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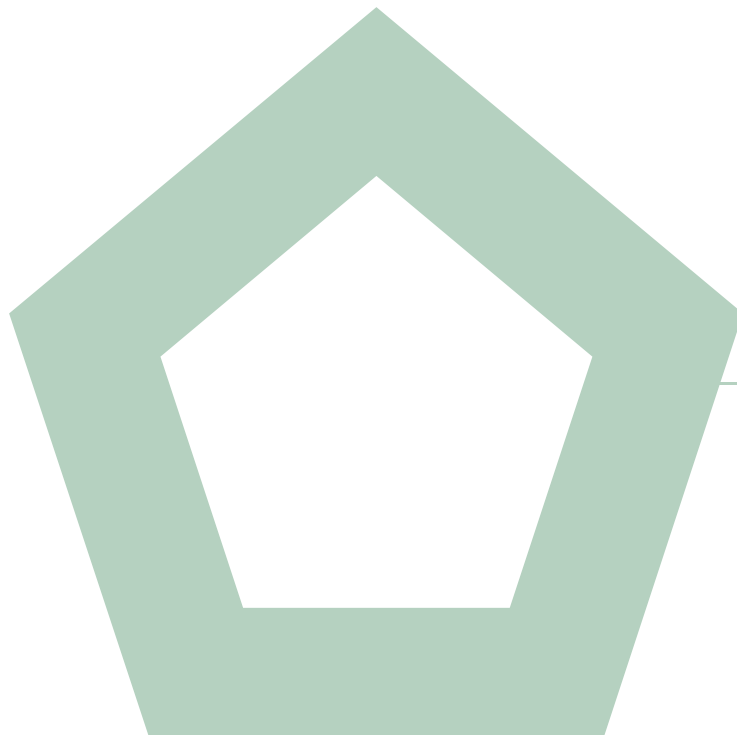
Genr8 Kajima Regeneration (Huyton) Limited.

SUSTAINABILITY

STAGE 3 REPORT – PART L2 COMPLIANCE REPORT

5300013-HLE-XX-XX-RP-ST-402026

REVISION P04 – 14 AUGUST 2026



STAGE 3

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
P01	12/05/2025	Draft for comment	J. Daoud	H. Clifton / V. Wall	T. Smith
P02	27/06/2025	Stage 2 issue	J. Daoud	H. Clifton / V. Wall	T. Smith
P03	30/01/2026	Stage 3 issue	J. Daoud	H. Clifton / V. Wall	T. Smith
P04	14/08/2026	Stage 3 VE Update	J. Daoud	C. Pearson / V. Wall	T. Smith

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Executive Summary

Hoare Lea has been appointed to produce a Part L2 report for the proposed development, located in Huyton, Knowsley.

This Part L2 report details how the Proposed Development shall incorporate a highly efficient, low-carbon scheme which is anticipated to significantly reduce potential CO₂ emissions compared to the notional building regulations target through the following measures:

- High efficiency servicing equipment and façade performance, in line with LETI targets, will minimise the energy usage of the building.
- The Energy Hierarchy has been used to drive the design of the proposed development through optimisation of the fabric thermal properties as well as glazing ratios.
- A dedicated study using Hoare Lea's in house tool, Kaleidoscope, was used to assess the solar impact on thermal and daylight performance and solar peak loads in early stages of the design.

This report has been prepared to demonstrate that, at developed design Stage 3, following the VE updates, the design team has given due consideration to the principles of energy and sustainability, and how these could be implemented for the Proposed Development.

When assessing the proposed development against the Building Regulations Part L2 (2021), results showed **19.2%** betterment over the notional building when using the maximum required photovoltaic system installation.

Stage 3 VE Updates

This report reflects the model updates following the design changes of the VE review. the design changes include reduction of the building footprint, removal of the lower ground floor and on typical office floor, and reconfiguration of spaces on the ground floor. The inputs and modelling methodology remain largely the same.

