

Norfolk House

Manchester, UK

Energy & Environmental Standards Statement



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Author	Alex Moran	Alex Moran
Title	Building Physics Engineer	Building Physics Engineer
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Date of Issue	17/10/2025	29/10/2025
Name	Mike Travis	Mike Travis
Title	Director	Director
Signature		



10 Oxford Court
Manchester
M2 3WQ
0161 827 1760
www.futureserv.co.uk
enquiries@futureserv.co.uk



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1.0 Executive Summary

This Energy and Environmental Standards Statement (EESS) has been prepared in support of the redevelopment of Norfolk House, located at the site of Norfolk Street, M2 1DH. The scheme proposes the conversion of existing office spaces into a modern, sustainable hotel within the Manchester City Centre, consisting of 95 guestrooms and several amenities for use of guests and staff.

The purpose of this document is to outline the approach adopted in maximising energy efficiency and environmental performance, and to demonstrate how the proposal aligns with relevant national and local planning policies and sustainability objectives, where appropriate.

The redevelopment makes effective use of an existing building, thereby supporting the principles of sustainable development. However, due to the project featuring the retention of existing structure, there are limitations in achieving full compliance with applicable national and local legislation. The design aims to make consequential improvements where practical.

Consequential improvements include the replacement of all existing windows with energy efficient units, targeted upgrades to the building fabric in line with Approved Document Part L 2021, and the installation of highly efficient Variable Refrigerant Flow (VRF) systems, air handling units with heat recovery, and a centralised Air-Source Heat Pump (ASHP) for the generation of domestic hot water for the development. The implementation of these measures shall improve thermal performance, reduce operational energy demand, and support the transition to a lower-carbon built environment in accordance with Manchester City Council's sustainability ambitions.

Futureserv have corresponded with Manchester City Council prior to this planning statement submission to establish the stance on applicable planning policies and requirements, due to the nature of the development featuring renovation of existing building space. The consensus of the Council was that if converting an existing building, the design must ensure an energy efficient building as far as possible whilst considering the constraints of the structure and location, and that any improvements to the building should conform to applicable planning policy documents as close as possible. Manchester City Council have identified that with the nature of the scheme that compliance with local legislation is not a requirement, but have requested that any policies not met are acknowledged.

This proposal has been developed with reference to the following relevant policy framework, and conforms to the ideology of Approved Document Part L of the English Building Regulations by prioritising conservation of fuel and power:

- National Planning Policy Framework (NPPF)
- Manchester Core Strategy: Policies EN4 & EN6
- Places for Everyone Joint Development Plan
- Greater Manchester Combined Authority (GMCA)

As stated, consequential improvements have been proposed for existing building fabric. Norfolk House was constructed circa 1997 and would have been compliant with relevant building regulations at the time, Part L 1991. If this was the case, then existing external walls would fall in-line with the limiting threshold U-Value figures as per Table 4.2 of Approved Document Part L2 2021, as would ground/exposed floors.

However, it is deemed that if the building was constructed to Part L 1991 standards, then the roof would exceed the limiting threshold U-Value within current building regulations and would require

further improvement. It is proposed that the roof shall be lined with insulation to achieve an upgraded U-Value, complying with the 'improved' standards outlined within Table 4.2.

In addition to improving the fabric build-up of any roof areas, the renovation proposes the replacement of all existing windows with energy efficient, high-performance units that conform to new-build elements specified within Table 4.1 of Approved Document Part L2 2021. Please refer to Section 4.2 for full detail into the passive design specification.

With the specification presented within this report, using the Integrated Environmental Solutions: Virtual Environment 2025 (IESve) software to conduct SBEM calculation analysis, the development shall achieve compliance with the calculated target CO₂ emissions and primary energy rates established by the calculation methodology.

The following table summarises the building CO₂ emissions and primary energy rates against the associated targets:

	Target (TER)	Building (BER)	% Difference
CO ₂ Emissions	11.83 kgCO ₂ /m ² /yr	11.54 kgCO ₂ /m ² /yr	-2.45%
Primary Energy Rate	128.54 kWh/m ² /yr	125.14 kWh/m ² /yr	-2.65%

The passive and active building service specification presented within this report provide compliance with the calculated notional CO₂ emission and primary energy rate targets established within the Part L2 SBEM calculation model. Further, select local legislation and policies are also satisfied with the implementation and prioritisation of low/zero carbon technologies.

2.0 Introduction

Futureserv have been appointed by Zerum to develop an Energy & Environmental Standards Statement (EESS) for the proposed redevelopment, Norfolk House. The purpose of this document is to outline the proposed design and commitments associated with the project, and establish any planning legislation applicable to the development, both local and national.

The document demonstrates not only policy compliance, but also that sustainability objectives form an integral part of the applicant's aspirations for the development.

Typically, an EESS would consider other planning documents such as a transport statement, flood risk assessment statements, or bat surveys. However, at this stage of the planning submission, these documents have not yet been prepared.

2.1 Site Context

The site comprises of an existing building that is currently operational as office spaces, located on Norfolk Street, Manchester, M2 1DH. The site presents plenty of opportunity for business due to the location in the heart of Manchester city centre and the surrounding bustling areas.

The proposal considers the conversion of office spaces into a modern, sustainable hotel whilst retaining the existing structure of the building.

