

This City

Postal Street, Manchester

Energy and Carbon Statement

16th December 2025

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0.0 Executive Summary

This Energy and Carbon Statement has been prepared to support the planning application for the Postal Street residential development (proposed development) located on Postal Street, Manchester, M1 1EE.

This statement demonstrates how the proposed development has been designed to maximise its environmental performance by reducing energy use and carbon emissions in accordance with the local energy and climate change policy requirements, including those of Manchester City Council (MCC) and the Greater Manchester Combined Authority (GMCA).

0.1 Energy and Carbon Proforma

The Energy and Carbon Proforma has been submitted alongside this statement to support the full planning application for the proposed development in accordance with the recently published GMCA Net Zero Carbon Design guidance. See the extract of the proforma below, populated with the relevant environmental performance indicators for the development.

The GIA figures reported in the proforma are consistent with the Simulated Model Area from the TM54 Dynamic Thermal Model to ensure consistency in the calculations.

Energy and Carbon Proforma Residential		GMCA GREATER MANCHESTER COMBINED AUTHORITY	
Major development (+10 homes) Version 1.0			
Project Name: Postal Street Application ref: Date:			
		Ref. name	Postal Street
		No. dwellings	
		Area (m ² GIA)	9,418
		Target values	Building 1
Minimise energy demand	Space heating demand (kWh/m ² GIA/yr)	≤ 15 (flats) ≤ 20 (houses)	0.25
	Calculation methodology used to calculate space heating demand and confirmation that this covers all homes/blocks	Predictive energy model	TM54
	Form factor per building	≤ 2	0.5
	Average external wall U-value (W/m ² K)	≤ 0.15	0.15
	Average window U-value (W/m ² K)	≤ 1 (triple)	0.8
	Air permeability rate (m ³ /h/m ² @ 50 Pa)	≤ 1	2.5
Maximise energy efficiency	Energy use intensity (kWh/m ² GIA/yr)	≤ 35	47.08
	Calculation methodology used to calculate energy use intensity and confirmation that this covers all homes/blocks	Predictive energy model	TM54
Use renewable energy	PV footprint area (% of ground floor space)	≥ 40	40
	Annual renewable energy generation (kWh/m ² building footprint/yr)	-	4.33
	Renewable energy balance (%)	-	11.5
	Total energy used (kWh/yr)	-	443,484.70
	Total energy generated on-site (kWh/yr)	-	51021
Use low carbon energy	Fossil fuel free (yes/no)	Yes	Yes
	Heat source	Electric	Electric
	Low Carbon Heat Appraisal completed	Yes	Yes
	Heat network suitability	-	No
	Exemption requested	-	No
	Efficiency of heating system (SCOP)	≥ 3.5	1
Reduce overheating risk	Carbon content of heat (gCO ₂ /kWh)	≤ 100	31.25
	Have Part O overheating requirements been met without the use of mechanical cooling?	Yes	Yes
	If no, how many homes are cooled?	Yes	N/A
	Has a CIBSE TM59 assessment been carried out using DS/2 and DS/3 weather files? Have any additional passive measures been included as a result?	Yes	No
Minimise embodied carbon	Upfront embodied carbon (kgCO ₂ e/m ² GIA)	≤ 500-600	711.54
	List top three materials with the highest upfront embodied carbon emissions (kgCO ₂ e/m ² GIA): Material 1	-	-mix concrete, li
	Material 2	-	source heat pui
	Material 3	-	circular galvanised ste
	Lifecycle embodied carbon (kgCO ₂ e/m ² GIA) - for large major developments only	-	
Offsets	Offset contribution (£)	-	-

Copy of Energy and Carbon Proforma.

0.2 Project Overview

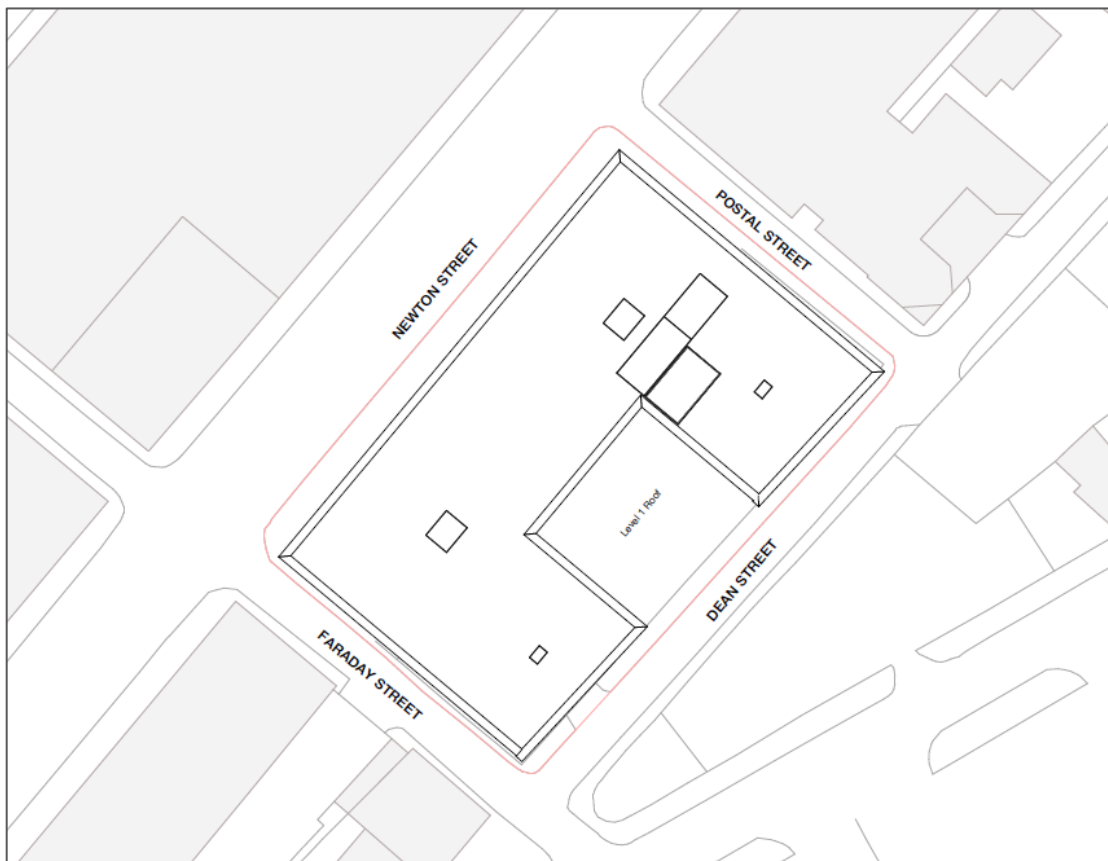
The City Council Development comprises the erection of a residential apartment building (Use Class C3a), of 8 storeys; together with ground floor commercial units (Use Class E), cycle parking provision, and other associated works.