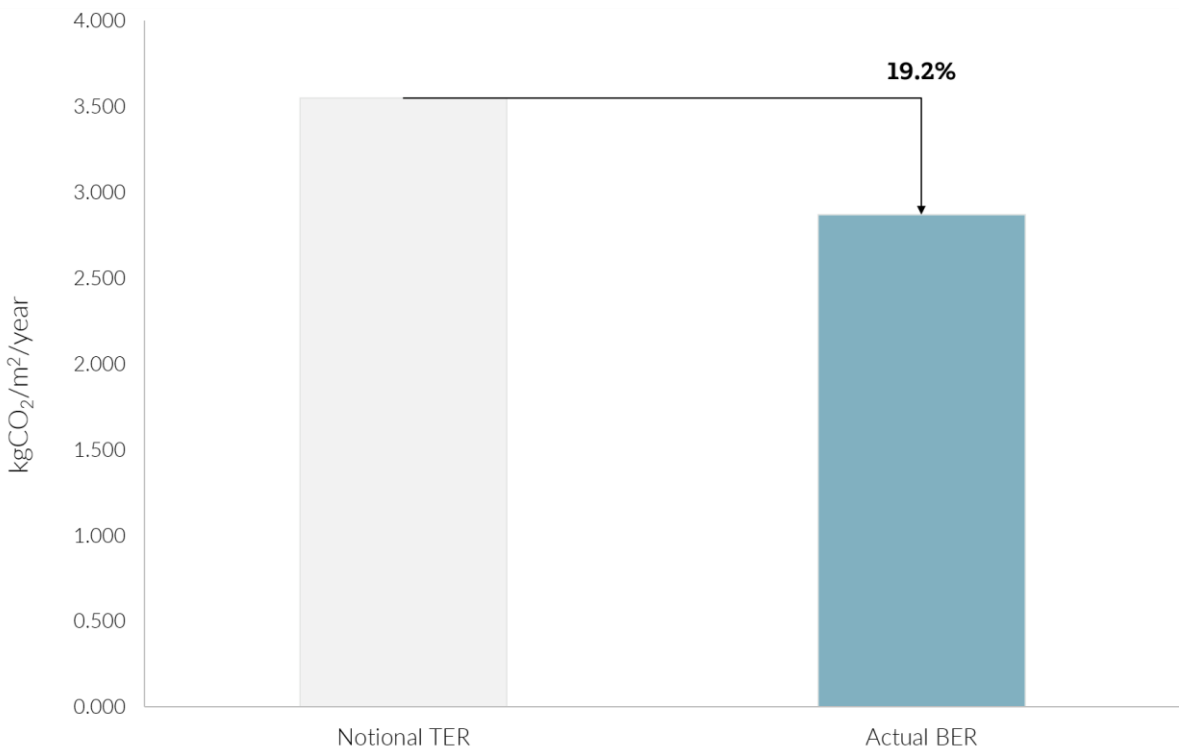


Figure 1 Emission Rate (kgCO₂/m²) Betterment over the Part L (2021) when photovoltaics is included.

1. Introduction.

This Part L report for the proposed development, located in Huyton has been developed for Knowsley Metropolitan Borough Council (KMBC), to demonstrate compliance with Part L Building Regulations. The report summarises the outputs of the energy modelling simulations typically used to achieve compliance with Approved Building Regulations Part L.

1.1 Proposed Development

This project is one of the initial phases of development of the new Huyton mixed-use commercial district project, St Michael's Place.

The proposed building is situated on Archway Road in Huyton, Liverpool and involves the construction of offices for the Knowsley Metropolitan Borough Council. The area surrounding the plot is dominated by the Knowsley Metropolitan Borough Council (KMBC) facilities which include the Municipal Tower, Huyton Library, the Annex and Computer Centre along with low-rise residential buildings.

The development is comprised of 4 storeys (including the ground floor) and will contain primarily office space along with support spaces such as a multifith room and roof top terrace. The entire building belongs to KMBC who are the sole tenants of these spaces.

The fixed building services will be newly installed and are expected to include centralised ventilation via Air Handling Units (AHU), VRF system for the offices and dedicated photovoltaic array on the roof.



Figure 2 Masterplan showing site location in yellow.

Approach to assessment

The following assessment report considers the approach to reducing carbon dioxide (CO₂) emissions and optimising energy efficiency within the development and sets out how the Proposed Development will address and achieve the relevant targets.

As such it demonstrates a proposed route to compliance with Approved Document Part L2 (2021), conservation of fuel and power, based upon the performance parameters stated within this report.

The Proposed Development is modelled in a Dynamic Simulations Modelling (DSM) software package (see Appendix A) with the assigned parameters and then tested against Part L2 methodology.

1.1.1 Definitions and limitations

Definitions:

The following definitions should be understood throughout this statement:

- **Energy demand:** the 'room-side' amount of energy which must be input to a space to achieve comfortable conditions. In the context of space heating, this is the amount of heat which 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 CO₂ emissions:** the CO₂ 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 Part L calculation methodology 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 for demonstrating compliance with Approved Document Part L2 (2021). The following is a summary of the data used and inputs/assumption made.

2.1 Site context.

The images below show the Dynamic Simulation Model (DSM) from the perspective of the south orientation.

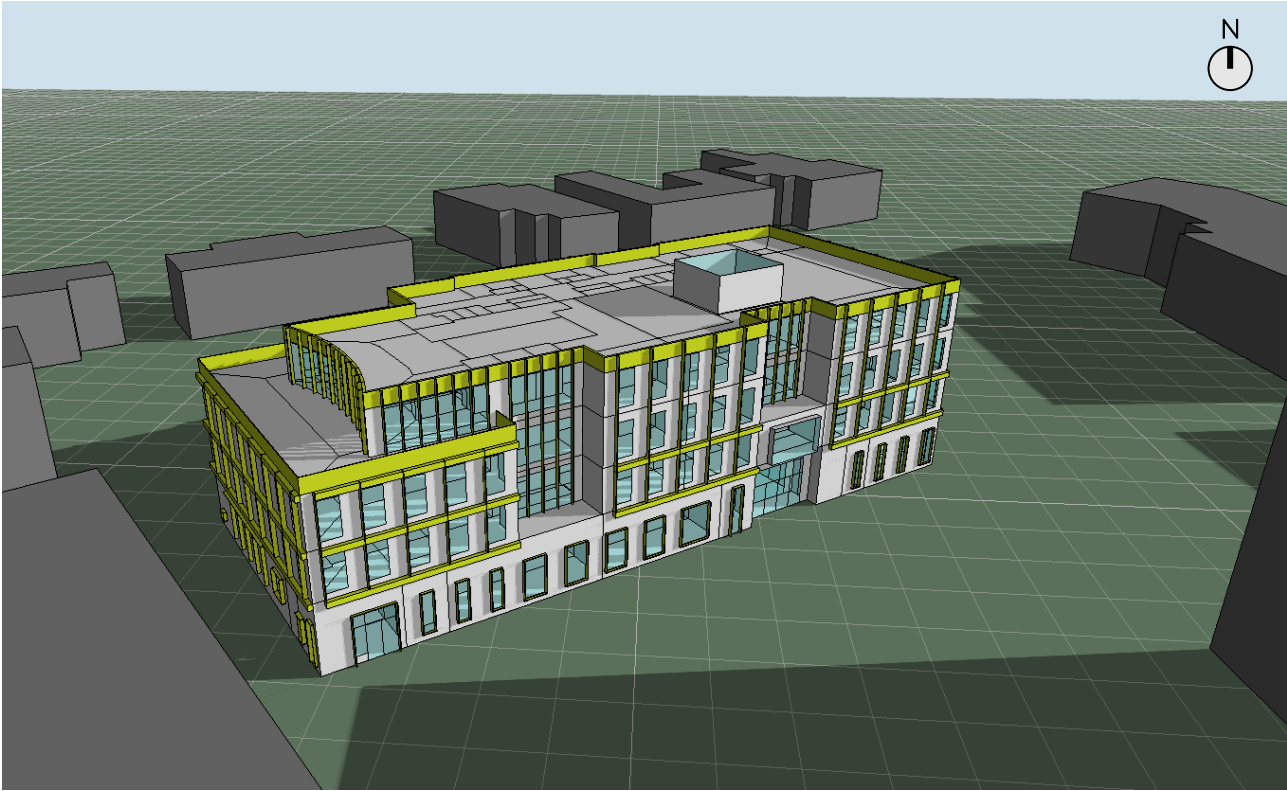


Figure 3 DSM Model Image of the development.