The Norfolk House site is located opposite an already established hotel, The Stock Exchange, which is also owned by the applicant and shall operate alongside the proposed Norfolk House redevelopment by providing an additional 95 guestrooms to the existing capacity. The site contains two underground levels of car parking spaces beneath the building that shall be retained as part of the redevelopment, for use of both guests and staff to prevent on-street parking.

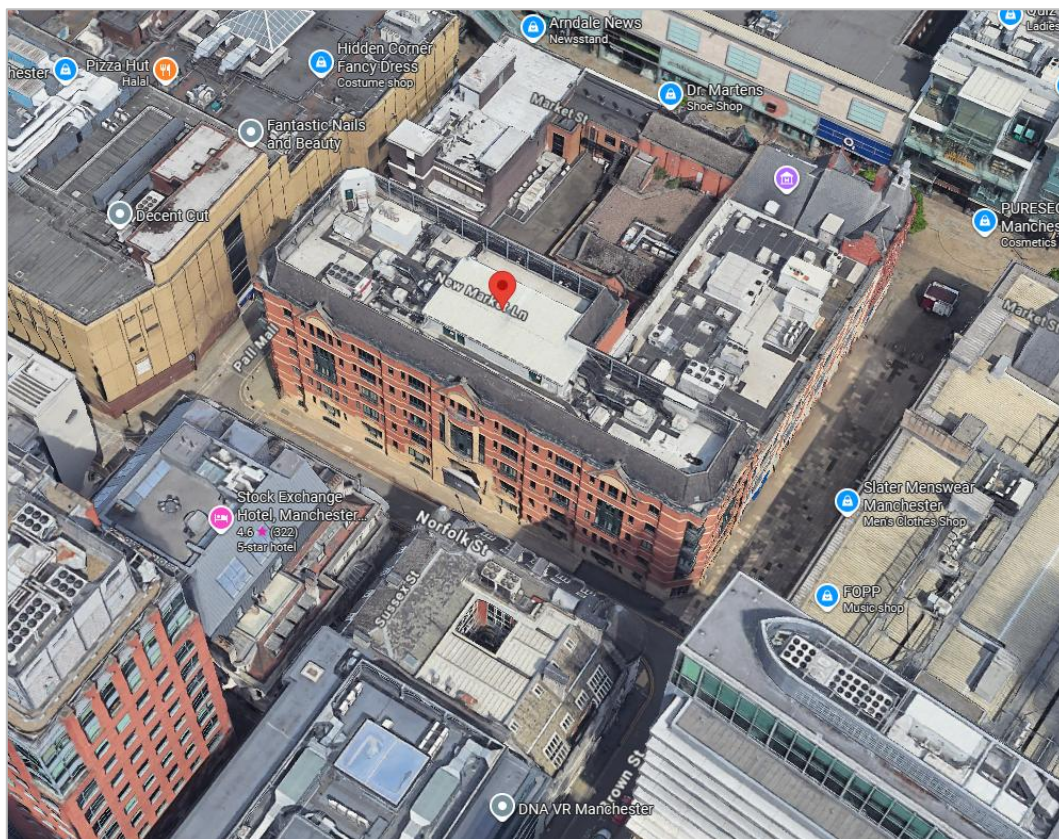


Fig. 1 – Norfolk Street, M2 1DH

2.2 Development Proposal

The project proposes the redevelopment of existing office space into a modern, sustainable hotel that shall comprise of 95 guestrooms and amenities including a gym, restaurant, meeting rooms, and lounges for use of guests.

As part of the renovation, the existing budding structure shall be retained but consequential improvements shall be made to the roof, and all glazing shall be replaced with energy efficient double-glazing. Further, the design incorporates the installation of sustainable, highly efficient VRF systems, air-handling units with heat recovery, and air-source heat pumps for domestic hot water generation throughout the building.

This EESS has been prepared to illustrate the environmental aspects of the proposed development highlighting the Energy/Carbon emission profile and assess the options available for reducing energy consumption and associated CO₂ emissions, in accordance with Manchester City Council's policies and guidelines.

Futureserv Consulting Engineers have collaborated with the design team in order to provide a holistic solution for the building that will provide an efficient envelope and contain intelligent building services reducing the environmental impact of the development whilst providing comfortable living accommodation.