The site of the proposed development is situated within the Northern Quarter, an inner-city neighbourhood located within Manchester City Centre, sitting within the Piccadilly Ward. The site is bounded by Postal Street to the east, Newton Street to the north, Faraday Street to the west and Dean Street to the south.

Part L modelling using the Standard Assessment Procedure (SAP 10.2) methodology and TM54 operational energy modelling has been carried out using current design information for the proposed development. The following environmental performance indicators outlined within this statement are therefore representative of the estimated performance of the proposed development based on the current, early-stage design scenario.

Both the residential and non-residential aspects of the proposed development have been considered in this statement, with compliance against the performance targets for both use classes demonstrated within the Energy and Carbon Proforma. For the purposes of this statement, the non-residential aspects of the development refer to the ground floor shell-only commercial unit which falls under Part L: Volume 2 of the Building Regulations. All other aspects of the development, including apartments and landlord areas, are considered in the assessment of residential areas, as the proposed development is predominantly a residential apartment building.

A site plan of the proposed development is provided below.



Site plan

0.2.1 Planning Policy

The following statutory requirements, separated by national, regional and local relevance, have been identified as key policy drivers and considered during the development of this statement. Further details regarding the specific policies relevant to energy and carbon are provided in Appendix 1.

Policy Reference	
National	National Planning Policy Framework (December 2024)
Regional	Greater Manchester Combined Authority Places for Everyone Joint Development Plan (adopted March 2024)
Local	Manchester Core Strategy 2012-2027 (adopted July 2012) A Guide to Development in Manchester: Supplementary Planning Document (adopted April 2007)

This statement has been prepared to address the requirements of Policies JP-S2 Energy and Carbon and JP-S3 Low Carbon Heat of the Places for Everyone Joint Development Plan (PfE) in accordance with the GMCA Net Zero Design Guidance, published in March 2025. Policies related to energy and climate change within the Manchester Core Strategy (MCS) and A Guide to Development in Manchester: Supplementary Planning Document are considered further within the Environmental Standards and Energy Statement and the Sustainability Statement, prepared by Hannan Associates and submitted as part of this planning application.

1.0 Building Fabric and Ventilation

The design of Postal Street seeks to minimise its operational energy demand by applying design strategies that consider energy efficient fabric and ventilation in accordance with Policy JP-S2 of the PfE. The following section demonstrates how the principles of the energy hierarchy have been implemented throughout its design to reduce the space heating demand.

1.1 Building form and heat loss envelope

The development comprises an 8 storey 'C' Block shape residential building, consisting of a ground floor podium base and 7 storeys of residential apartments. The building is proposed to be a traditional brick construction with a steel framing system, including regular moments of anodised metal rainscreen.

The main roof is a flat roof with associated plant above. An unoccupied flat green roof is proposed at Level 01. There is a large commercial space and residential amenity proposed at the ground floor, which are both considered heated spaces. There is also associated plant, bin and cycle parking located at ground floor, all to be treated as unheated spaces.

The form factor of the proposed development has been calculated as 0.5, using the following methodology of dividing the exposed external surface area by the gross internal floor area.

$$\frac{5,294m^2 \text{ (total exposed surface area)}}{10,524m^2 \text{ (gross internal floor area)}} = 0.5$$

1.2 Elevation design and window proportions

The design of the elevations incorporates floor-to-ceiling windows in all rooms, as illustrated in the drawings provided in Appendix 2.

Generally, living rooms have Juliette windows and bedrooms have a singular bottom-hung window with a split transom and top panel. This varies across the building due to acoustic constraints within the scheme. In these locations, the Juliette balconies are replaced with the same window treatment as the bedrooms.

The glazing-to-wall ratio figures for each elevation of each building are shown in the table below.

Building Orientation	Glazing-to-Wall Ratio
Newton Street	24%
Faraday Street	17%
Dean Street	19%
Postal Street	18%
Courtyard 01	27%
Courtyard 02	32%
Courtyard 03	25%

1.3 Heated and unheated spaces

As above, the commercial space and residential amenity proposed at the ground floor are both heated spaces. The ground floor unheated spaces comprise the refuse store, bike store, sprinkler water tank room, LV switch room and IDNO transformer room.

A drawing is provided in Appendix 2 illustrating heated and unheated spaces within the building.

1.4 Building fabric specifications and airtightness

A fabric-first approach to improving the performance of the building envelope has been applied using the 2021 'Notional Building' as the target for the construction of the development to ensure compliance with the 2021 Part L Building Regulations. A summary of the as-designed performance specifications for the building envelope is provided in the table below.

Specification	Fabric Performance	Notes
Airtightness (m ³ /hm ²) at 50 Pa	2.50	-
Average U-values W/m ² K	Ground and Exposed Floor 0.12 External Wall 0.15 Roof 0.11	<i>U-values refer to Part L Volume 1 results for residential areas only. See Energy & Carbon Proforma for Part L: Vol 2 results for the non-residential areas.</i>
Window U-value W/m ² K	0.80	
External Door U-value W/m ² K	1.00	
Glazing g-value	0.35	-
Shading	Balustrade design to provide 50% shading to the living room areas. The building footprint provides natural shading to the courtyard elevations. The building's urban context allows natural shading from neighbouring buildings. Deep reveals to windows provide shading in warmer months.	-
Overall Total Y-value	0.04 (dwellings)	
Thermal bridging W/mK		

1.5 Ventilation system

Residential Areas Ventilation Strategy

General ventilation (trickle & boost) within each apartment shall be provided via independent whole-house low power continuous supply and extract ventilation (MVHR) units.

MVHR units shall provide continuous extract ventilation to the kitchens, ensuite bathrooms, bathrooms and utility cupboards with continuous supply air to the bedrooms and living / dining areas. Ventilation rates will be in accordance with the requirements of Approved Document F of the Building Regulations.

MVHR units shall operate continuously in trickle mode. Increased boost ventilation shall be manually controlled by the occupants via wall-mounted boost operation switches.

Purge ventilation shall be provided to all habitable rooms by openable windows.

Amenity Areas Ventilation Strategy

Mechanical fresh air ventilation shall be provided to amenity areas via local mechanical heat recovery ventilation units mounted at a high level within the space served.

Local mechanical extract ventilation shall be provided to refuse store areas via twin duty/standby mechanical extract fan(s) mounted at a high level within the space served.

Ventilation rates will be in accordance with the requirements of Approved Document F of the Building Regulations.

Non-residential Ventilation Strategy

As the commercial units are to be constructed to a shell only standard for fit-out works by a future incoming occupier(s). To demonstrate Part L compliance, an assumed level of fit-out has been provided with lighting included and space heating/cooling via high efficiency VRF systems with local heat recovery ventilation.

1.6 Space heating demand

A dynamic simulation model (DSM) has been created using IES Virtual Environment (2025) to predict the development's space heating demand in accordance with the CIBSE TM54 methodology, based on early-stage design information.

The block average space heating demand calculated for the residential areas of the development (i.e. dwellings and landlord areas) is 0.25kWh/m²/yr.