2.2 Architectural drawings.

The geometry used to assess Proposed Development was determined by the following information received by 5Plus Architects.

Table 1 Architectural Information.

Date	Data Type	Description
26/07/2026	Revit Model	06147-5PA-B1-ZZ-M3-A-500001-P15
26/07/2026	PDF Plans	06147-5PA-B1x00-DR-A-022200
		06147-5PA-B1x01-DR-A-022201
		06147-5PA-B1x02-DR-A-022202
		06147-5PA-B1x03-DR-A-022203
		06147-5PA-B1x04-DR-A-022204
		06147-5PA-B1xZZ-DR-A-422001-42203

2.3 Site location and weather data.

A building's thermal performance is it's 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. Thermal comfort calculations require the simulation to be tested against CIBSE Design Summer Year (DSY) climate data.

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, Nottingham, Cardiff, Edinburgh, Glasgow, Leeds, London (3 sites), Manchester, Newcastle, Norwich, Nottingham, Plymouth, Southampton and Swindon. The weather variables are synthesised into 2 types of CIBSE weather file type both the current and future climate:

– Design Summer Year (DSY): 2006 and 2016

The DSY is a single continuous year rather than a composite one made up from average months. The DSY is used for overheating analysis.

– Test Reference Year (TRY): 2006 and 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 closest CIBSE weather file location for the proposed development is **Manchester TRY**.

2.4 Building Fabric Specification.

Optimising the developments fabric is seen to be the most robust and effective way to improve energy efficiency and in turn reduce carbon emissions whilst also impacting thermal comfort. The performance of the envelope i.e. material performance is unlikely to deteriorate significantly with time and therefore the benefits of these measures will continue at a similar performance for the duration of their installation.

The performance of the glazing has also been carefully considered to maximise natural daylight penetration to reduce the reliance of artificial lighting whilst also allowing a controlled amount of passive solar heating.

Useful solar heat gain reduces heating demand in winter but with careful consideration to the glazing specification, this will help limit solar gain in the summer which would therefore reduce the potential risk of glare and overheating. Shading has been provided to the outdoor classroom areas on the ground floor.

The target building fabric performance is detailed below.

Table 2 Fabric and Construction Parameters.

Parameter	Part L (2021) Limiting Values	Notional (2021) Values	Proposed development values
Fabric Air Permeability Average (m³/m².h at 50Pa)	8.00	3.00	3.00
External Wall (W/m².K)	0.26	0.18	0.16
Louvred Panels (W/m².K)	-	-	1.20
Solid Doors (W/m².K)	1.60	1.90	1.20
External Glazing General– (W/m².K) (g-value/VLT)	1.60	1.40 (0.29)	1.10 (0.29/61%)
External Glazing Breakout Space– (W/m².K) (g-value/VLT)	1.60	1.40 (0.29)	1.10 (0.40/70%)
Rooflight Glazing – (W/m².K) (g-value/VLT)	1.60	-	1.50 (0.40/70%)
Roof (W/m².K)	0.18	0.15	0.10
Ground Floor (W/m².K)	0.18	0.15	0.10

2.5 System Parameters

Detailed heating, hot water, ventilation and lighting system parameters can be found in Appendix B of this report.

2.6 Photovoltaic Array parameters

The proposed photovoltaic array is to supply 29,895kWh/yr. To account for maintenance and access, 60% of the available roof area was allocated to PV which equates to approximately ~168m² of active PV panel area. Please note, area is indicative only as it is due to refinement based on efficiency/inclination specified etc.

The PV array size, to offset all energy consumption, may be reduced by the performance of the building’s design in relation to energy consumption which will be stated in the Operational Energy Report.

3. Part L2 Assessment.

The proposed development has been assessed against the most current version of Part L2 which is 2021 as per the requirements of the Building Regulations.

The proposed development will integrate low and zero carbon technologies as well as renewable energy in the form of air source heat pumps (ASHP) and photovoltaic (PV) panels.

3.1 Part L2 assessment results

Table 3 and Figure 4 show the results for the Building Emission Rate (BER) in comparison to the Target Emission Rate (TER).

Table 3 Compliance Results for Scenario Testing.

Emission Rate	TER (kg.CO ₂ /m ² /year)	3.55
	BER (kg.CO ₂ /m ² /year)	2.87
	Percentage betterment	19.2%
Primary Energy	TPER (kWh/m ² /year)	38.43
	BPER (kWh/m ² /year)	30.82
	Percentage betterment	19.8%

Overall, it is anticipated that the Proposed Development will achieve up to a **19.2%** reduction in CO₂ emissions beyond the Building Regulations Part L 2021 'baseline' Target Emission Rate (TER) based on Part L2 (2021) carbon factors when using the parameters listed within this report.

The TER baseline is a benchmark determined by the Part L notional case and is the minimum requirement set by Part L in order to gain compliance with Building Regulations.

Modelling penalties

It is important to note that the Part L compliance modelling offers penalties which cause the proposed building emission rate to be lower than expected.

The notional building will have a PV array which can be reduced based on the percentage of space heating served by heat pumps.