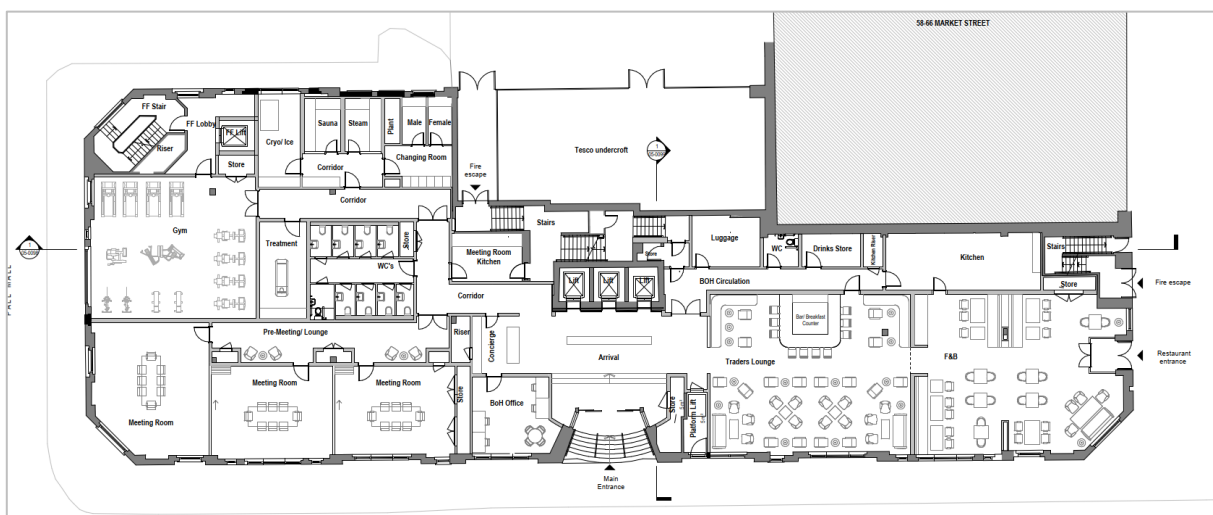


Fig. 2 – Proposed GF Plan

3.0 Planning Policy & Legislation

As the scheme proposes the redevelopment of existing building space, whilst retaining the original structure, there are limitations in achieving full compliance with applicable national and local legislation.

Futureserv have corresponded with Manchester City Council prior to this planning statement submission to establish the stance on applicable planning policies and requirements, due to the nature of the development featuring renovation of existing building space. The consensus of the Council was that if converting an existing building, the design must ensure an energy efficient building as far as possible whilst considering the constraints of the structure and location, and that any improvements to the building should conform to applicable planning policy documents as close as possible. Manchester City Council have identified that with the nature of the scheme that compliance with local legislation is not a requirement, but have requested that any policies not met are acknowledged.

With this, the design incorporates the use of low/zero carbon technologies through the form of heat recovery ventilation units and air-source heat pump systems for space and water heating throughout the building.

Improvements to building fabric shall satisfy the requirements of Approved Document Part L2 - 2021 of the English Building Regulations. All existing glazing shall be replaced with new energy efficient double-glazing units (as per Table 4.1), and the roof shall be lined to satisfy the 'improved' figure within Table 4.2. It is determined that the existing walls and ground floor, assumed built to Part L 1991 standards, would satisfy the limiting 'improved' requirements within Table 4.2 and therefore do not require any further improvement. Please refer to Section 4.3 for full detail into proposal of building fabric.

3.1 Building Regulations Approved Document Part L2 2021

The scheme is not actively seeking to satisfy the requirements of Approved Document Part L2 2021 due to the redevelopment of existing building space; this is not a requirement under Building Regulations. However, due to the design incorporating all new installations of plant and equipment throughout the building, the development shall conform to and satisfy the minimum requirements regarding efficiencies associated with space and water heating, ventilation, cooling, and lighting throughout.

As stated above, all new glazing units shall be installed and will satisfy the minimum requirements of Part L2 2021, achieving a U-Value no greater than $1.60 \text{ W/m}^2\text{.K}$. The roof shall be upgraded to a figure no greater than the limiting 'improved' figure of $0.18 \text{ W/m}^2\text{.K}$ as per Table 4.2 within the document.

3.2 National Planning Policy Framework (NPPF)

The UK government has signed up to a legally binding agreement to reduce Carbon emissions by 34% based on 1990 levels before 2020 and by 80% before 2050, this responsibility is being discharged using the Climate Change Act 2008.

The National Planning Policy Framework (NPPF), offers specific guidance which highlights the UK's aspiration to support a transition to a Low Carbon future in a changing climate and in particular, to encourage the use of renewable resources such as Renewable Energy and states;

The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk 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.

3.3 Manchester Local Policies

Due to the location of the site, the following local planning policies and legislation must be considered. The following policies do not have to be complied with but must be identified, following correspondence with Manchester City Council.

3.3.1 Places for Everyone Joint Development Plan

The Places for Everyone Joint Development Plan is a long-term regional sustainability strategy applicable to areas including Manchester, Bolton, Bury, Salford, Rochdale, Trafford, etc. The purpose of the document is to provide clear guidance regarding new-build dwellings and non-domestic units, promoting the use of low/zero carbon technologies and outlining minimum requirements that exceed the targets of Part L 2021 – ultimately leading to a net-zero future.

Policy JP-S2: Carbon and Energy provide further support for the Greater Manchester Spatial Framework 2020 target of achieving a carbon neutral Greater Manchester by 2038. The policy replaces the former Manchester Core Strategy and emphasises improving energy efficiency in buildings, reducing CO₂ emissions in line with net-zero ambitions, and encourages designers to think holistically about a building's energy use and carbon footprint – both present and throughout its future lifespan.

The document states minimum targets for PV installations and low/zero carbon technologies for dwellings, but does not state minimum targets for non-residential buildings instead encouraging use of LZC technologies.

Although not a requirement, this policy has been satisfied by the introduction of LZC technologies throughout the design of the proposed renovation via VRF systems, air-handling units with heat recovery, and air-source heat pumps for hot water generation.

3.3.2 Manchester Core Strategy

The Manchester Core Strategy (2012-2027) is the main planning document that outlined the long-term vision, policies, and land use strategy for how the city should develop within the future, prepared by Manchester City Council to be used alongside the NPPF. Select policies have been revised as per the introduction of the Places for Everyone Joint Development Plan, but still remain in effect until 2027.