The space heating demand calculated for the non-residential areas of the development (i.e. the shell commercial unit) is 0.52kWh/m²/yr.



SDH target for major developments.

2.0 Maximise Energy Efficiency

The design of Postal Street seeks to decrease its operational energy consumption further by exploring opportunities to integrate high-efficiency systems, thereby reducing wasted resources and illustrating how the energy hierarchy has been applied to maximise energy efficiency. The following section describes how Postal Street works towards achieving challenging targets for total energy use and considers both regulated and unregulated energy.

2.1 Energy use intensity for residential developments

A dynamic simulation model (DSM) has been created using IES Virtual Environment (2025) to assess the overall annual operational energy for the development in accordance with the CIBSE TM54 methodology. The DSM has been used to predict the total energy use intensity (EUI) of the development based on early-stage design information and in line with GMCA guidance, excluding renewables.

A building's EUI considers all regulated and unregulated energy consumption and is measured in kWh per square metre of gross internal floor area (GIA) per year (kWh/m²/yr).

The predicted energy use intensity calculated for the residential areas of the development is 47kWh/m²/yr.



EUI target for major residential developments.

2.2 Energy use intensity for non-residential developments

The TM54 methodology has also been used to assess the overall annual operational energy for the non-residential areas (i.e. shell commercial unit) of the building.

The predicted energy use intensity calculated for the non-residential aspect of the development is 38kWh/m²/yr.

In accordance with Policy JP-S2, the energy performance ratio (EPR) of the ground floor commercial space has been reported against the minimum standard for BREEAM “Excellent” for the Ene-01 Reduction of energy use and carbon emissions BREEAM issue.

BREEAM ENE 01 ENERGY PERFORMANCE RATIO	
Minimum Standard (Excellent)	Postal Street Commercial Space
0.4	0.357

The EUI and EPR reported at the early planning stage reflect the current ‘worst case’ design scenario for the ground floor commercial space as it has been designed to a shell-only standard, and assumptions have been made based on the level of fit-out

Whilst the EPR achieved for the commercial space does not meet BREEAM “Excellent” at the early planning stage, it is considered that the future incoming occupier(s) of this space will have opportunities to improve the energy performance further.

2.3 Efforts to reduce energy use of equipment

Energy consumption of unregulated loads has been calculated using a combination of the TM54 methodology, industry best practice guidance and benchmarks for the following services:

- External lighting
- Lifts & escalators
- Small power
- Catering
- Server rooms

The total energy use has been predicted using the projected occupancy of the proposed development; however, it is recognised that there are challenges associated with monitoring and reducing energy use in residential buildings and that these early-stage operational energy estimates are based on several assumptions, such as the average usage of unregulated energy devices.

Opportunities to further reduce the EUI beyond what can be achieved through minimising regulated energy use include specifying energy-efficient appliances, in line with the degree of fit-out in the base build, to reduce energy consumption per use.

3.0 Renewable Energy Generation

The proposed development aims to maximise the generation of on-site renewable energy by considering opportunities to integrate low carbon and renewable technologies into the design where appropriate. The following section describes how the design of Postal Street advances towards balancing predicted annual energy use with annual renewable energy generation in accordance with the energy hierarchy.

3.1 Proposed renewable energy generation system

Solar PV is the renewable energy generation system proposed for inclusion in the development. A large solar PV array will be provided on the roof of the building to generate low carbon electricity, which will contribute towards reducing operational carbon emissions in and lessen reliance on grid electricity. The solar PV system proposed has been modelled at this early design stage.

The capacity of the system shall be 65.83kWp

The expected annual renewable electricity generation of the PV system is 51,021kWh/yr.

The table below provides further details of the proposed solar PV system for Postal Street based on early-stage modelling results.

Description	Solar PV
Orientation	45° from south
Tilt	10°
Peak output (kWp)	65.83kWp
Panel (maximum output, type of inverters)	480W
PV area as percentage of ground floor area	40%
Expected annual renewable energy generation	51,021kWh/yr.
Annual renewable energy generation per m ² (GIA)	5.42kWh/m ² (GIA)/yr*
Annual renewable energy generation per m ² (building footprint)	33.22kWh/m ² (building footprint)/yr
Balance between total energy use and renewable energy generation	11.5%
Shading constraints?	None calculated at this stage, shading factor used = 1. Minimal localised shading from other rooftop plant.
Data source	ECA Guide to PV Systems

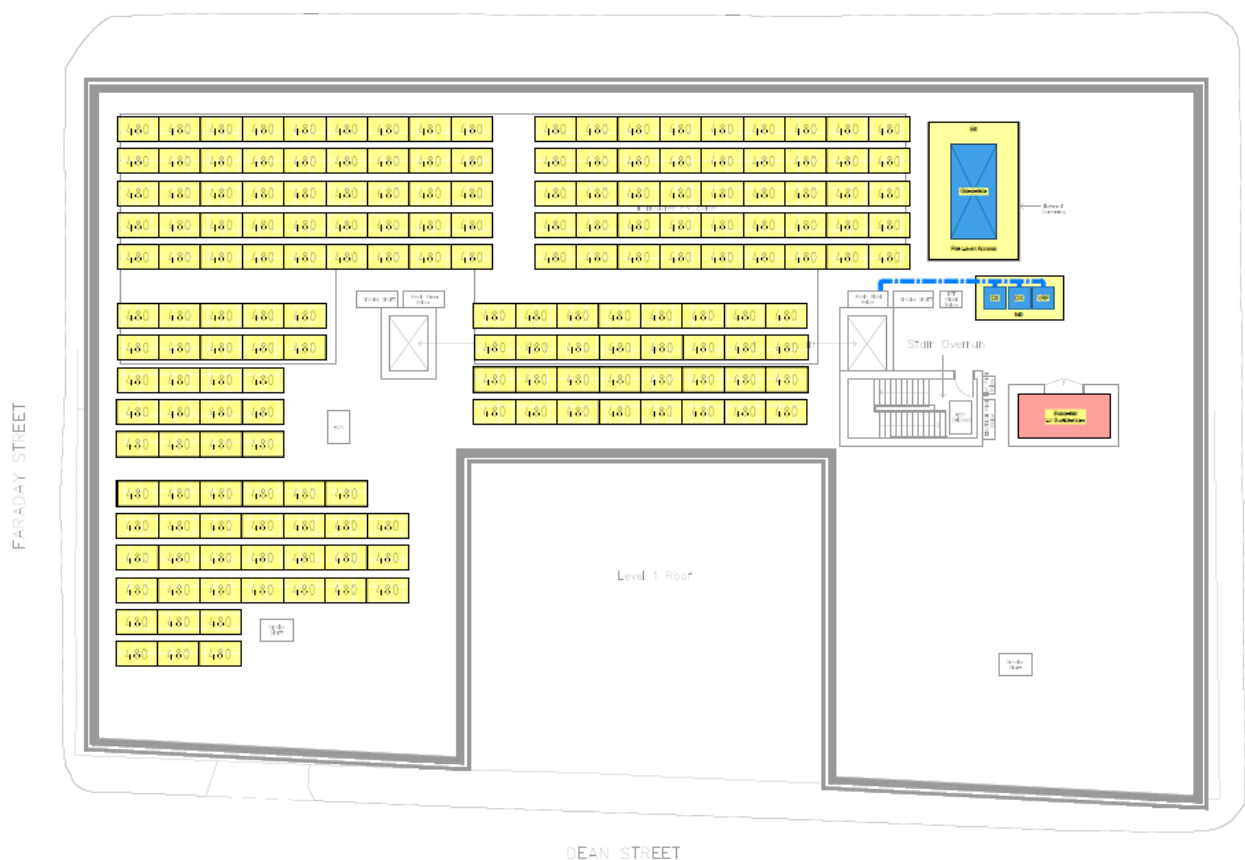
**The GIA of the ground floor commercial space has been excluded from this total as PV will serve the apartments and landlord areas only. GIAs are consistent with the figures used in the TM54 operational energy modelling.*

