	Data Type	Description	Revision	Date Received
Bennetts Associates	Revit Model	0196_MAY-BA-O01-ZZ-M3-A-0001_P13	P13	13/02/26
	PDF	0196_MAY-BA-O01-00-DR-A-20-100L P07	P05	17/02/2026
		0196_MAY-BA-O01-01-DR-A-20-101M P06		
		0196_MAY-BA-O01-02-DR-A-20-102 P05		
		0196_MAY-BA-O01-07-DR-A-20-107 P01		
		0196_MAY-BA-O01-09-DR-A-20-109 P07		
		0196_MAY-BA-O01-10-DR-A-20-110 P04		
		0196_MAY-BA-O01-BB-DR-A-20-220 P02		
		0196_MAY-BA-O01-EE-DR-A-20-320 P07		
		0196_MAY-BA-O01-NN-DR-A-20-310 P07		
		0196_MAY-BA-O01-SS-DR-A-20-325 P03		
		0196_MAY-BA-O01-SS-DR-A-20-330 P07		
		0196_MAY-BA-O01-WW-DR-A-20-340 P07		
		0196_MAY-BA-O01-ZZ-DR-A-20-210 P05		

2.2 Site location and weather data.

A building's thermal performance is its response to external environmental conditions. The more dependant a building is on passive features to achieve acceptable internal comfort, the more important the use of external weather information becomes.

Climate data is assigned to the virtual environment of the dynamic model to simulate external weather conditions that are likely to occur.

The UK Meteorological Office (MO) collects weather data at stations across the UK. Climate variables measured at hourly intervals include air temperatures, wind speed and direction and air pressure etc.

CIBSE licenses the historic weather data from the MO for 14 locations in the United Kingdom: Belfast, Birmingham, Cardiff, Edinburgh, Glasgow, Leeds, London (3 sites), Manchester, Newcastle, Norwich, Nottingham, Plymouth, Southampton and Swindon.

The weather variables used for the Part L compliance model, as set out in the ADL 2021 document, is the Test Reference Year (TRY) 2016.

The TRY is composed of 12 separate months of data each chosen to be the most average month from the collected data. The TRY is used for energy analysis and for compliance with the UK Building Regulations (Part L).

The CIBSE weather file location selected for the proposed development is Manchester.

3. Policy drivers.

The following section outlines the national and local policies and drivers.

3.1 National drivers.

3.1.1 Building Regulations Part L2 2021.

Approved Document Part L (2021, England edition) is the Building Regulations relating to the conservation of fuel and power in buildings. The Approved Document is separated into two sections: Volume 1 and Volume 2:

- Part L Vol.1 relates to dwellings specifically, with individual criteria for this building-use type.
- Part L Vol.2 relates to buildings other than dwellings 'Conservation of fuel and power in buildings other than dwellings' and sets out specific criteria for this building use type.

Schedule 1: Conservation of Fuel and Power.

Schedule 1 of the Building Regulations Part L states that reasonable provisions shall be made for:

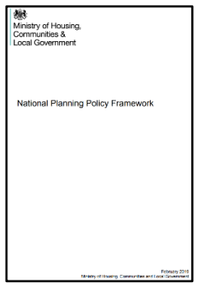
- Limiting Heat Gains and Losses through:
  - Thermal elements and other parts of the building fabric; and
  - Pipes, ducts and vessels used for space heating, space cooling and hot water services.
- Providing fixed building services which are:
  - Energy Efficient;
  - Have effective controls; and;
  - Are commissioned by testing and adjusting as necessary to ensure they use no more fuel and power then is reasonable in the circumstances

Developments should aim to at least meet the limiting values for system and fabric requirements in order to better the Building Emission Rate set by a notional building which uses standardised inputs based on the system and fabric design of each building.

Part L (2021) Conservation of Fuel and Power.

With the release of the update to the Part L of Building Regulations in December 2021, the newest iteration is applicable to all developments commencing work after June 2022 which did not submit an initial notice.

3.1.2 National Planning Policy Framework.



The National Planning Policy Framework (NPPF) was first published in on 27 March 2012 and most recently updated in February 2025. The updated NPPF has superseded all Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) documents, with the exception of PPS10 (Waste). The NPPF sets out the Government's strategy on the delivery of sustainable development.

The NPPF states that there is a presumption in favour of sustainable development.

The following is extracted from paragraph 8 of the NPPF:

"Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways:
an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;

- a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- *an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*

Furthermore, in relation to energy policy, paragraph 161 sets out that:

"The planning system should support the transition to net zero by 2050 and take full account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. It should help to:

- shape places in ways that contribute to radical reductions in greenhouse gas emissions,
- *minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings;*
- *and support renewable and low carbon energy and associated infrastructure."*

In respect of energy policy contained within the NPPF, paragraphs 162 to 167 set out that:

- 162. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating and drought from rising temperatures. Policies should support appropriate measures to ensure the future health and resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

- *163. The need to mitigate and adapt to climate change should also be considered in preparing and assessing planning applications, taking into account the full range of potential climate change impacts.*

- *164. New development should be planned for in ways that:*
  a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through incorporating green infrastructure and sustainable drainage systems; and

  b) help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings in plans should reflect the Government's policy for national technical standards.