In this case, as the development uses electric radiant panels in ancillary spaces and point-of-use DHW systems, the notional development penalises by installing photovoltaics at a rate of 0.2kW_p/m² of PV array. The PV area is calculated using the following equation:

$$A_{PV} = (A_{foundation} \times 20\% \times A_{side-lit\&unlit} / A_{total}) + (A_{foundation} \times 40\% \times A_{top-lit} / A_{total})$$

Furthermore, all direct electric systems used in the notional to match those in the model utilise an efficiency of 134% -rather than 100%- which is not possible to achieve in real life.

Additionally, the notional building applies demand-controlled ventilation (DCV) in spaces that would often not be considered reasonable in reality, such as cupboards and circulation.

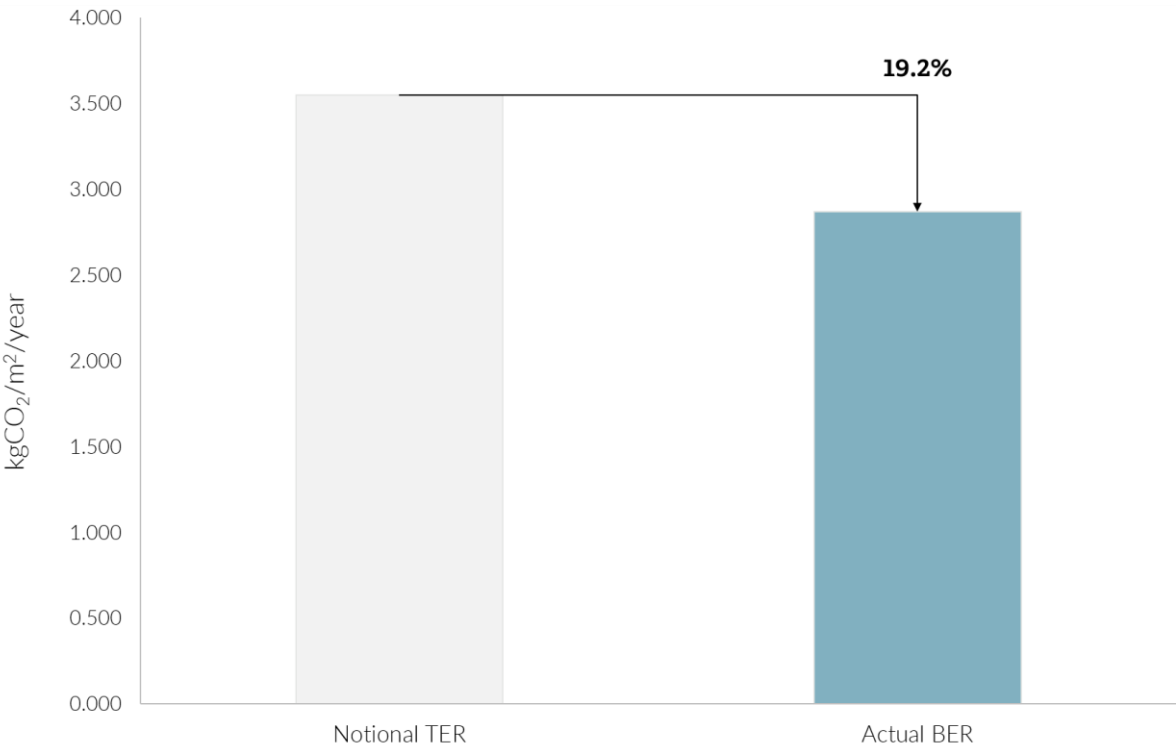


Figure 4 Building Emission Rate (kgCO2/m2) Compliance Graph.

4. Conclusion.

This Part L report for the Proposed Development incorporates a highly efficient, low-carbon scheme which significantly reduces potential CO₂ emissions.

High efficiency servicing equipment and façade performance, in line with LETI targets, will minimise the energy usage of the building. The Energy Hierarchy has been used to drive the design of the proposed development through optimisation of the fabric thermal properties as well as glazing ratios. A dedicated study using Hoare Lea's in house tool, Kaleidoscope, was used to assess the solar impact on thermal and daylight performance and solar peak loads.

This report has been prepared to demonstrate that, at the concept design Stage 3, the design team has given due consideration to the principles of energy and sustainability, and how these could be implemented for the Proposed Development.

When assessing the proposed development against the Building Regulations Part L2 (2021), results showed **19.2%** betterment over the notional building when using the maximum required photovoltaic system installation, satisfying the requirements of both Part L2 and the Knowsley Local Plan.