3.2 PV footprint area

One limitation to the extent of a PV system is that a significant amount of the roof area across the development is required to house building services plant and other equipment therefore, there may be substantially less available roof space on which solar panels could be installed.

In line with Policy JP-S2 of the PfE, the opportunities for on-site electricity generation from solar technologies can still be maximised by installing panels on the remaining roof area. The proposed PV arrangement covers an area equivalent to 40% of the usable roof area when accounting for access and maintenance zones. This meets the requirement of Policy JP-S2, to provide a PV installation which covers 40% of the ground floor area (proxy for available roof space).

The indicative roof layout provided in Appendix 3 illustrates the proposed arrangement of solar PV across the available roof area of the building and demonstrates how the panel area has been maximised whilst accounting for other roof-mounted equipment, access for maintenance and overshadowed areas.



Proposed PV layout.

3.3 Renewable energy balance

The renewable energy balance describes the proportion of the total annual energy used for the development that will be balanced by the total annual generation of renewable energy on site.

Based on early-stage predictions of operational energy use, the renewable energy balance for the proposed development has been calculated as 11.5%.

This has been achieved by applying the principles of the energy hierarchy in accordance with Policy JP-S2 of the PfE to minimise operational energy use and maximise onsite renewable energy generation to reduce operational carbon emissions.

$$11.5\% = \frac{51,021\text{kWh/yr (Annual electricity yield)}}{443,484.70\text{kWh/yr (Final energy demand)}} \times 100$$

The renewable energy balance has been calculated using the final energy demand of the residential aspects of the development only (i.e. apartments and landlord's areas), to more accurately reflect how the renewable energy generated on site will be utilised in the building, as the PV will not serve the ground floor commercial space. These figures have been calculated in accordance with the TM54 methodology.

The renewable energy generation balance reduces to 10.8% when accounting for the predicted operational energy demand of the shell commercial unit as well.

4.0 Low Carbon Heating

The proposed development has been designed to reduce its contribution to climate change by minimising carbon emissions and mitigating local air pollution through the integration of low carbon heating systems in accordance with Policies JP-S2, JP-S3 of the PfE and Policy EN4 of the MCS. The following section demonstrates how a variety of heating systems have been considered for implementation in the development, and the best heating option chosen to deliver low carbon heat, which is affordable to residents and cost-effective.

4.1 Fossil fuel free

The development is an all-electric scheme and does not rely on burning fossil fuels (gas/other) on-site for heating, hot water, cooking or back up-generation.

No gas supplies shall be provided.

4.2 Proposed systems for heating and hot water

In accordance with Policy EG1 and JP-S3, Hannan Associates has conducted a low carbon heat appraisal for the proposed development which assesses the suitability of different low carbon heating systems against four key performance indicators:

- Environmental performance
- Impact on residents
- Impact on viability
- Infrastructure development

Based on an assessment of the location of the proposed development and the low carbon heat networks map provided within the GMCA Low Carbon Heating guidance, the development falls within the Case type 3 location. Case 3 reflects developments that are within a low carbon heat network opportunity area. Engagement with MCC has been initiated to obtain further details to indicate whether the site is now part of a designated heat network zone or not, with guidance stating that it is unlikely, as designations are not expected to happen before 2027.

The proposed system for heating and hot water is an individual heating system in which space heating and domestic hot water are provided separately. Space heating shall generally be delivered throughout the development via direct electric panel heaters with a SCOP of 1.00. Electric panel heaters will be provided within habitable spaces within apartment areas, with electric towel rails also provided in bathroom/en-suite areas.

Domestic hot water shall generally be delivered via ducted air source heat pump (ASHP) cylinders with SCOP of ≤ 3.36 , which will be located within the utility cupboard of each apartment.

A copy of the low carbon heat appraisal is provided in Appendix 4, with a summary presented in the table below.

Systems Considered	Carbon Emissions gCO ₂ /kWh (heat delivered)	Cost of Heat £/dwelling/year	Capital Cost £/unit	Overall Suitability
Notional Low Carbon Heat Network	100	175	975,728	• Future proofed technology • Reliable heating compared to individual systems • Purchase energy in bulk, potentially securing better prices • Constrained by the lack of existing networks in the area to enable an immediate connection
Hot water heat pump + Direct Electric	31.25	528	720,130	• No external units required • Low distribution losses • Low impact on overheating • Zero carbon ready
Biomass Boiler	113.2	102	1,260,427	• Purchase fuel in bulk, potentially securing better prices • Negative impact on local air quality • High capital cost

4.3 Proposed system for cooling

The proposed development has been designed not to overheat, as detailed in the design stage overheating assessment which demonstrates that all residential areas comply with Approved Document O (CIBSE TM59). As such, no mechanical cooling is proposed to residential areas.

Limiting overheating has been achieved by enhanced MVHR units, as opening windows is not permitted for achieving compliance with Approved Document O due to acoustic constraints.

5.0 Overheating Risk

Climate change is expected to increase the frequency of periods of hot weather in the UK, and at more extreme temperatures, creating challenges that will affect infrastructure, health and wellbeing. As such, it is important to consider how increased temperatures will affect the risk of overheating within a new development to ensure occupant comfort. The design of Postal Street seeks to minimise the risk of overheating by considering window design and shading strategies, as described in the following section.

5.1 Natural ventilation

All windows are designed to be openable for natural purge ventilation and controlled by the occupant. Juliette windows will provide two openable doors at 90degrees. Singular top windows will have openings of 30degrees. Secondary glazing will be provided to acoustically sensitive areas that will be openable to allow all windows to follow the opening strategy. The bay study drawings provided in Appendix 5 illustrate the extent to which windows would open.

Openable windows cannot be used to limit overheating at night under Approved Document O, due to external noise levels at the site of the development. As such, a full mechanical ventilation strategy is proposed for the bedrooms and living / kitchen areas in all apartments in the building. Enhanced ventilation is to be supplied via the MVHR units operating in summertime 'boost' mode, as manually controlled by the occupant to mitigate overheating risks.