- 165. To help increase the use and supply of renewable and low carbon energy and heat, plans should:
  a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, and their future re-powering and life extension, while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts);

  b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

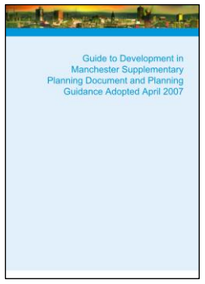
c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for colocating potential heat customers and suppliers.

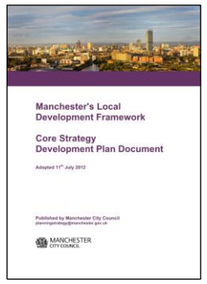
– 166. In determining planning applications, local planning authorities should expect new development to:
a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.

167. Local planning authorities should also give significant weight to the need to support energy efficiency and low carbon heating improvements to existing buildings, both domestic and non-domestic (including through installation of heat pumps and solar panels where these do not already benefit from permitted development rights). Where the proposals would affect conservation areas, listed buildings or other relevant designated heritage assets, local planning authorities should also apply the policies set out in chapter 16 of this Framework. Local policy drivers.

3.1.3 Local Planning Policy





Manchester City Council (MCC) documentation:

– Core Strategy (CS) (amended 2024)
– Supplementary Planning Documentation and Planning Guidance (SPDPG) (April 2007)

This strategy summarises the response of the proposed development's design to the policy framework of the MCC Adopted Core Strategy, and SPDPG documentation that together form the city's policy landscape. The CS documentation supersedes the SPDPG and therefore the CS documentation will take precedence.

3.1.4 Manchester Climate Change Framework (2020-2025)

The Manchester Climate Change Framework 2020-25 is the city's high-level strategy for tackling climate change, formally endorsed by Manchester City Council in March 2020. This document remains relevant because it is the framework that builds on the Manchester Zero Carbon Framework 2020-2038 which currently is in draft form.

The aim of the framework is stated as: *'Manchester will play its full part in limiting the impacts of climate change and create a healthy, green, socially just city where everyone can thrive.'*

It identifies four objectives we need to meet by 2025.

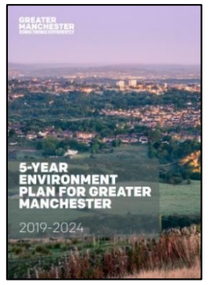
– Objective 1 – Staying within our carbon budgets
– Objective 2 – Climate adaptation and resilience
– Objective 3 – Health and wellbeing
– Objective 4 – Inclusive, zero carbon climate resilient economy

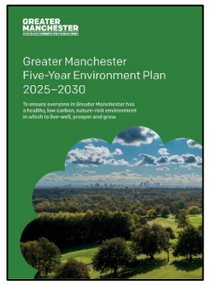
Six priority areas for action have been identified as follows:

– 1. Buildings (existing and new)
– 2. Renewable energy
– 3. Transport and flying
– 4. Food
– 5. The things we buy and throw away
– 6. Green infrastructure and nature-based solutions

The 2022 Update was a response to the city not being on track to stay within its carbon budget by 2025 and aimed to provide more detailed targets for different sectors and different types of energy use in buildings and ground transport to help guide increased action.

3.1.5 5-Year Environment Plan for Greater Manchester





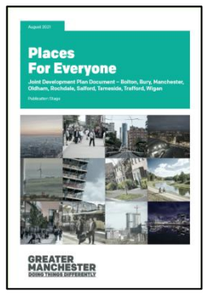
The Greater Manchester Combined Authority (GMCA) set an ambitious target to be a zero-carbon city by 2038. As part of this plan, the Greater Manchester Spatial Framework sets out plans for all new development to be zero carbon by 2028.

Included in the five-year plan, are amongst others; increasing local renewable electricity generation, increasing the diversity and flexibility of energy supply and decarbonising how buildings are serviced. These items encourage passive design and a shift away from fossil fuels to service buildings. The five-year plan also notes that new developments should seek to generate 20% onsite renewable energy generation.

Additionally, the strategy includes a clean air plan to help tackle poor air quality – safeguarding Manchester residents from high levels of Nitrogen Dioxide (NO_2).

With first version released in 2019, the five-year plan has been updated in December 2024. Based on the lessons learnt, the new plan adopted challenging but achievable targets for the next 5 years replacing the fixed carbon budget approach. This was, the progress can be regularly monitored and reported upon.

3.1.6 Places for everyone



Places for Everyone is a long-term plan of nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan) for jobs, new homes, and sustainable growth. The plan, adopted in March 2024 is the result of a process that began with the publication of the first Greater Manchester Spatial Framework in 2016 and has been informed by the feedback received from residents, businesses, and the development industry.

The plan addresses the sustainable integration of all new into Greater Manchester's transport network or supported by new infrastructure.

As a part of the 'Places for everyone' plan, the following sustainability policies have been included.

– JP-S1: Sustainable development
– JP-S2: Carbon and energy
– JP-S3: Heat and energy networks
– JP-S6: Resource efficiency
– JP-G8: A net enhancement of biodiversity and geodiversity
– JP-P1: Sustainable places
– JP-C1: An integrated network
– JP-C8: Transport requirements of new development

4. Places for Everyone Energy Hierarchy.

This energy strategy document has been prepared in response to the Places For Everyone Joint Development Plan, Policy JP-S2, which stipulates the Net Zero Carbon target for Greater Manchester by 2038. The above target is supported by the measures described in the following sections.