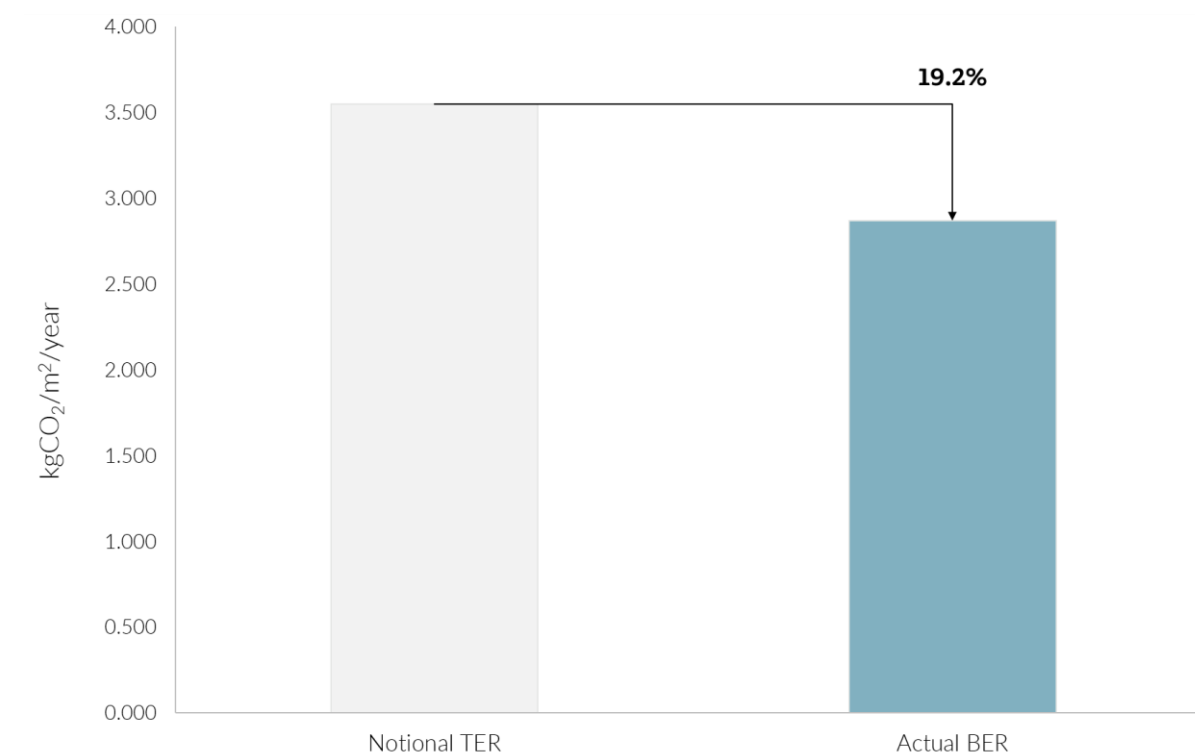


Figure 5 Part L 2021 carbon factor reductions for the proposed development when Photovoltaics are applied.

Appendix A: 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 (v2024.1.0)** for Part L modelling.

The IESve model for the Proposed Development was drawn based on the information received as listed in Section 3.2 Architectural drawings.

Modelling disclaimer.

The calculations produced by Hoare Lea have been carried out with the information provided by the architects and based on information and profiles taken from industry standard guidance documents e.g. NCM templates typical profiles to determine whether the proposed development can achieve criteria within the regulation methodologies specified in this report.

It should be noted that the data generated by this work is obtained using computer simulations. These simulations are the industry standard means of predicting the performance of the building at this stage. Project specific data can only be achieved by measuring the performance of the building and associated systems after a period of use.

The actual operation for the building once occupied may vary from the simulated operation. These differences will occur due to several variable parameters between the modelled building and the actual building usage. Such differences will include the hours, levels of occupancy, how the building services plant is used and the design criteria with regards to how the rooms are environmentally controlled.

Whilst the simulations have been undertaken using the level of reasonable skill and care required by our appointment and with reference to industry standard guidance documentation, 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 as well as the ways in which it may be occupied and actually used.

Appendix B: Carbon Intensity

4.1.1 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 2020¹.

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, 39.2% of the UK’s generation sources are from renewable sources².

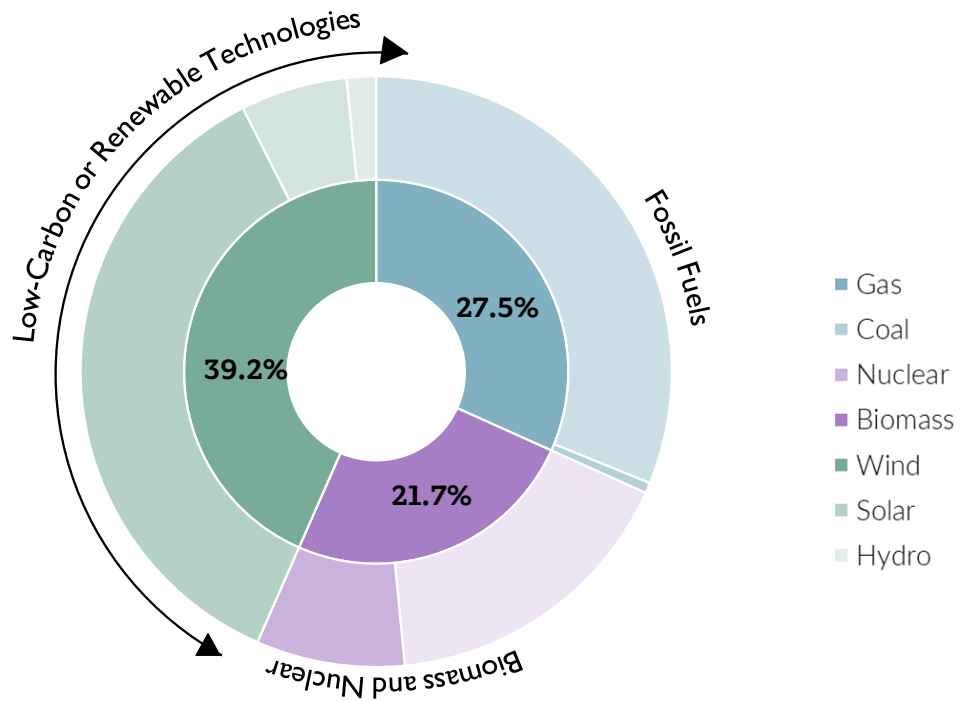


Figure 6 UK Energy Mix January 2024 - January 2025 (Source: National Grid iamkate.com).

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.