5.2 Overheating risk assessment

Hannan Associates has conducted an overheating assessment on the early-stage design of the proposed development using dynamic thermal modelling to demonstrate compliance with the 2021 Part O Building Regulations. Overheating analysis has been carried out for all occupied spaces within the Postal Street using IES Virtual Environment 2025.1.0., which utilises local weather files. A copy of the overheating assessment is provided in Appendix 6.

The risk category of the site has been identified as a high-risk location as determined via Approved Document O - Central Manchester, postcode M1.

The results of this assessment confirm that all bedrooms and living / kitchen areas within apartments are predicted to comply with the overheating criteria as detailed within CIBSE TM59 (2017) and therefore Approved Document O. The results also indicate that there is no significant overheating risk within communal corridor areas. As such, mechanical cooling is not deemed necessary in any residential areas within the development.

This has been achieved by employing passive design measures that include introducing shading via recessed windows to limit excessive solar gain and incorporating glazing with a lower G-value to demonstrate compliance.

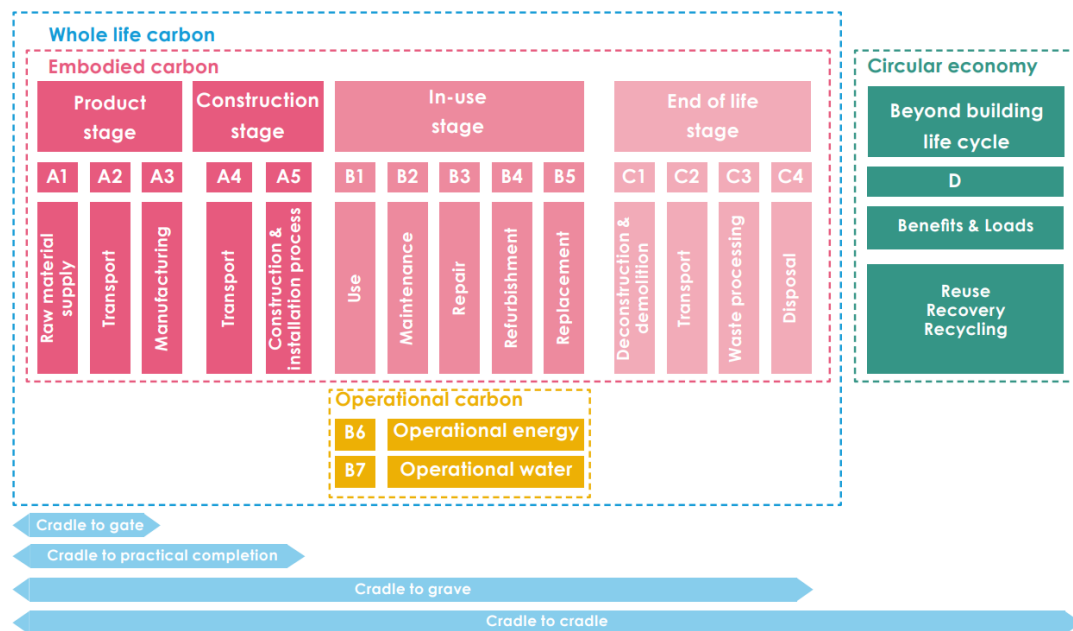
To test resilience to a warming climate, two additional simulations were undertaken to model the building and review performance for future climate scenarios using the Manchester 2020 DSY1 weather file. Results indicate that additional mitigation measures may be required to reduce the risk of overheating when assessing the development against future climate scenarios for the years 2050 and 2080 to ensure continued occupant comfort over the lifetime of the development. These recommended measures could include incorporating fixings to the façade/window package to enable future installation of solar shading and increasing mechanical ventilation flow rates.

As described in the previous section, it is not proposed to provide mechanical cooling to any residential areas within the development; however, it could be introduced in the future to prevent overheating in a warming climate if all other passive design solutions are considered not suitable.

6.0 Materials

Further to reducing operational carbon emissions as far as practicably feasible, the design of Postal Street seeks to consider and reduce the embodied carbon associated with its construction and building materials through efficient design and low carbon material selection. This will reduce the building's whole life carbon impacts which account for both operational and embodied carbon in accordance with Policy JP-S2.

A whole life carbon (WLC) assessment has been carried out by AtkinsRéalis using early-stage design information and materials quantities to estimate the life cycle embodied carbon associated with the developments' 'upfront', 'in-use' and 'end-of-life' emissions. These consider separately the building's construction and production of materials; in-use maintenance, repair or replacement of materials; and the eventual deconstruction and disposal of building materials, comprising modules A1-C4 as demonstrated in the diagram below.



Life Cycle Carbon Modules. Source : LETI.

A copy of this WLC assessment is provided in Appendix 7, and results have been calculated following the approach of RICS Whole Life Carbon Assessment Standard 2nd edition (2023).

6.1 Upfront embodied carbon

The life cycle stages included in an assessment of upfront carbon are as follows:

- Product Stage (Modules A1-A3)
- Construction Stage (Modules A4-A5)

The predicted upfront embodied carbon calculated for the development is 711.5kg/CO₂/m². The upfront embodied carbon value for the development shows that the design of Postal Street is working towards the target for major developments, with a 19% difference.

This has been achieved through consideration of the Hierarchy of Carbon Reduction/Net Zero Design, which encourages design choices that opt to 'build nothing' and 'build less', where possible. Opportunities to reduce the embodied carbon associated with the proposed development's structure, façade



Upfront embodied carbon target.

and building services may be explored further as design progresses. These may include re-using existing materials where possible, such as steelwork from nearby construction sites, and specifying carbon-efficient materials.

Implementation of these design options, and to what extent, will be confirmed as the design progresses.

6.2 Life cycle embodied carbon

In addition to the development's upfront embodied carbon, life cycle carbon considers emissions attributable to the following life cycle stages:

- In-Use Stage (Modules B1-B7)
- End-of-Life (Modules C1-C4)

As the proposed development is a large development comprising fewer than 150 homes, lifecycle carbon is not required to be calculated and reported.

7.0 Offsetting

7.1 Offsetting

Based on early-stage predictions of operational energy use, the renewable energy balance for the proposed development has been calculated as 11.5%. The remaining 88.5% of the development's energy use will be met using grid electricity.

As the UK grid continues to decarbonise towards the government's 'Clean Power by 2030' target – five years from now, the operational carbon emissions from the development will continue to decrease towards net zero based on its all-electric energy strategy. It is considered that the inclusion of photovoltaics into the design of Postal Street will contribute towards mitigating residual operational carbon emissions in the interim.

1.0 National Policy

The National Planning Policy Framework (NPPF) (December 2024 revision) sets out the government's planning policies for England and guidance on how these are expected to be applied. The NPPF states that the purpose of the planning system is to contribute to the achievement of sustainable development, which is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs. This includes the provision of homes, commercial development and supporting infrastructure in a sustainable manner.