4.1 Minimise energy demand

Passive design and energy efficiency measures form the basis for the reduction in overall energy demand and carbon emissions for the Proposed Development. The design intent is to reduce the energy demand initially by optimising the envelope and building services.

The Design Guidance for Net Zero is to be used in conjunction with Greater Manchester Combined Authority (GMCA) policies. It acts as a supporting document to the PFE and can be utilised to address policy JP-S2 section (5) 'Net Zero operational carbon' which sets out the energy hierarchy targets discussed in this section of this document.

The Design Guidance for Net Zero contains a space heating demand limit for major developments over 1,000m^2. The proposed development's GIA is greater than 1,000m^2 therefore this condition is fulfilled and the limit is applicable.

The table below displays the space heating demand limit against the proposed development's space heating demand. The comparison concludes that the propose development meets the target.

Table 5: Space Heating Demand Target Comparison.

Design Guidance for Net Zero	Proposed Development
15 kWh/m^2/year	13.8 kWh/m^2/year*

*This figure is based on the NIA taken from the DSM model 9,689m^2.

4.1.1 Passive Design

Passive design measures are those which reduce the demand for energy within buildings, without consuming energy in the process.

4.1.2 Fabric performance

The Proposed Development will benefit from an efficient thermal envelope. Heat losses and gains will be controlled by the optimisation of the fabric i.e. ensuring appropriate levels of glazing to control winter heat loss and summer heat gain. Reducing the thermal transmittance of the building envelope where appropriate will help to reduce both heating and cooling requirements and result in lower energy requirements.

The following table provides a summary of the building fabric specification used in this analysis.

Table 6: Fabric Performance.

Parameter	Proposed values
Fabric Air Permeability (m3/m2.h @ 50Pa)	3.00
External Wall U-value (W/m^2.K)	0.26 (precast concrete panels) (Type C/D/F) 1.10 (unitised wall system)* (Type A1)
Exposed Floor U-value (W/m^2.K)	0.15
Roof U-value (W/m^2.K)	0.12
Glazing U-value (W/m^2.K) (glazed doors / windows)	1.10 (Type A1) 1.40 (Type B1/B2)
Glazing g-value	0.28
Solid Door (W/m^2.K)	1.20
Thermal bridges	Heat loss through thermal bridges to be minimised as far as reasonably possible during construction. The model assumes alpha value of 25%.
Basement	
External Wall (W/m^2.K)	0.15
Ground Floor (W/m^2.K)	0.15
Thermal bridges	Heat loss through thermal bridges to be minimised as far as reasonably possible during construction. The model assumes alpha value of 25%.

*Including all solid and glazed elements, as well as side and top panels.

4.2 Maximise Energy Efficiency.

Systems with high delivery efficiencies have been specified wherever possible. Appendix C summarises the system inputs for Part L modelling.

4.3 Use Renewable Energy.

The Proposed Development will generate renewable energy on-site through the use of roof-mounted PV panels. A circa 221m^2 array of photovoltaic panels, which can generate ~38,107kWh/year, has been proposed for the site, offering substantial CO_2 emission reductions.

The design team is currently exploring options to further maximise the renewable energy use on site by utilising the roof of the top floor amenity space accommodating additional 39m^2 of PV array. This is discussed alongside the outcomes of the undergoing NABERS assessment. The yearly energy production from the additional PV array has been estimated to reach 6,391kWh/year and increase the margin to 25.4% beyond the BER and 26.4% beyond the BPER.

The Design Guidance for Net Zero requires the PV to be reported using the metric 'percentage of footprint' or '%fp' of the building. When using the original PV area of 221m^2, this has been calculated to be 17%fp whereas when using the additional 39m^2 PV (totalling of 260m^2), this amounts to 20%fp.

4.4 Use low carbon energy.

The Proposed Development is an all-electric scheme, set to supply heating, cooling and domestic hot water through Variable Refrigerant Flow (VRF) and integrated air source heat pumps (ASHP). This meets the requirements set out in supporting document Design Guidance for Net Zero which requires a fossil fuel free development. Further to this, the EUI target set out in the supporting document is addressed in detail in the NABERS assessment Ref. [5300025-HLE-XX-XX-RP-ST-354056-Rev01].

VRF and ASHPs are a low carbon technology which offer a high output of energy for every kW put in, maximising energy efficiency and considerably reducing CO_2 emissions.

Having an all-electric scheme also benefits from the decarbonisation of the national grid which is expected to be fully net zero by 2035. Please refer to Appendix A which gives a more insightful view of the national grid, the decarbonisation strategy, the national grid's carbon factors and how this affects Part L assessments.

5. Part L2 results.

The proposed development will utilise air source heat pumps to providing the heating, cooling, and hot water. Photovoltaics are also included, located on the roof of the building to provide an assumed array of 221m^2. A full summary of the calculation parameters are detailed in Appendix C.

The below table summarises the regulated loads for Part L2 compliance.

Table 7: Energy Use Breakdown.

	Actual (kWh/m^2)	Notional (kWh/m^2)
Heating	3.53	1.30
Cooling	3.57	4.31
Auxiliary	2.57	6.36
Lighting	10.83	13.63
Hot water	3.77	2.75
Solar PV	3.16	0.13

Building Emission Rate.