Policy EN4: Reducing CO₂ Emissions by Enabling Low & Zero Carbon Development

'The Council will seek to reduce fuel poverty and decouple growth in the economy, growth in CO₂ emissions, and rising fossil fuel prices, through the following actions:

- *All development must follow the principle of the Energy Hierarchy, being designed:*
 - *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*

- *Wherever possible new development and retrofit projects, including energy generation plant, must be located and designed in a manner that allows advantage to be taken of opportunities for low and zero carbon energy supplies*
- *Where possible new development and retrofit projects will be used as a mechanism to help improve energy efficiency and provide low and zero carbon energy supplied to existing buildings*
- *Where possible new development and retrofit will be required to connect to and/or make contributions to low or zero carbon energy schemes and/or to incorporate provision to enable future connection to any existing/potential decentralised energy schemes*
- *The use of building materials with low embodied carbon in new development and refurbishment schemes'*

Although not a requirement, this policy has been satisfied through the implementation of LZC technologies.

Policy EN6: 'Target Framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies'

This policy outlines a minimum requirement for non-domestic new-build developments over 1000m², stating that a 15% reduction of CO₂ emissions over the Part L 2010 target must be achieved.

This policy is not required for compliance, as the project is not a new-build development.

3.3.3 Greater Manchester Combined Authority

The Greater Manchester Combined Authority (GMCA) document is an additional set of supplementary planning guidance to allow developers to conform to the targets of Places for Everyone Joint Development Plan, specifically for carbon and energy policies.

Although not required for planning due to the nature of the redevelopment, this has been included to provide insight to Manchester City Council of the figures achieved.

The document consists of three core parts, summarised:

1. Net-Zero Carbon Buildings
 - Design guidance on how to achieve net-zero operational carbon
 - Conformance to the established energy hierarchy:
 - i. *Minimise energy demand*
 - ii. *Maximise energy efficiency*
 - iii. *Use renewable energy*
 - iv. *Use low carbon energy*
 - v. *Utilise other energy sources*
 - Provides design principles including fabric-first design, heat pump integration, PV sizing, and whole-life carbon
2. Low Carbon Heat
 - Guidance on low-carbon heating appraisals
 - Minimum efficiencies; improvement upon those outlined within Part L 2021
 - Avoidance of fossil-fuel systems, any gas connections require in-depth justification
3. Submission Guidance, Energy & Low Carbon Development Proforma
 - A step-by-step checklist is required for submission alongside this energy statement for planning applications
 - The proforma is based upon building use and size

- 
- Building services are summarised, including U-Values, efficiencies of plant/equipment, PV coverage, EUI benchmarks

This proforma document is often submitted alongside an energy statement for new-build developments. However, as the scheme features conversion of existing building space, this is not a requirement and has been included for indicative purposes for the planning submission. The development is approximately 8,200m² in total floor area, therefore has been assessed as a *'non-residential major development (+1,000m²)'*.

As stated, the proforma must be submitted alongside this energy statement. This development falls under the 'non-residential minor development (100-999m²)' assessment, with the proposed superstore floor area approximately 700m².

As a result, the proforma typically requires the following detail for new-build developments:

- Summary of main building services (U-Values, efficiencies associated with space and water heating, form factor, etc.)
- BREEAM 'Excellent' rating
- Energy use intensity (EUI) calculation
- Total PV footprint including percentage of ground floor area, annual yield, and compared to total predicted energy demand
- Overheating assessment (if required)
- Confirmation that a summary of efforts has been made to design a lean, low carbon structure

Obtained from the Part L2 SBEM calculation included within this Energy Statement, Futureserv have provided indicative figures where available. There is no requirement for an overheating assessment as the building shall be primarily cooled via VRF systems.

The proforma specification, to be used for planning submission can be found within Section 4.7 of this report.

4.0 Energy Strategy

4.1 Energy Calculation Model

Futureserv have produced a thermal model for the Simplified Building Energy Model (SBEM) calculation, reflecting the proposed passive and active building service design for the scheme.

The Integrated Environmental Solutions: Virtual Environment 2025 (IESve) software was used as the calculational methodology for this assessment, providing a prediction of annual CO₂ emissions and primary energy rates associated with the development.

Although typically used for new-build developments to determine whether building emissions and energy rates remain within the constraints of the calculated notional targets, this calculation has been used to provide indication of the annual carbon dioxide and primary energy rates for planning purposes.

Futureserv understands that there is no requirement for the Norfolk House development to comply with these targets due to the nature of the development being a conversion of existing building space.