Section 2 describes the three overarching objectives of the NPPF that are intended to be pursued in mutually supportive ways and delivered through the preparation of plans and application of the policies within the Framework. These are:

- a) An economic objective – to help build a strong, responsive and competitive economy;
- b) A social objective – to support strong, vibrant and healthy communities; and;
- c) An environmental objective – to protect and enhance our natural, built and historic environment.

To facilitate the advancement of sustainable development in a positive way, paragraph 10 states that at the heart of the NPPF is a presumption in favour of sustainable development for plans and decisions.

The NPPF supports the transition to a low-carbon future in a changing climate, taking full account of flood risk and coastal change. It aims to help 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.

Section 14 outlines the energy and climate change policies and states that 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 from rising temperatures. 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 the planning of green infrastructure; and;
- b) Can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

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, which 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.

When determining planning applications, the NPPF states that 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.

When determining planning applications for renewable and low carbon development, local planning authorities should:

- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to significantly cutting greenhouse gas emissions;
- b) approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas; and;
- c) in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site, and approve the proposal if its impacts are or can be made acceptable.

Section 9 of the NPPF outlines the sustainable transport policies supports and encourages transport issues to be considered from the earliest stages of plan-making and development proposals.

The NPPF states that applications for development should:

- a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and;
- e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

2.0 Regional Policy

The Places for Everyone (PfE) plan was formally adopted in March 2024 and forms part of a suite of documents that comprise the Manchester Local Plan. The PfE was prepared by the Greater Manchester Combined Authority (GMCA) and sets out the long-term plan for jobs, new homes and sustainable growth across nine of Manchester's Metropolitan Districts including Salford.

The policies within the PfE plan aim to support the delivery of a carbon neutral Greater Manchester by 2038, following the declaration of a Climate Emergency in July 2019 by the GMCA by encouraging a range of measures that contribute to reducing greenhouse gas emissions from new development in the area.

Objective 7: Playing our part in ensuring that Greater Manchester is a more resilient and carbon neutral city-region states that the GMCA will:

- Promote carbon neutrality of new development by 2028;
- Promote sustainable patterns of development that minimise the need to travel and contribute to cleaner air;
- Locate and design development to reduce car dependency;
- Facilitate provision of infrastructure for cleaner vehicles;
- Improve energy efficiency and the generation of renewable and low carbon energy.

Policy JP-S1: Sustainable Development

Policy JP-S1: Sustainable Development states that development should aim to maximise its economic, social and environmental benefits simultaneously, and minimise its adverse impacts, to help tackle climate change. Preference will be given to using previously developed (brownfield) land and vacant buildings to meet development needs. In bringing forward previously developed sites for development, particular attention will be paid to tackling land contamination and stability issues, ensuring that appropriate mitigation and remediation is implemented to enable sites to be brought back into use effectively.

Policy JP-S2: Carbon and Energy

Policy JP-S2: Carbon and Energy aims to support the delivery of a carbon neutral Greater Manchester no later than 2038 through a range of measures including:

1. Promoting the retrofitting of existing buildings with measures to improve energy efficiency and generate renewable and low carbon energy, heating and cooling;
2. Promoting the use of life cycle cost and carbon assessment tools to ensure the long-term impacts from development can be captured;
3. Taking a positive approach to renewable and low carbon energy schemes, particularly schemes that are led by, or meet the needs of local communities;
4. Increasing the range of nature-based solutions including carbon sequestration through the restoration of peat-based habitats, woodland management, tree-planting and natural flood management techniques;

Policy JP-S2 states that there is an expectation that new developments will unless it can be demonstrated that it is not practicable or financially viable;

- a) 'Be net zero carbon which applies:
 - from adoption– to regulated operational carbon emissions;
 - from 2028 - to all emissions 'in construction'.

From 2025 development should also calculate and minimise carbon emissions from unregulated emissions alongside regulated emissions.

Development proposals should set out how this has been achieved in an energy statement in accordance with the energy hierarchy.

From 2025 any residual carbon emissions that cannot be fully mitigated on-site should be offset, in agreement with the relevant local planning authority through a financial contribution to a carbon offset fund. As an interim measure, development should be consistent with the 2022 Part L Building Regulations unless superseded by changes to building regulations and/or national or local planning policies;

- b) Incorporate adequate electric vehicle charging points, in line with Part S of the Building Regulations, unless superseded by relevant Local Plan policies, to future proof for the likely long-term demand, taking account of the potential maximum energy demand for the site;
- c) Where practicable, prioritise connection to a renewable energy/heating/cooling network in the first instance or a low carbon energy/heating/cooling network that is adaptable to non-fossil fuels at a later date;
- d) In residential developments, achieve energy demand reductions in terms of space heat demand, hot water energy demand and the delivery of on-site renewable energy generation; in accordance with Table 5.1.

Table 5.1 Best Practice Thresholds for Reducing Energy Demand and Onsite Renewable Energy Generation within residential developments

-	Space Heat Demand ²⁵	Hot Water Energy Demand ²⁶	Renewable Energy Generation Targets
2021 - 2025	Houses (30kWh/m2) Flats (25kWh/m2)	20% energy demand reduction in the total heat required for water heating	*Photovoltaic installation: 20% ground floorspace
2025 - onwards	Houses (20kWh/m2) Flats (15kWh/m2)	^20% energy demand reduction in the total heat required for water heating	*Photovoltaic installation: 40% ground floorspace
*Ground floorspace used as a proxy for available roof area.	-	-	-
^will need to be reviewed with Future Homes Standard 2025 to determine if savings already embedded.	-	-	-

For renewable energy generation priority should be given to PV installation where technically feasible, alternative technologies will be appropriate where the equivalent generation is evidenced.

- f) For non-residential developments, achieve at least BREEAM excellent standard (or equivalent) for the 'Ene 01 – reduction of energy use and carbon emissions' category rising to 'BREEAM outstanding' equivalent for ENE 01 from 2028.
- g) Include a detailed energy statement to demonstrate via site relevant evidence how the development has sought to maximize reductions in carbon emissions in line with relevant policy targets, including the minimisation of overheating risks and appropriate measures for post occupancy evaluation. Whole life cycle emissions should be considered where possible.

Districts may set out specific carbon emission reduction and energy demand targets within Local Plans.