The table below shows the results for the Building Emission Rate (BER) in comparison to the Target Emission Rate (TER) for the Proposed Development.

Table 8: Savings over Part L 2021.

Part L 2021 Building regulations	Building CO_2 Emission rate regulated (kgCO_2/m^2/yr.)	Target CO_2 Emission rate regulated (kgCO_2/m^2/yr.)	Savings (%)
Office	2.87	3.78	24.1%
Retail	3.4	3.93	13.5%
Whole site	2.88	3.78	23.8%

It is anticipated that up to a 23.8% whole site reduction in CO_2 emissions will be achieved beyond the Building Regulations Part L 2021 Target emissions with the combined use of ASHPs and PV array, as shown in the graph below.

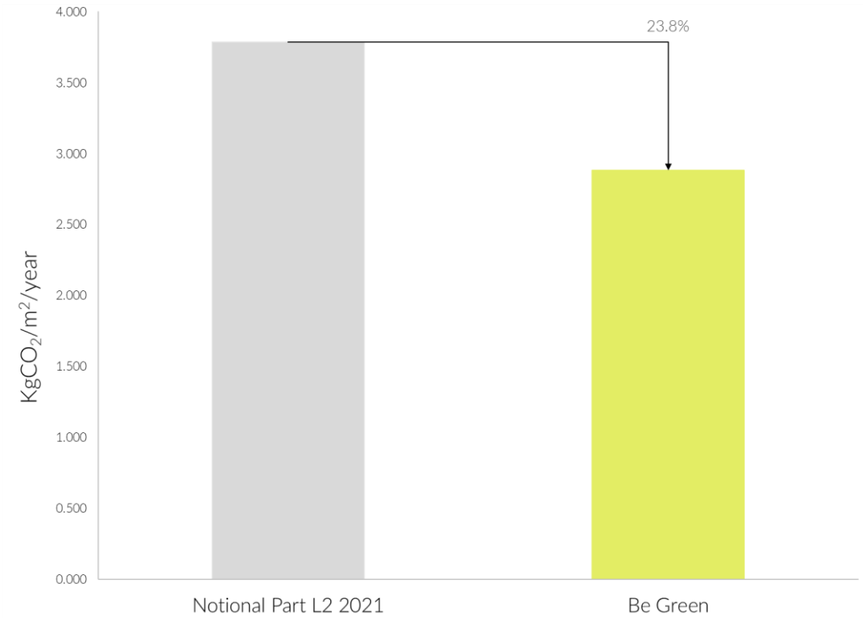


Figure 6: Building Emission Rate betterment over the notional.

5.1 Primary Energy Rate.

Measuring the Dwelling Primary Energy Rate against the notional Target is a new criterion of the Part L 2021 methodology and to comply, energy use intensity must be minimised as much as reasonably possible.

The table below shows the results of the Building Primary Energy Rate (BPER) in comparison to the Target Primary Energy rate (TPER) for the Proposed Development.

Table 9: Savings over Part L 2021.

Part L 2021 Building regulations	Building Primary Energy Rate (kWh/m_2/year)	Target Primary Energy Rate (kWh/m_2/year)	Savings (%)
Office	31.12	41.5	25.0%
Retail	35.95	42.83	16.1%
Whole site	31.24	41.53	24.8%

It is anticipated that up to a 24.8% whole site reduction in primary energy rate will be achieved beyond the Building Regulations Part L 2021 Target emissions, as shown in the graph below.

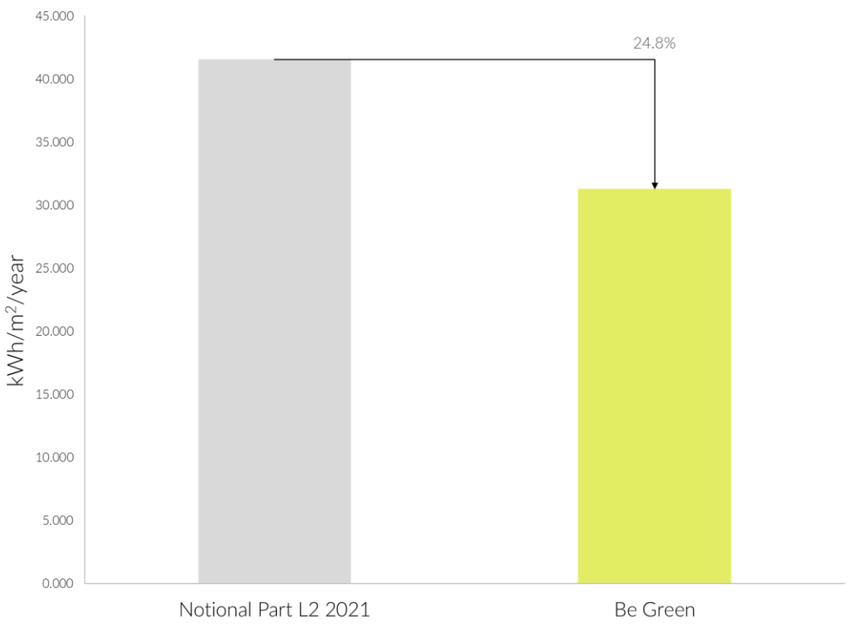


Figure 7: Building Primary Energy Rate compliance betterment over the notional.