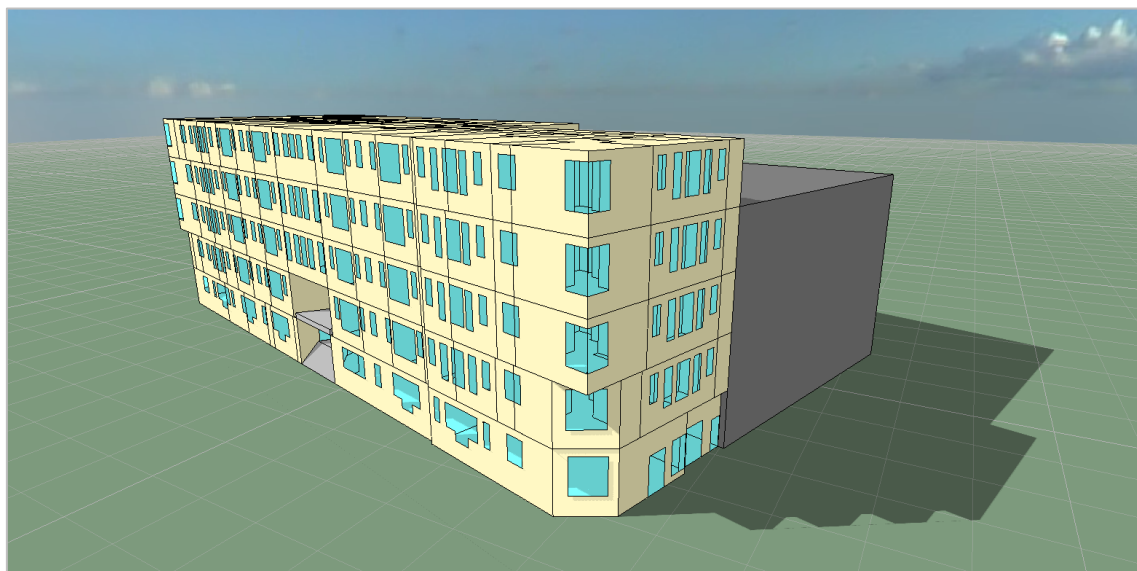


Fig. 3 – Norfolk House Thermal Model, IESve

4.2 Passive Building Services

A fabric-first approach to building design involves maximizing the performance of thermal components and materials that make-up the building envelope, conforming to the principle of heat preservation over generation. Due to the proposal featuring renovation of existing building structure, this principle is not feasible to achieve throughout the building, but improvements have been made as part of the consequential improvements to the scheme.

It is estimated that the building was constructed in circa 1997 and would have conformed to the English Building Regulations at that time, specifically Part L 1991. The limiting figures for various elements have been extracted from the document (Fig. 4) for cross reference against the maximum permissible U-Values for existing elements in accordance with Approved Document Part L 2021 (Fig. 5). For any elements that do not conform to the maximum figure in current regulations, improvements must be made.

Table 5 Standard U-values (W/m ² K) for buildings other than dwellings	
Element	U-value
Roofs ⁽¹⁾	0.25 ⁽²⁾
Exposed walls	0.45
Exposed floors and ground floors	0.45
Semi-exposed walls and floors	0.6
Windows, personnel doors and rooflights	3.3
Vehicle access and similar large doors	0.7

Notes

- Any part of a roof having a pitch of 70° or more may have the same U-value as a wall.
- For a flat roof or insulated sloping roof with no loft space it will be acceptable if a U-value of 0.35 W/m²K is achieved for residential buildings or 0.45 W/m²K for other buildings.

Fig. 4 – Limiting U-Values (Part L 1991)

Table 4.2 Limiting U-values for existing elements in existing buildings		
Element	U-value ⁽¹⁾ W/(m ² .K)	
	(a) Threshold	(b) Improved
Pitched roof – insulation at ceiling level ⁽²⁾	0.35	0.16
Pitched roof – insulation at rafter level ⁽²⁾⁽³⁾	0.35	0.18
Flat roof or roof with integral insulation ⁽²⁾⁽⁴⁾	0.35	0.18
Wall – cavity insulation ⁽²⁾⁽⁵⁾	0.70	0.55
Wall – external or internal insulation ⁽²⁾⁽⁶⁾	0.70	0.30
Floors ⁽⁷⁾⁽⁸⁾	0.70	0.25

Fig. 5 – U-Values for Existing Elements in Existing Buildings (AD Part L2 2021)

The following table summarises the limiting Part L 1991 U-Values, against the current Part L2 2021 threshold/improved U-Values for elements in existing buildings.

Element	1991/95 Regulations	2021 Regulations (Threshold, Table 4.2)	2021 Regulations (Improved, Table 4.2)
Flat Roofs	0.45 W/m ² .K	0.35 W/m ² .K	0.18 W/m ² .K
Ext. Walls	0.45 W/m ² .K	0.70 W/m ² .K	0.30 W/m ² .K
Ground/Exposed Floors	0.45 W/m ² .K	0.70 W/m ² .K	0.25 W/m ² .K

An initial desktop survey of the existing building by EPR Architects determined that the external walls and ground/exposed floors would remain within the limiting Part L threshold figure if construction conformed to Part L 1991. However, analysis determined that the roof U-Value of 1991 regulations exceeded that of the permissible threshold and would require further improvement to achieve a U-Value no greater than 0.18 W/m².K, in line with the ‘improved’ figure. Guidance on this decision is included within Section 11.3 of Approved Document Part L2 2021, stating:

‘If a thermal element is renovated and one of the following applies, then the whole of the thermal element should be improved to achieve at least the U-value in Table 4.2 column (b).

- a) *More than 50% of the surface of the individual thermal element is renovated (see paragraph 11.4).*
- b) *The work constitutes a major renovation. A major renovation is when more than 25% of the surface area of the external building envelope is renovated’.*

The proposal for the building proposes the upgrade to roof U-Value by providing an internal or external lining of insulation, which shall conform to the limiting ‘improved’ figure established within Table 4.2 (Fig. 3) in line with the statement above. Additionally, all glazing elements are intended to be replaced with highly efficient double-glazed units that shall achieve a U-Value of no greater than 1.60 W/m².K (Table 4.1).