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>

4.1.2 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 4 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

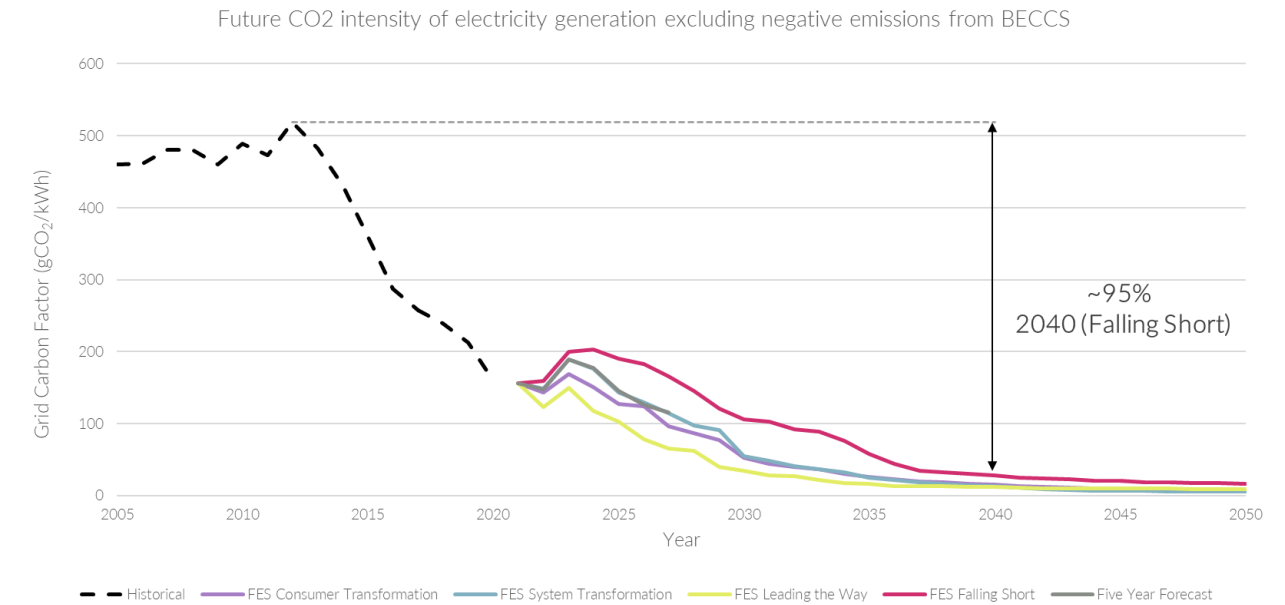


Figure 7 Grid Decarbonisation Factors from BEIS Future Energy Scenarios.

Appendix C: Calculation Parameters.

Building Specification

The target building fabric performance is detailed below:

Table 5 Fabric and Construction Parameters.

Parameter	Proposed development
Fabric Air Permeability Average (m ³ /m ² .h at 50Pa)	3.00
External Wall (W/m ² .K)	0.16
Basement Wall (W/m ² .K)	0.20
Louvred Panels (W/m ² .K)	1.20
Solid Doors (W/m ² .K)	1.20
External Glazing General– (W/m ² .K) (g-value/VLT)	1.10 (0.29/61%)
External Glazing Breakout Space– (W/m ² .K) (g-value/VLT)	1.10 (0.40/70%)
Rooflight Glazing – (W/m ² .K) (g-value/VLT)	1.50 (0.40/70%)
Roof (W/m ² .K)	0.10
Ground Floor (W/m ² .K)	0.10

Heating, Cooling and Ventilation Systems

The table below details the systems associated with each space type.

Table 6 System Parameters.

	Detail	Units	01_FCU + AHU (VRF)	02a_Elec Rad Panel - AHU	03_Elec Rad Panel - nat vent	04_Single room cooling	05_Air Curtain
	UK NCM System Type	-	Variable Refrigerant Flow	Other local room heater: unfanned	Other local room heater: unfanned	Single room cooling system	Other local room heater: unfanned
Heating	Heat Source	-	ASHP (electric)	Direct Electricity	Direct Electricity	ASHP (electric)	Direct Electricity
	Fuel Type	-	Electricity	Electricity	Electricity	Electricity	Electricity
	Was the System Installed After 1998	Y/N	Y	Y	Y	Y	Y
	Generator Seasonal Efficiency (COP)	%	4.48	1.00	1.00	4.48	1.00
	Does it Qualify for ECAs	-	-	-	-	-	-
Cooling	Pack Chiller Type	-	-	-	-	ASHP (electric)	-
	Pack Chiller Power	kW	-	-	-	-	-
	Chiller Fuel Type	-	-	-	-	-	-
	Generator Seasonal EER (SEER)	%	Varies (see schedule below)	-	-	4.30 (6.20)	-
	Does it Qualify for ECAs	Y/N	-	-	-	-	-
Adjustment & Metering	Ductwork Air Leakage CEN Classification	-	Class A	Class A	-	Class A	-
	AHU Air Leakage CEN Classification	-	Class L2	Class L2	-	Class L2	-
	System Specific Fan Power (SFP)	W/l/s	Varies (see schedule below)	Varies (see schedule below)	-	-	-
	Does the System have Provision for Metering	Y/N	Y	Y	Y	Y	Y
	Does the Metering Warn "Out of Range" Values?	Y/N	Y	Y	Y	Y	Y
Ventilation	Cooling / Ventilation Mechanism	-	Air conditioned	Mechanical Ventilation	-	Air conditioned	-
	Air Supply Mechanism	-	Centralised balanced A/C or MV	Centralised balanced A/C or MV	-	Centralised balanced A/C or MV	-
	Heat Recovery Type	-	Varies (see schedule below)	Varies (see schedule below)	-	-	-
	Heat Recovery Seasonal Efficiency	%	Varies (see schedule below)	Varies (see schedule below)	-	-	-
	Pump power density	W/m²	-	-	-	-	-
	Auxiliary energy fan fraction		0.50	0.50	-	-	-
Rooms Served			all office and assembly spaces, atrium and reception areas	WC lobby, drying room, roof stair, store	BOH lobby, draft lobby, water tank	comms	main entrance

VRF Schedule.

Table 7 VRF Schedule of Efficiencies.

	Heating SCOP	Cooling SEER
VRV GF East floorplate	4.48	7.28
VRV GF West floorplate	4.14	6.64
VRV 1F East floorplate	4.48	7.28
VRV 1F West floorplate	4.48	7.28
VRV 2F East floorplate	4.48	7.28
VRV 2F West floorplate	4.48	7.28
VRV 3F East floorplate	4.48	7.28
VRV 3F West floorplate	4.48	7.28

AHU Schedule.