6. Conclusion.

This report has been prepared to assess Part L2 2021 compliance at the Stage 3 Revisit for the Mayfield Poulton project. The strategy has been developed to benefit from onsite heat pumps for a high performing building and has roof-mounted PV panels for on-site renewable energy generation.

6.1.1 Part L2 Results.

The tables below show the results for the carbon savings over Part L 2021.

	Building CO_2 Emission rate regulated ($kgCO_2/m^2/yr.$)	Target CO_2 Emission rate regulated ($kgCO_2/m^2/yr.$)	Savings (%)
Office	2.87	3.78	24.1%
Retail	3.4	3.93	13.5%
Whole site	2.88	3.78	23.8%

Table 8: Summary of carbon emissions for the Proposed Development, using Part L 2021.

	Building Primary Energy Rate (kWh/m_2/year)	Target Primary Energy Rate (kWh/m_2/year)	Savings (%)
Office	31.12	41.5	25.0%
Retail	35.95	42.83	16.1%
Whole site	31.24	41.53	24.8%

Table 9: Summary of the primary energy ratings for the Proposed Development, using Part L 2021.

Therefore, Building Regulations and local plan requirements have been met for the Proposed Development.

6.1.2 EPC results

The table below shows the results of a sample Level 09 office floor.

Location	Band	Asset Rating
Level 09 Tenant 1	A	13

6.2 Outcomes.

It is anticipated that up to a **24.1%** reduction in CO_2 emissions will be achieved beyond the Building Regulations Part L 2021 Target emissions with the combined use of VRF and PV array.

The PV area of $221m^2$ will generate approximately 38,107kWh, however the PV performance specs are based on the compliance defaults for photovoltaic performance which can be found in Table 11 Renewables.

A sample EPC was produced for the uppermost office floor on Level 09. The results showed that the 9^{th} Floor, Tenant 1, will yield an EPC Band A and an Asset Rating of 13. This complies with the Landsec's Sustainability Development Toolkit target of EPC A for offices >$1,000m^2$.

Appendix A: Grid decarbonisation.

The carbon factor of the National Grid – the amount of carbon dioxide released per kilowatt hour of electricity generated and distributed, has slowly been decreasing on record since the public availability of data in 2002. With the increase of renewable technologies being connected to the grid, by 2019, greenhouse gas emissions from electricity generation had fallen by 71% since 1990. This decarbonisation has led to the average carbon factor of gas surpassing that of electricity for the first time in 2020[1].

With the UK Government declaring a climate emergency, the Net Zero Carbon Agenda has taken precedent, with an ambition to achieve Net Zero Carbon in operation by 2050. In 2021, a commitment was made to ensure that the 'electricity power system' would be fully decarbonised by 2035 in order to reduce reliance on fossil fuels and exposure to global wholesale energy prices. At present, 39.1% of the UK's generation sources are from renewable sources[2].

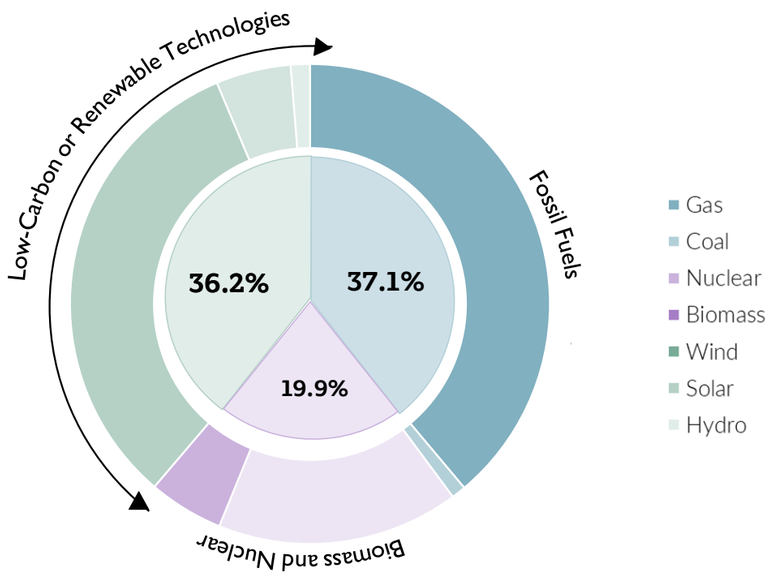
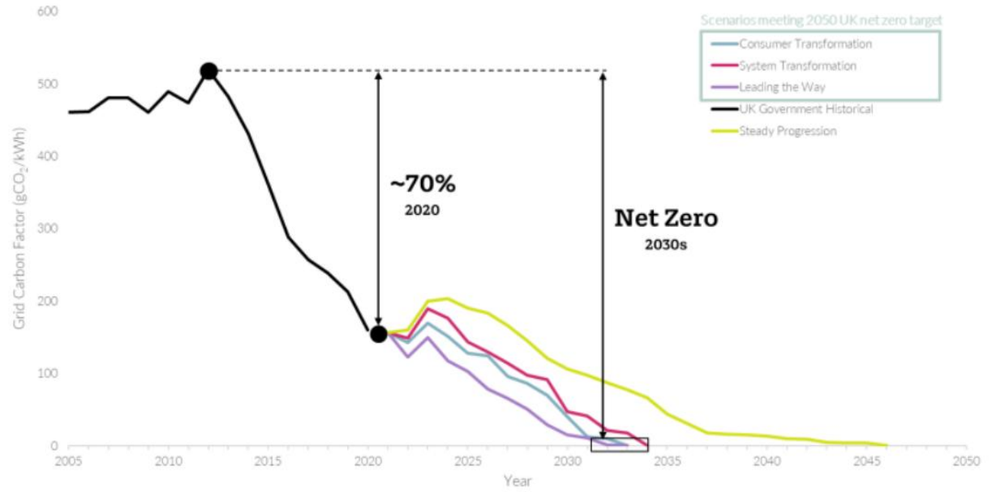


Figure 8: UK Energy Mix October 2023 (Source: National Grid iamkate.com).