Policy JP-S3: Heat and Energy Networks

The provision of decentralised energy infrastructure is critical to the delivery of our objectives for low carbon growth, carbon reductions and an increase in local energy generation. The following measures will help to achieve this:

1. Delivery of renewable and low carbon energy schemes will be supported with particular emphasis on the use of decentralised energy networks in areas identified as “Heat and Energy Network Opportunity Areas”. These have been identified where:
 - a) Existing heat/energy networks are operational or have been commissioned;
 - b) Proposals for new heat networks/energy networks are being progressed, or future opportunities have been identified in city-region master planning;
 - c) Sufficient density of existing heat demand occurs; and
 - d) Significant future development is proposed at the strategic development locations.
2. Within the identified “Heat and Energy Network Opportunity Areas”, unless it can be demonstrated that there are more effective alternatives for minimising carbon emissions or such connection is not practicable or financially viable, it is expected that:
 - a) New residential developments that are '10 dwellings or more' or other developments over 1,000 m2 floorspace shall:
 - i. Connect to an existing or planned heat/energy network or be designed to enable future connection (where within 500m of such a network); and/or
 - ii. Install a site-wide or communal heat/energy network solution
 - b) An expectation that new industrial development will demonstrate that opportunities for using waste heat locally have been fully examined, and included in proposals;
 - c) An expectation that where publicly owned buildings and assets adjoin new major development sites, opportunities for these buildings and assets to connect to site-wide proposals will be considered; and
 - d) An expectation that any site-wide networks will be designed so as to enable future expansion to adjoining buildings or assets as appropriate.

3.0 Local Policy

3.1 Manchester Core Strategy

Manchester City Council's Core Strategy (2012-2027) was adopted in July 2012 and comprises the key document in the Manchester Local Plan. Following the recent adoption of GMCA's PfE by Manchester City Council, the Core Strategy was updated in March 2024. It sets out the long term strategic policies for Manchester's future development and forms the framework that planning applications will be assessed against. The following policies from the Core Strategy have been replaced by Policy JP-S2 of the PfE however will still be considered within this Statement.

Policy EN4 Reducing CO2 Emissions by Enabling Low and 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 supplies to existing buildings.
- Where appropriate new development and retrofit projects 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.

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

Applications for residential development of 10 or more units and all other development over 1,000 sq m will be expected as a minimum to meet the target shown in Tables 12.1 or 12.2, unless this can be shown not to be viable. This should be demonstrated through an energy statement, submitted as part of the Design and Access Statement. Such a statement will be expected to set out the projected regulated energy demand and associated CO2 emissions for all phases of the development.

Developments smaller than the above threshold, but involving the erection of a building or substantial improvement to an existing building will also be expected to meet the minimum target, where viable, but will not be expected to submit an energy statement.

The target framework relates to three broad development locations and their potential for low and zero carbon, decentralised energy. The areas are defined as follows:

- Target 1 Network development areas: Locations where the proximity of new and existing buildings, the mix of uses and density of development provide the right conditions to support district heating (and cooling).
- Target 2 Electricity intense areas: Locations where the predominant building type has an all-electric fit-out such as retail units and leisure complexes.
- Target 3 Micro-generation areas: Locations where lower densities and a fragmented mix of uses tend to mean that only building scale solutions are practical.

Domestic CO₂ emissions reduction targets

Table 12.1

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	+15% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

Non-domestic CO₂ emissions reduction targets

Table 12.2

Target	% Minimum requirement
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible, a 15% increase on Part L 2010
Target 2: Electricity intense buildings (Applies to commercial uses with a high proportion of emissions from electricity use (>45 kg CO ₂ /m ²))	+10% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

Where the CO₂ emissions reduction required under any future revision to Part L of the building regulations becomes greater than the '% Minimum requirement', the reduction required under building regulations would apply.

Where the Council identifies an 'allowable solution', for example within an energy proposals plan, that would produce higher carbon reductions at no extra cost than that of achieving the '% Minimum requirement' (or required under building regulations if greater) the higher percentage reduction will be required. The cost comparison is based on the cost of incorporating the 'allowable solution' at design stage.

The energy statement will be required to be submitted at the outset of any proposed development (outline application or before). Developers will be permitted to use green infrastructure elements such as green roofs, green walls, street trees and waterways to contribute to compliance with CO₂ mitigation, subject to the energy statement incorporating evidence such as modelling to demonstrate compliance.

3.2 A Guide to Development in Manchester

The Guide to Development in Manchester was formally adopted by Manchester City Council in April 2007 and acts as a Supplementary Planning Document and Planning Guidance that reflects the growing recognition of the importance of attractive, well-designed, well-maintained neighbourhoods in supporting sustainable development and 'neighbourliness'. The Guide aims to support and enhance the ongoing shaping of the City by providing a set of reasoned principles that can guide developers, designers and residents to the sort of development that is wanted in Manchester.

The Guide sets out a number of Environmental Standards that are expected to be achieved by developers and demonstrated within an Environmental Standards Statement.

The 'UDP' discussed in the following Environmental Standards refers to the Manchester's Unitary Development Plan (UDP) which was adopted by in July 1995. The UDP provided the guidelines for all development in Manchester and provided the frameworks from which to base decisions about planning applications on, however was superseded by the adoption of Manchester's Core Strategy in 2012 and subsequent policies within the PfE.

Energy Efficiency

Part 1 Policy E1.5 encourages high standards of energy efficiency in new development. In the Environmental Standards Statement, developers should show how they have considered the steps necessary to reduce energy demand at the earliest stages of design. Developers should aim to reduce CO2 emissions by at least 25% more than the requirements of the current Building Regulations, which at present are Building Regulations: Approved Document L (2006) – 'Conservation of Fuel and Power.' The following design principles will assist developers in achieving energy efficiency targets:

- Minimise reliance on energy-using equipment for heating, cooling, lighting and natural ventilation
- Position trees and soft landscaping on and around the development and within buildings to provide natural shading, insulation and air conditioning
- Integrate energy efficient micro-generation and community heating schemes, such as combined heat and power (CHP)
- Site layout and building design principles should maximise the capture and use of daylight and passive solar energy, whilst avoiding excessive solar gain in summer
- Specify energy and water efficient appliances and systems.

Renewable Energy

To reduce energy demand and the harmful impact of using energy from non-renewables, in line with UDP Part 1 Policy E1.5, developers should aim for at least 20% of final site energy demand to be met by on-site renewable energy technologies. Renewable energy targets can be achieved more readily by undertaking the measures suggested above to reduce the total energy demand of the building. It is possible to produce developments that use 50% and even 100% energy from renewable sources. To achieve this, developers should:

- Assess opportunities for integrating small and large scale renewable energy generation systems (i) to improve the energy security of occupants and the neighbourhood, including siting of energy generation businesses on-site and export of surplus energy
- Use a mix of technologies to help generation patterns match demand Investigate energy generation opportunities before designing building envelopes or fixing their location, to optimise utilisation of wind, solar and geothermal resources
- Consider final energy demand rather than building energy consumption in the selection and sizing of generation equipment
- Explore opportunities to tackle waste and energy issues collectively through use of anaerobic digesters linked to CHPs (Combined Heat and Power devices)

- Consider private wire networks as an alternative to grid connection and availability charges on larger developments.