The current passive design specification, summarised:

Element	U-Value	Comment
External Walls	0.45 W/m ² .K	As per Part L 1991 limiting U-Value
Ground/Exposed Floors	0.45 W/m ² .K	As per Part L 1991 limiting U-Value
Roof	0.18 W/m ² .K	‘Improved’ U-Value with insulation upgrades
Glazing	1.60 W/m ² .K	Replacement of all glazing with new units

4.3 Active Building Services

The redevelopment proposes the replacement of all existing plant and equipment, with new installations that shall conform to the minimum efficiencies established by AD Part L2 2021. Active building services will be designed to minimise direct energy consumption and CO₂ emissions, with particular emphasis on the following:

- Increased hot water generating efficiencies and reduced standing losses
- Energy efficient LED lighting
- Low energy motors in fans
- Efficient heat recovery in relevant systems
- Efficient mechanical ventilation systems

The mechanical and electrical design proposes an all-electric building service solution through the use of highly efficient Variable Refrigerant Flow (VRF) to provide space heating and cooling to the majority of the building.

An air-handling unit will provide adequate supply and extract ventilation throughout, with capability for heat recovery during the winter period, alleviating demand on the VRF system whilst simultaneously reducing energy consumption thus carbon emissions. Mechanical extract ventilation shall feature within select spaces (i.e. WCs).

Air-source heat pumps will be installed to provide the development with highly efficient means of hot water generation.

All light fittings will be replaced with highly efficient LED fittings and PIR controls.

All the above equipment shall be installed as new and will conform to the efficiencies stated within Part L2 2021 to prioritise conservation of fuel and power. The M&E proposal also satisfies the national and local planning policies to promote low/zero carbon technologies where possible.

4.4 Low/Zero Carbon Technologies

The following table presents a list of low/zero carbon technologies widely acknowledged within the building service industry that should be considered for developments.

Each of the following systems has been considered alongside the requirements of planning policies and legislation applicable to the development. Although compliance with this legislation is not required due to the nature of the scheme, there have been conscious efforts to maximise low/zero carbon technologies wherever possible within the design.

LZC Technology	Status	Comments
Variable Refrigerant Flow Systems	Selected	VRF systems have been proposed for the development, supplying space heating and cooling to several spaces within the building. Grid supplied electricity demand is significantly reduced due to the units offering highly efficient means of space heating and cooling. As a result, CO ₂ emissions and annual fuel costs associated with the building are reduced.
Air-Source Heat Pumps	Selected	Air-source heat pumps shall be responsible for the generation of all domestic hot water within the development. The implementation of this technology provides a highly efficient method for hot water generation, enabling the building to achieve significantly reduced energy demand this lower CO ₂ emissions.
Ground Source Heat Pumps	Discounted	Due to the nature of the scheme, the implementation of a GSHP would require excavation of the surrounding areas, disrupting every day operation for surrounding occupants and businesses. ASHPs are generally accepted as a more feasible option, whilst providing the same level of efficiency.
Solar Photovoltaic Panels	Discounted	At this stage, there is no provision to include PV within the redevelopment. Instead, priority has been given to VRF systems, ASHPs, and heat recovery AHUs.
Solar Thermal Collection	Discounted	It is considered that due to the size of the development, solar thermal collectors would not be a suitable LZC technology.
Biomass Boilers	Discounted	Biomass boiler solutions have been discounted at this location due to potential clean air issues, deliverability logistics and the lack of available storage space for the required quantity of fuel.
Wind Turbines	Discounted	Wind turbines have been discounted due to the resulting visual/noise impact from the equipment, and relatively poor performance of the solution when used within urban and suburban locations.
Combined Heat & Power	Discounted	The proposal of CHP technology has been discounted due to the city centre location of the scheme, and the more favourable movement to utilise decarbonised grid electricity over traditional fossil fuels.

4.5 SBEM Calculation

To demonstrate the environmental benefits associated with the considered energy hierarchy approach to energy demand and carbon emission reduction for the development, the Government approved IES VE software has been used – specifically the ‘VE Compliance’ module. The following image has been extracted from the BRUKL cover page, demonstrating the BER and BPER compared to the associated targets.

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

Norfolk House
As built

Date: Thu Oct 16 15:36:38 2025

Administrative information

Building Details

Address: Manchester,

Certifier details

Name: Futureserv

Telephone number: 0161 827 1760

Address: 10 Oxford Court, Manchester, M2 3WQ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.29

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.29

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

Foundation area [m²]: 783.95

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	11.83
Building CO ₂ emission rate (BER), kgCO ₂ /m ² :annum	11.54
Target primary energy rate (TPER), kWh _{pe} /m ² :annum	128.54
Building primary energy rate (BPER), kWh _{pe} /m ² :annum	125.14
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 -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.45	0.45	00000025:Surf[0]
Floors	0.18	0.45	0.45	00000011:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.18	0.18	00000025:Surf[11]
Windows** and roof windows	1.6	1.6	1.6	00000025: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-Limit = Limiting area-weighted average U-values [W/(m²K)] U_i-Calc = Calculated maximum individual element U-values [W/(m²K)]