Part L 2021 has taken advantage of this reduction in carbon content of the electricity supply and decreased the standardised factor from 0.519 in Part L 2013 to an average of 0.136 for use in assessments. This has resulted in all-electric strategies now being favoured over gas-led schemes.

Figure 9: Grid Decarbonisation Factors from BEIS Future Energy Scenarios.



6.2.1 Carbon factors.

The updated Part L 2021 document uses the SAP 10.2 carbon factors. This assesses the emission rate using a different fuel factor for each month of the year depending on the average fuel mix seen to be accessible within that month.

Colder months are seen to have a higher carbon factor due to numerous items, most notably the reduction in available Photovoltaic power, and the introduction of more fossil fuel sources to help manage the increased energy demand from heating.

Table 10: Carbon factors comparison.

Month	Carbon Factor $kgCO_2/kWh$	Month	Carbon Factor $kgCO_2/kWh$
January	0.163	July	0.111
February	0.160	August	0.112
March	0.153	September	0.122
April	0.143	October	0.136
May	0.132	November	0.151
June	0.120	December	0.163

[1] Plans unveiled to decarbonise UK power system by 2035 (BEIS, 2021): https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035

[2] Britain's Electricity Explained: 2022 Review (National Grid ESO, 2023): https://www.nationalgrideso.com/news/britains-electricity-explained-2022-review

Appendix B: Dynamic Simulation Modelling.

A dynamic simulation model was created to assess the design.

Integrated Environmental Solutions Virtual Environment (IESve) is a Dynamic Simulations Modelling (DSM) software package that has the capabilities of enabling the user to create a virtual representation of a building.

The results presented in this report were calculated using the approved compliance software IESve 2024, (v2024.1.1.0).

Modelling disclaimer.

It should be noted that the data generated by this work is obtained using computer simulations. These simulations are the best means of predicting the performance of the building at this stage. Full certainty can only be achieved by measuring the performance of the building and associated systems after a period of use. It was made sure that the thermal model is as close to possible to the design. However, some simplifications were made to avoid any unexpected errors in the thermal calculations in lieu of the complex nature of the building design.

The actual performance and/or energy usage for the building once occupied may vary from the calculated values submitted to Building Control. These differences will occur due to several variable parameters between the modelled building and the actual building. Such differences will include the hours, levels of occupancy, how the plant is used and the design criteria with regards to how the rooms are environmentally controlled.

Whilst the simulations have been undertaken in good faith using reasonable skill and care, Hoare Lea can take no responsibility for differences between the computer simulations and the actual performance of the completed building due to the inherent complexity and variability of the physics in a building and its environment.

This section provides details of the Suitably qualified energy modeller involved in these works.

This is defined as an individual who:

- Holds a degree or equivalent qualification in building services or a sustainability related subject
- Has a practical experience of conducting energy modelling and has appropriate knowledge of the tool being used, e.g. has attended training by independent providers.
- Is a member of a professional body such as CIBSE.

Relevant qualifications	
Name	Ian Andrews
EA Number	176847
Organisation	Hoare Lea LLP

Appendix C – Part L Modelling Inputs.