Table 8 AHU Schedule of Performance Efficiencies.

	Specific Fan Power (W/l/s)	Heat Recovery Efficiency (%)	Heat Recovery Type
AHU 1 East core	1.50	82.9	PHX
AHU 2 West core	1.41	83.7	PHX
AHU 3 East floorplate	1.54	79.9	Thermal Wheel
AHU 4 West floorplate	1.52	80.0	Thermal Wheel

Domestic Hot Water Systems.

Table 9 DHW System Parameters.

	Instantaneous	POU
(00b _DHW Instantaneous)	Instantaneous hot water	
Fuel Source	Direct Electricity (100%)	
Storage (L)	-	280 L (5L per WC basin and 15L per cleaner's basin)
Storage Losses (kWh/l/day)	-	0.016

Lighting Parameters.

Table 10 Lighting Installed Power Densities and Controls per Space Type.

Room name	Lux Level	Light Output Ratio (LOR)	Lamp Efficacy (lm/W)	Local Manual Switching	Constant illuminance control	Photoelectric Daylight (control)	Lighting Controls **	Total Parasitic Power (W/m²)
Bin store	200	1	110	N	N	N	AUTO-ON-OFF	0.05
Business Lounge	300	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Chamber of Commerce	300	1	110	Y	N	N	MAN-ON-AUTO-OFF	0.05
Cleaner's Store	200	1	110	N	N	N	AUTO-ON-OFF	0.05
Comms	300	1	110	N	N	N	AUTO-ON-OFF	0.05
Conference and democratic centre	500	1	110	N	N	Y	None	0.05
Contact Room	300	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Corridors/lobbies	200	1	110	N	N	Y	AUTO-ON-OFF	0.05
Cupboard/store	200	1	110	Y	N	N	AUTO-ON-OFF	0.05
Cycle store	300	1	110	N	N	N	AUTO-ON-OFF	0.05
Drying Room	300	1	110	Y	N	N	AUTO-ON-OFF	0.05
Mayor's Room	500	1	110	Y	N	Y	MAN-ON-AUTO-OFF	0.05
Multi-faith Room	500	1	110	Y	N	Y	MAN-ON-AUTO-OFF	0.05
Nursing Room	500	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Office & deliveries	300	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Office (open) core	300	1	110	N	N	N	MAN-ON-AUTO-OFF	0.05
Office (open) perimeter	300	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Office Meeting	300	1	110	Y	N	Y	MAN-ON-AUTO-OFF	0.05
Plant room	200	1	110	N	N	N	None	0.05
Quiet Room	500	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Reception/waiting area	300	1	110	N	N	Y	MAN-ON-AUTO-OFF	0.05
Security	300	1	110	N	N	N	AUTO-ON-OFF	0.05
Showers	200	1	110	N	N	N	AUTO-ON-OFF	0.05
Stair	150	1	110	N	N	N	AUTO-ON-OFF	0.05
Training/Committee room	500	1	110	N	N	Y	AUTO-ON-OFF	0.05
WC	200	1	110	N	N	N	AUTO-ON-OFF	0.05

* Note that these values are not representative of each space within the building, just an example of one type of this space. – Full lighting detail can be provided upon request.

Outer Perimeter Zones

Control algorithm: ramp(e1,0,1,300,0.40) ; A formula applied as a dimming profile which controls lighting gain as a function of available daylight. It 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 0.40 at illuminance 300 lux, thereafter, remaining constant at this value. The value 0.40 represents the fraction of the room's lighting gain which is not subject to daylight control. The illuminance e1 has been computed using Radiance.

** 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.

Man On – Auto Off: Specifies manual on switch within the space within occupant control and absence detection switches lighting off when the space is detected to be unoccupied.

Photoelectric Cells

Approximately **29,895kWh** minimum total annual generation required.

Please note that the PV array specification and configuration should be determined by a PV specialist to achieve the minimum kWh/year detailed in this report.

Power factor

Electric Power Factor 0.90 to 0.95

Appendix D: BRUKL Output.

BRUKL Output

BRUKL Output Document

 HM Government

Compliance with England Building Regulations Part L 2021

Project name

5300013-Huyton HQ-Part L-Stage 3+_P01

As designed

Date: Fri Jul 31 12:13:10 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: Hoare Lea
Telephone number:
Address: 6th Floor, Royal Exchange, St Ann's Square,
Manchester, M2 7FL

Foundation area [m²]: 1189.6

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

Target CO ₂ emission rate (TER), kgCO ₂ /m²·annum	3.55
Building CO ₂ emission rate (BER), kgCO ₂ /m²·annum	2.87
Target primary energy rate (TPER), kWh _{ep} /m²·annum	38.43
Building primary energy rate (BPER), kWh _{ep} /m²·annum	30.82
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 _{o-Limit}	U _{o-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.16	0.16	L0000067:Surf[2]
Floors	0.18	0.1	0.1	L0000065:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.1	0.1	L0000186:Surf[5]
Windows** and roof windows	1.6	1.1	1.1	L0000048:Surf[0]
Rooflights***	2.2	1.5	1.5	L0000001:Surf[0]
Personnel doors^	1.6	1.2	1.2	L0000176:Surf[0]
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_{o-Limit} = Limiting area-weighted average U-values [W/(m²K)]
U_{o-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
m³/(h.m²) at 50 Pa	8	3

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Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m²]	5263.2	5263.2
External area [m²]	5994.8	5994.8
Weather	MAN	MAN
Infiltration [m³/hm²@ 50Pa]	3	3
Average conductance [W/K]	1717.97	2170.61
Average U-value [W/m²K]	0.29	0.36
Alpha value* [%]	24.74	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
94	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
5	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/m²]

	Actual	Notional
Heating	3.39	4.29
Cooling	2.65	2.41
Auxiliary	2.47	6.58
Lighting	12.41	12.12
Hot water	5.62	1.84
Equipment*	34.19	34.19
TOTAL**	26.55	27.24

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is not of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	5.68	1.26
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	5.68	1.26

Energy & CO₂ Emissions Summary

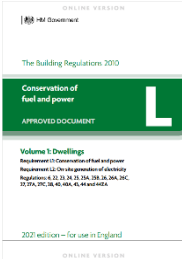
	Actual	Notional
Heating + cooling demand [MJ/m²]	80.65	76.52
Primary energy [kWh _{ep} /m²]	30.82	38.43
Total emissions [kg/m²]	2.87	3.55

HOARE LEA 

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Appendix E: Assessment Drivers.