U_a-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	15

4.5.1 SBEM Calculation Summary

The following specification has been used to develop the energy demand and carbon emission rates as per the SBEM calculation in Section 4.6:

- VRF systems for space heating and cooling
- Air-handling units with heat recovery for supply and extract ventilation
- Mechanical extract ventilation for select areas (i.e. WCs)
- Air-source heat pumps for hot water generation

Summarised SBEM calculation, extracted from Section 6.0:

	Target (TER)	Building (BER)	% Difference
CO ₂ Emissions	11.83 kgCO ₂ /m ² /yr	11.54 kgCO ₂ /m ² /yr	-2.45%
Primary Energy Rate	128.54 kWh/m ² /yr	125.14 kWh/m ² /yr	-2.65%

The SBEM calculation model determines that the development, with the specification outlined within this report, achieves compliance with the calculated notional CO₂ emissions and primary energy rate. This is due to the large amount of highly efficient low/zero carbon technologies implemented throughout the building.

However, this SBEM calculation is typically performed on new-build developments only. The BRUKL highlights an exceedance in permissible U-Values and air permeability as the calculation model uses the Part L new-build limiting U-Values as the reference point (as outlined within Section 4.2, Table 4.1). Therefore, although compliant with the calculated emissions and primary energy rates, the development does not comply with Part L2 2021 as an overall.

4.7 GMCA Proforma

The Greater Manchester Combined Authority (GMCA) Energy and Carbon Proforma is a tool to summarise the energy and carbon performance of a development, to be submitted alongside this energy statement. This development falls under the 'non-residential major development (+1,000m²)' assessment, with the proposed superstore floor area approximately 8,200m².

As a result, the proforma typically requires the following detail for new-build developments:

- Summary of main building services (U-Values, efficiencies associated with space and water heating, form factor, etc.)
- BREEAM 'Excellent' rating
- Energy use intensity (EUI) calculation
- Total PV footprint including percentage of ground floor area, annual yield, and compared to total predicted energy demand
- Overheating assessment (if required)
- Confirmation that a summary of efforts has been made to design a lean, low carbon structure

Obtained within the Part L2 SBEM assessment, available information has been included within the proforma document. At this stage, the BREEAM assessment, EUI calculation, and overheating assessment have been excluded. The guidance of GMCA states that an alternative calculation model must be employed for the calculation of EUI, such as CIBSE TM54: Operational

Energy Analysis – this has not been included. Additionally, an overheating assessment is not required as all occupied areas shall feature active cooling via VRF units.

Please refer to the image for figures calculated for the proforma, used for indicative purposes. As stated throughout this report, Futureserv understands that there is no requirement for the redevelopment to comply with these targets.

		Ref. name	Norfolk House
		Area (m ² GIA)	8,200
		Target values	Building 1
Minimise energy demand	Space heating demand (kWh/m ² GIA/yr)	≤ 15	9.64
	Space cooling demand (kWh/m ² GIA/yr)	≤ 15	1.56
	Calculation methodology used to calculate space heating demand and confirmation that this covers all homes/blocks	Predictive energy model	SBEM
	Form factor per building	≤ 2	0.51
	Average external wall U-value (W/m ² K)	≤ 0.15	0.45
	Average window U-value (W/m ² K)	≤ 1 (triple)	1.6
	Air permeability rate (m ³ /h/m ² @ 50 Pa)	≤ 1	15
Maximise energy efficiency	BREEAM Ene 01 rating	Excellent	N/A
	Energy use intensity (kWh/m ² GIA/yr)	-	N/A
	Calculation methodology used to calculate energy use intensity and confirmation that this covers all homes/blocks	Predictive energy model	N/A
Use renewable energy	PV footprint area (% of ground floor space)	-	N/A
	Annual renewable energy generation (kWh/m ² building footprint/yr)	-	N/A
	Renewable energy balance (%)	-	N/A
	Total energy used (kWh/yr)	-	N/A
	Total energy generated on-site (kWh/yr)	-	N/A
Use low carbon energy	Fossil fuel free (yes/no)	Yes	Yes
	Heat source	Electric	Electric
	Low Carbon Heat Appraisal completed	Yes	No
	Heat network suitability	-	No
	Exemption requested	-	No
	Efficiency of heating system (SCOP)	≥ 3.5	4.3
Reduce overheating risk	Carbon content of heat (gCO ₂ /kWh)	≤ 100	N/A
	Has CIBSE TM52 been used to calculate overheating and does the building pass?	Yes	N/A
	What percentage of spaces are cooled? (% of GIA)	-	N/A
Minimise embodied carbon	Has a CIBSE TM52 assessment been carried out using DSY2 and DSY3 weather files? Have any additional passive measures been included as a result?	Yes	N/A
	Upfront embodied carbon (kgCO ₂ e/m ² GIA)	-	N/A
	List top three materials with the highest upfront embodied carbon emissions (kgCO ₂ e/m ² GIA): Material 1	-	N/A
	Material 2	-	N/A
	Material 3	-	N/A
Offsets	Lifecycle embodied carbon (kgCO ₂ e/m ² GIA) - for large major developments only	-	N/A
	Offset contribution (£)	-	N/A

5.0 Environmental Standards

The proposal outlined within this document demonstrates the prioritisation of sustainability as part of the applicant's aspirations for the scheme.