System summary.
Table 11: System Inputs

	01A- C Landlord VRF, HRU	01-VRF, AHU 1	02-VRF, AHU 2	03-Elec Rad | Nat Vent	05-Elec Rad | AHU	06- DX Cooling Only | HRU	07-VRF Tenant, HRU Tenant
System type	Variable Refrigerant flow	Variable Refrigerant flow	Variable Refrigerant flow	Other Local Room Heater - Unfanned	Other Local Room Heater - Unfanned	Single Room Cooling System	Variable Refrigerant flow
Heating source	ASHP	ASHP	ASHP	Direct Electric	Direct Electric	ASHP	ASHP
Heating fuel	Elec	Elec	Elec	Elec	Elec	Elec	Elec
Heating efficiency	3.50	3.50	3.50	1.00	1.00	-	3.50
Cooling System type	ASHP	ASHP	ASHP	-	-	ASHP	ASHP
Cooling Fuel	Elec	Elec	Elec	-	-	Elec	Elec
Cooling Seasonal Energy Efficiency Ratio (SEER)	5.62	5.62	5.62	-	-	4.20	5.62
Cooling Nominal Energy Efficiency Ratio (EER)	3.92	3.92	3.92	-	-	4.20	3.92
Ductwork Leakage tested	Yes - Class B	Yes - Class B	Yes - Class B	-	Yes - Class B	Yes - Class B	Yes - Class B
AHU CEN Leakage Standards	Class L3	Class L3	Class L3	-	Class L3	Class L3	Class L3
AHU Specific Fan Power	Refer to next table	Refer to next table	Refer to next table	-	Refer to next table	Refer to next table	Refer to next table
Pump Type	-	-	-	-	-	-	-
System Metering	Yes	Yes	Yes	-	Yes	Yes	Yes
Out of Range warning	Yes	Yes	Yes	-	Yes	Yes	Yes
Ventilation Type	Central Balanced A/C Mech	Central Balanced A/C Mech	Central Balanced A/C Mech	-	Central Balanced A/C Mech	Central Balanced A/C Mech	Central Balanced A/C Mech
Heat Recovery	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger	-	Plate Heat Exchanger	Plate Heat Exchanger	Plate Heat Exchanger
Seasonal Efficiency	Refer to next table	Refer to next table	Refer to next table	-	Refer to next table	Refer to next table	Refer to next table
System Controls	Y	Y	Y	-	Y	Y	Y
Demand Controlled Ventilation (DCV)	Demand Control based on Gas sensors where applicable	Demand Control based on Gas sensors where applicable	Demand Control based on Gas sensors where applicable	-	None	-	Demand Control based on Gas sensors where applicable
DCV Airflow Regulation	Speed Control	Speed Control	Speed Control	-	Speed Control	-	Speed Control
Zones served	GF Security Control room and Staff Office (HRU01), GF Main Foyer (HRU 02), L09- Event room (HRU Roof)	Office Tenant 1	Office Tenant 2	L00 Stairs, L10 Stairs	Lift Lobby, FF Lobby, Toilet, Shower (AHU03)	Basement Comms Room (HRU Basement) L00 Comms Room, Main Equipment Room (Nat Vent)	GF Retail (HRU Tenant)
Heating Radiant Fraction	0.00	0.00	0.00	0.50	0.50	0.00	0.00
Cooling Radiant Fraction	0.00	0.00	0.00	0.00	0.00	0.00	0.00

*Refuse Store has local extract ventilation only with a terminal SFP of 0.60W/l/s with fan located within zone

AHU Schedule

Table 10 AHU Schedule to be read in conjunction with Systems Summary table.

	Specific Fan Power (W/l/s)	Heat Recovery
HRU Basement	1.27	74%
HRU 01 (Security)	1.23	77%
HRU 02 (Main Foyer)	1.27	74%
HRU Roof (Amenity)	1.32	74%
HRU Tenant (L00 Retail)	1.32	75%
AHU01 (Tenant 1)	1.69	80%
AHU02 (Tenant 2)	2.24	80%
AHU 03 (Landlord)	1.64	80%

Hot Water Systems

Table 10: Hot water inputs.

Domestic Hot Water system	Office	Retail (Shell and Core)
Generator	Instantaneous	Instantaneous
Delivery efficiency	100%	100%
Storage (litres)	615 litres	-
Storage losses (kWh/l/day)	0.0466	-
Time Switch	N	N

Renewables

Table 11 Renewables summary.

	South Facing	Southwest Facing	South Facing (Tentative Additional PV)
Area	97m^2	124m^2	39m^2
Azimuth (°clockwise from north)	180 deg	225 deg	180 deg
Inclination (° from horizontal)	30	30	30
Shading Factor	1.0	1.0	1.0
Efficiency	20.1%	20.1%	20.1%
Degradation Factor	0.99	0.99	0.99
Nominal Cell Temp.	42˚C	42˚C	42˚C
Annual Yield	38,107 kWh		Additional 6,391 kWh

Lighting Parameters.

Table 12: Lighting Inputs

Zone type	NCM Lux	Lamp Efficacy (lm/W)	Light Output Ratio (LOR)	Constant illuminance control	Lighting Controls *	Photoelectric (Daylight) Control	Total Parasitic Power (W/m²)	Time Switch	Display lamps (lm/W)
BoH Office	400	110	1.0	-	MAN-ON-AUTO-OFF	Yes, Dimming		-	
Circulation/Lift Lobby	200				AUTO-ON-OFF	-		-	
Core Offices	400			Yes	MAN-ON-DIMMED	-			
Amenity/meeting room	300			Yes	MAN-ON-AUTO-OFF	Yes, Dimming			
IT Comms Room	100			-	NONE	-		-	
Perimeter Offices	400			Yes	MAN-ON-DIMMED	Yes, Dimming			
Security Room	300			-	MAN-ON-AUTO-OFF	-			
Plant	200				-			-	
Reception	300				AUTO-ON-OFF	Yes, Dimming		-	110
Retail	300				-	Yes, Dimming		-	110
Stairs	200				AUTO-ON-DIMMED	-		-	-
Store	100				-			-	
WCs	200				AUTO-ON-OFF				

*Lighting Controls are defined as follows:
Auto On – Auto Off: Specifies presence detection sensors within the space which automatically switches lighting on when occupants are detected and switches lighting off when the space is detected to be unoccupied.
Manual On – Auto Off: Specifies absence detection sensors within the space. Lighting is required to be manually switched on. Automatically switches lighting off when the space is detected to be unoccupied.
Photoelectric (Daylight) Control: Yes – Dimming/Standalone*: Where this has been specified the following profile has been assumed is the IES model ramp(e1,0,1,400,0.2)
This formula modulates the lighting gain as a function of the illuminance on the working plane, e1. The value of the profile falls from 1 at zero illuminance to 0.2 at illuminance 400 lux, thereafter, remaining constant at this value.
The value 0.1 represents the fraction of the space's lighting gain which is not subject to daylight control. The illuminance e1 has been computed using the link to Radiance for each zone.