4.2 Building Regulations Part L2 2021



The building is being assessed against the Building Regulations Part L2 2021.

Building Regulations Part L 2021 requires that the development as designed is not anticipated to exceed CO₂ emissions, Primary Energy or Fabric Efficiency than those set by the notional dwelling (TER and TPER calculated in accordance with 2021 methodology).

4.2.1 Limitations

The appraisals within the strategy are based on the Building Regulations Part L 2021 calculation methodology and should not be understood as a predictive assessment of likely future performance.

Occupants may operate their systems differently, and/or the weather may be different from the assumptions under Part L approved calculation methods, leading to differing energy requirements.

4.2.2 Unregulated energy and carbon

The Part L compliance assessment only takes into account regulated energy uses (i.e. lighting, heating, cooling and ventilation) and does not consider unregulated energy uses. Unregulated sources include ‘plug-in’ consumption from items such as televisions, computers and fridge-freezers, etc.

Due to these energy requirements being excluded from the Part L appraisal an assessment of the unregulated CO₂ emissions of the Proposed Development is not part of this Part L report. An Operational Energy Assessment will be undertaken using the TM54 methodology which requires refined parameter inputs. The TM54 methodology considers unregulated energy, including miscellaneous items like catering, lifts, and servers, within the assessment. This offers a more realistic outlook of the in-use energy demands to explore further opportunities to decrease the operative costs and carbon emissions.

4.2.3 Calculation tool

The Part L2 2021 calculations were undertaken using IESve 2024.0.1 software, which is approved for use in assessing the performance of buildings in accordance with the Building Regulations Part L2 2021.

4.3 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 co-locating 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.

4.4 Knowsley Local Policies.

The Knowsley Local Plan Core Strategy was originally adopted in 2016, the Climate Emergency Action Plan in 2020 and Net Zero Delivery Plan in 2022 (to be completed by 2025). The updated Core Strategy policies and text have been collated into a single document alongside the existing policies to form the current Knowsley Local Plan.

The key carbon and energy related policies from the Knowsley Local Plan, Climate Emergency Action Plan and Net Zero Delivery Plan are outlined in the table below.

Policy Reference		Target
Local Plan Core Strategy 2016	CS22 – Sustainable and Low Carbon Development	1. New development will be required to meet high standards of sustainable design and construction and minimise carbon emissions. This should be achieved by: a. Designing new buildings for flexible uses throughout their lifetime; b. Avoiding the creation of adverse local climate conditions by using natural systems to avoid internal overheating and excessive heat generation; c. Ensuring developments are comfortable and safe for users; d. Making the most effective and sustainable use of water, aggregates and other resources; e. Limiting energy use by incorporating high standards of insulation, heat retention, natural ventilation and passive solar techniques; f. Landscaping (including measures such as green walls or roofs) to create shelter and reduce any heat island effect; g. Using sustainable materials from local suppliers where possible; h. Supplying energy efficiently and incorporating decentralised energy systems, using renewable and low carbon energy where feasible; i. Managing flood risk, including through the use of Sustainable Drainage Systems (SuDS) and flood resilient design for infrastructure and property; j. Promoting sustainable waste practices in new and existing developments.
		2. Government targets for carbon reduction in new development are expected to be implemented through updates to the Building Regulations. Where it is not technically feasible or economically viable to meet the requirements on site, contributions to the Council's Community Energy Fund may be accepted as one of a range of options under the Government's proposed 'Allowable Solutions' mechanism. The Fund will be used to support carbon reduction initiatives in Knowsley and potentially the wider Liverpool City Region. 3. Local targets for sustainability in relation to specific development areas or sites may be outlined in the Local Plan: Site Allocations and Development Policies. Priority Zones and Decentralised Energy Networks 4. Knowsley Industrial Park and Knowsley Business Park are identified as a 'Priority Zone'. Within this area the Council and its partners will facilitate renewable and low carbon infrastructure by (subject to feasibility) requiring new development to:

Policy Reference		Target
		a. Make provision for connection to an existing or planned decentralised energy network; and b. Be designed to enable future connectivity in terms of proposed site layout, infrastructure and heating provision, including consideration of connections at a later date or phase. 5. Subject to opportunity and need, additional 'Priority Zones' may be identified in the Local Plan: Site Allocations and Development Policies.
Climate Emergency Action Plan 2020	Theme 7 – Sustainable energy generation	– Assess the impact of nationwide electricity grid decarbonisation on future energy use and carbon reduction targets. – Assess regional and national proposals for sustainable heat generation. – Determine feasibility of relocating existing solar panel array on the Huyton Municipal Annex. – Investigate feasibility of retrofitting sustainable energy generation for other Council buildings which are likely to be still operational in 2040. – Incorporate the generation of sustainable energy into the proposals for the new Council Headquarters in Huyton. – Incorporate the generation of sustainable energy into the proposals for the redevelopment of the buildings at Court Hey Park. Investigate the feasibility of off-site sustainable energy projects as a means of offsetting the Council's own carbon emissions
Net Zero Delivery Plan 2022-2025	Decarbonisation of Council estate and assets	– To design low carbon new Huyton Council Headquarters, KMBC will ensure the building incorporates low carbon technologies.



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