In addition to promoting sustainability, the Norfolk House project aims to improve upon the social and environmental aspect and promote further growth of business within the area through the delivery of a 95-guestroom hotel. The scheme shall remain within constraints of the existing building as the project does not propose any amendments to building structure, therefore, surrounding businesses and residents shall not be disrupted.

The project will develop a highly efficient design by following the three-stage energy hierarchy to 'be lean, clean, and green', while aligning with the standards of Building Regulations Part L (2021) where practicable. As the development involves the renovation of existing building spaces, there are inherent limitations in achieving full compliance with all aspects of the legislation. However, it is understood that full compliance is not a requirement in this context.

As outlined within this document, the scheme proposes upgrades to the existing building fabric including improvement upon roof insulation and replacement of glazing, whilst aiming to maximise energy efficiency through the implementation of low/zero carbon technologies throughout.

5.1 Environmental Design

The scheme is located within the core of Manchester city centre and proposes the renovation of existing building space, therefore avoiding constructing upon greenfield sites. The design proposes the use of the existing main entrance located on Norfolk Street, and is accessible by already established public right of ways. The development provides 95 guestrooms and a considerable amount of amenity spaces including a gym, recovery facilities (steam, sauna, cryotherapy), restaurant, meeting rooms, and lounges. The restaurant is accessible both internally and externally via the east façade which is adjacent to the bustling Market Street – a shopping district with various businesses and amenities.

An interim transport plan has been developed by Mosodi for this planning submission and should be reviewed in conjunction with this EESS.

The site is located in a bustling area of Manchester, Deansgate, and is well connected to transport links including an abundance of bus routes, as well as Manchester Victoria and Manchester Picadilly train stations. The provision of regular services makes travel via public transport a very viable option to access Manchester and the surrounding areas.

Pedestrian connectivity within the area is also excellent with good standard footpaths and safe pedestrian linkage, with controlled crossing points to the existing pedestrian infrastructure within Manchester city centre. The site features two basement levels beneath the building which are currently operational as car parks. This shall remain the same and will provide parking spaces adequate for guests and staff.

As the Norfolk House scheme features renovation of existing building space whilst maintaining the building structure, a wind microclimate assessment, bat survey, nor daylight/sunlight assessment have been conducted as these documents are not required.

The project shall be designed in accordance with an Environmental Noise Study produced by Red Acoustics to determine the existing sound climate affecting the site. The results of this



assessment were used to advise on the level of facade noise mitigation across the scheme based on current architectural design provided by the Client. As the site is located in the core of Manchester's city centre and surrounds a busy shopping district, the acoustic report recommends enhanced glazing in areas affected by environmental sound. With these measures, noise is not expected to present a constraint on the site's suitability for the intended building use.

5.2 Energy

The energy statement presented within this document shall be used alongside other relevant documents for planning submission, and describes how the proposed redevelopment shall conform to the energy hierarchy to support national and local planning requirements. Correspondence with Manchester City Council prior to this submission determined that due to the nature of the scheme featuring renovation of existing building space, there are limitations on feasible design/construction, therefore compliance with planning legislation is not necessarily required but the development should aim to maximise energy efficiency where possible.

The proposal shall incorporate upgrade to roof building fabric to align the construction with current Part L 2021 standards, and to limit heat losses thus operational energy. All glazed elements shall be replaced as part of the works, further reducing heat loss and satisfying recommendations outlined within the acoustic report.

The development shall utilise low/zero carbon technologies through the use of VRF systems for space heating and cooling, heat recovery ventilation units, and air-source heat pumps for domestic hot water generation.

The anticipated building CO₂ emission rate is 11.54 kgCO₂/m²/yr. This is a reduction of 2.45% over the calculated Part L2 2021 notional target rate.

The anticipated primary energy rate is 125.14 kWh/m²/yr, a reduction of 2.65% against the calculated Part L2 2021 notional target rate.



6.0 Conclusion

The aim of this document was to summarise the design proposal for the redevelopment of the existing building, Norfolk House.

It is understood that compliance with national and local planning policies is not a requirement for this project due to the nature being a renovation of existing building space whilst maintaining existing structure. Manchester City Council have advised, prior to the submission of this planning document, that this legislation is not required for compliance, but the design should aim to maximise energy efficiency in each possible area.

This has been considered within the design of the renovation. Building fabric shall be upgraded (roof) or replaced (glazing) to meet modern standards to limit heat loss, reducing annual energy demand thus CO₂ emissions associated with the operation of the building. The design proposes the use of low/zero carbon technologies throughout the building through the use of VRF systems for highly efficient space heating and cooling, air-handling units with a high efficiency of heat recovery, and air-source heat pumps to supply hot water within the development. Efficient light fittings and controls shall also be installed to replace any existing fittings.

The implementation of this passive and active building service specification allows for a significant reduction of annual CO₂ emissions associated with the development, which assists in achieving the ambitions of Manchester City Council.

Overall, the SBEM calculation undertaken for this stage of the development determined the annual CO₂ emissions at 11.54 kgCO₂/m²/yr, a reduction of 2.45% over the calculated Part L2 2021 notional target rate. Further, the primary energy rate of the building was anticipated at 125.14 kWh/m²/yr, a 2.65% region over the target.

Due to the all-electric design strategy proposed, these figures shall continue to decrease in future as the UK electricity grid continues to improve and decarbonise.