Appendix D – BRUKL Summary.

Office

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

The Poulton Mayfield - Stage 4 - With PV Option Yellow — As designed

Date: Tue Mar 10 09:11:39 2026

Administrative information

Building Details

Address: Address 1, City, Postcode

Certifier details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.28

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.28

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

Foundation area [m^2]: 869.92

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2$annum	3.78	
Building CO_2 emission rate (BER), $kgCO_2/m^2$annum	2.87	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	41.5	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	31.12	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

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

Fabric element	$U_{b\text{-}Limit}$	$U_{b\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.24	0.26	L00001C5:Surf[1]
Floors	0.18	0.15	0.15	B100000A:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	L0000225:Surf[0]
Windows** and roof windows	1.6	1.14	1.4	L000000A:Surf[0]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1.2	1.2	L000000A:Surf[1]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

$U_{b\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] — $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]

$U_{b\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
$m^3/(h.m^2)$ at 50 Pa	8	3

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m^2]	12059.3	12059.3
External area [m^2]	8605.6	8605.6
Weather	MAN	MAN
Infiltration [m^3/hm^2@ 50Pa]	3	3
Average conductance [W/K]	5398.38	3871.84
Average U-value [W/m^2K]	0.63	0.45
Alpha value* [%]	26.29	10

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

Building Use

% Area	Building Type
	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
100	**Offices and Workshop Businesses**
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
	Residential Institutions: Hospitals and Care Homes
	Residential Institutions: Residential Schools
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m^2]

	Actual	Notional
Heating	3.53	1.3
Cooling	3.57	4.31
Auxiliary	2.57	6.36
Lighting	10.83	13.63
Hot water	3.77	2.75
Equipment*	41.88	41.88
TOTAL**	**24.26**	**28.36**

* 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/m^2]

	Actual	Notional
Photovoltaic systems	3.16	0.13
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	*3.16*	*0.13*

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m^2]	88.16	83.72
Primary energy [kWh_{PE}/m^2]	31.12	41.5
Total emissions [kg/m^2]	2.87	3.78

Retail

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

The Poulton Mayfield - Stage 4 - Retail As designed

Date: Fri Mar 13 09:16:01 2026&

Administrative information

Building Details

Address: Address 1, City, Postcode

Certification tool

Calculation engine: Apache
Calculation engine version: 7.0.28
Interface to calculation engine: IES Virtual Environment
Interface to calculation engine version: 7.0.28
BRUKL compliance module version: v6.1.e.1

Certifier details

Name: Name
Telephone number: Phone
Address: Street Address, City, Postcode

Foundation area [m²]: 301.84

The CO_2 emission and primary energy rates of the building must not exceed the targets

Target CO_2 emission rate (TER), $kgCO_2/m^2annum$	3.93	
Building CO_2 emission rate (BER), $kgCO_2/m^2annum$	3.4	
Target primary energy rate (TPER), kWh_{PE}/m^2annum	42.83	
Building primary energy rate (BPER), kWh_{PE}/m^2annum	35.95	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

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

Fabric element	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	First surface with maximum value
Walls*	0.26	0.26	0.26	L0000001:Surf[5]
Floors	0.18	0.15	0.15	L0000001:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	-	-	No flat roofs in building
Windows** and roof windows	1.6	1.4	1.4	L0000001:Surf[1]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	-	-	No personnel doors in building
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

$U_{a\text{-}Limit}$ = Limiting area-weighted average U-values [W/(m²K)] $U_{i\text{-}Calc}$ = Calculated maximum individual element U-values [W/(m²K)]
$U_{a\text{-}Calc}$ = Calculated area-weighted average U-values [W/(m²K)]
* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.
** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.
^ For fire doors, limiting U-value is 1.8 W/m²K
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
$m^3/(h.m^2)$ at 50 Pa	8	3

HVAC Systems Performance

System Type		Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	122.4	23.6	9.6	1.7	3.5	3.54	3.92	3.5	5.62
	Notional	20.8	32.3	2.1	1.9	9.1	2.78	4.63	----	----

Key to terms

Heat dem [MJ/m2]	= Heating energy demand
Cool dem [MJ/m2]	= Cooling energy demand
Heat con [kWh/m2]	= Heating energy consumption
Cool con [kWh/m2]	= Cooling energy consumption
Aux con [kWh/m2]	= Auxiliary energy consumption
Heat SSEFF	= Heating system seasonal efficiency (for notional building, value depends on activity glazing class)
Cool SSEER	= Cooling system seasonal energy efficiency ratio
Heat gen SSEFF	= Heating generator seasonal efficiency
Cool gen SSEER	= Cooling generator seasonal energy efficiency ratio
ST	= System type
HS	= Heat source
HFT	= Heating fuel type
CFT	= Cooling fuel type

HOARE LEA

KLAUDIA KRASOWSKA
SENIOR SUSTAINABILITY CONSULTANT

+44 161 672 7175
klaudiakrasowska@hoarelea.com

HOARELEA.COM

Royal Exchange
Manchester
M2 7FL
England