Environmental Design

Developers must demonstrate energy efficiency in line with UDP Part 1 Policy E1.5. For residential developments, this should be through the use of the Department for Communities and Local Government's 'Code for Sustainable Homes'. (In the short-term, compliance is voluntary but home builders are encouraged to follow the principles set out in the Code because the Government is considering making assessment under Code standards mandatory in the future). This Code builds on and replaces the EcoHomes system. Any developer in the process of achieving an EcoHomes assessment should discuss the transition to the Code for Sustainability with the relevant planning case officer. Whilst the City Council considers that new homes should achieve at least a three star sustainability rating under the Code for Sustainable Homes, developers should be aware that the Government target is for new homes to have a six star rating under the Code by 2016. The City Council would expect developers to be working towards meeting this six star rating. However, using alternative modelling tools that enable the developer to exceed the requirements of the Code is also encouraged.

To demonstrate energy efficiency in non-residential developments, the City Council would encourage developers to use the Building Research Establishment Environmental Assessment Method (BREEAM) which is used to assess environmental performance. Developments should be achieving a design and post-construction rating of "very good." However, using alternative modelling tools that enable the developer to exceed the requirements of BREEAM is also encouraged.

Water Management and Weather Resilience

UDP Part 1 Policy E1.3 states that the Council will promote measures to decrease the level of pollution in the City's watercourses, and groundwater sources. UDP Development Control Policy DC21.1 refers to development not normally being permitted where it would be at risk from flooding or increase the risk of flooding elsewhere. The environmental standards statement should therefore show how water is to be managed in the most environmentally effective way.

- New developments and the conversion of existing properties can both result in the removal of areas of soakaway, which can result in high volumes of surface water run-off, burdening the local sewer system and increasing pollution and the risk of flooding. Sustainable drainage systems (SUDS) should be included, and the amount of hard surfacing minimised, for example by providing on site capture and soakaway of all rainwater on site. Examples of SUDS options would include, rainwater harvesting systems, pervious surfaces, green roofs, filter drains, filter strips, swales, infiltration devices, bio-retention areas, basins, ponds and wetland. The use of gardens as a surface water management resource should not be underestimated.
- Localised flooding incidents are becoming increasingly frequent and problematic as we see the effects of climate change taking hold across the UK. Developers will be expected to prepare a Flood Risk Assessment for proposals in an area of identified flood risk.
- New developments should seek to use water efficiently, through specification of water efficient devices and through the use of rainwater harvesting and grey water recycling.

Waste Management

UDP Development Control Policy DC27.1 sets out how the City Council will deal with applications for development involving the disposal or recycling of waste materials. All development is likely to involve the production of waste to a greater or lesser extent. Greater emphasis is now being placed on the importance of the reduction and recycling of waste at source (PPS10). Developers will be increasingly required to consider how this issue will be tackled on-site.

All developments should have a waste management strategy included in the Environmental Standards Statement. This will ensure that adequately sized bin storage areas, access for collection crews and vehicles, and other aspects of waste management are designed into the development at the earliest stage.

Construction Management

UDP Part 1 Policy E1.6 requires the building materials used in new development and refurbishment schemes to be environmentally friendly wherever possible, and encourages the use of recycled building materials, which is also energy efficient. Site waste management plans should, therefore, be implemented to reduce the quantity of waste generated, and to increase re-use and recycling. Opportunities for reuse of existing structures should be explored, and where this is not appropriate, materials should be reused on site and incorporated into the new design where practicable. Materials that are environmentally friendly, of low embodied energy, locally sourced, and can be recycled or reclaimed when the building comes to the end of its life should be prioritised. Materials that contain environmentally damaging chemicals should be avoided.

In addition, activities carried out during the construction of new developments have the potential to cause significant environmental impact. In order to avoid such impacts, it is important that appropriate measures are put in place to manage and control the waste generated, the amount of water and energy used, and any potential releases to water, land and air. Use of the Considerate Constructor scheme is recommended.

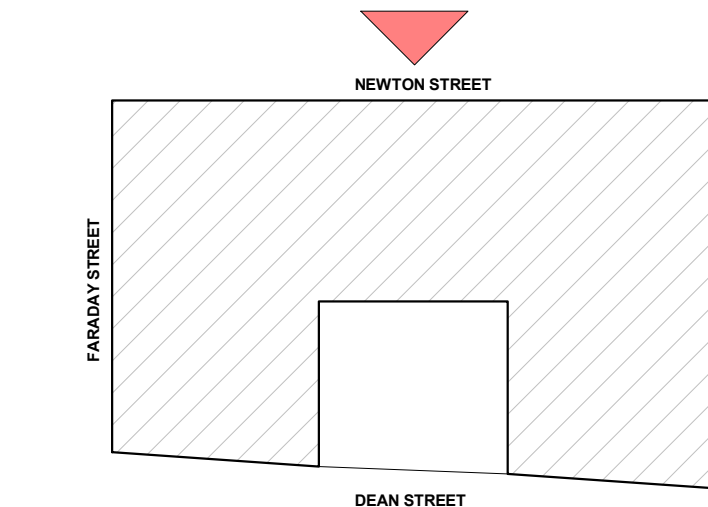
Biodiversity

UDP Part 1 Policies E2.3 and E2.4 require the protection of wildlife, wildlife habitats, and where possible, the creation of new nature reserves and features which will sustain wildlife. Part 1 Policy E2.6 states that the City Council wishes to prevent the loss of existing trees. Developers will need to contribute to Manchester's Biodiversity Strategy by demonstrating in their Environment Standards Statement how they have taken full account of the effect of their proposed development on biodiversity. This should highlight how existing species and habitats would be protected and how the proposed development would enhance the ecological value of the site. Mature trees and hedges should be retained on site wherever possible. Where this is not possible, developers will be expected to agree an appropriate scheme for replanting with the Development Control case officers.

Developments should result in no net loss in overall biodiversity value and maximise opportunities to meet and exceed our target to achieve a 10% net increase in tree cover across new developments. In exceptional cases, where planting is unachievable on site, permission may be granted to plant elsewhere in the City to ensure no overall net loss in tree resources. Existing green links across the site should be maintained and the opportunity taken to create new links as appropriate. Landscaping and new planting should include species appropriate for the proposed development that will encourage wildlife. Full plans should be included in the report showing retained, enhanced and new ecological features, the number of on-site trees pre and post development, and a 5 year management plan. Wood and wood products should come from Forest Stewardship Council sources. Tropical hardwoods should be avoided.

Waterways

The waterways are a major asset for the City and provide significant opportunities to raise perceptions and economic values through links to regeneration, the environment and transportation. This is recognised in UDP Part 1 Policies E1.3 which seeks to promote measures to reduce pollution in the City's watercourses and E3.4 which sees the waterways as an important part of a recreational network where measures will be taken to improve access and protect and enhance wildlife. Developers working in close proximity to the City's waterways should demonstrate, in line with the above mentioned UDP Policies and Manchester's Waterways Strategy, how public access, environment and management will be enhanced. Developers should landscape to ensure that site run-off and blown waste does not enter watercourses, even during extreme weather conditions.



KEY PLAN

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Rev	Description	Date
P01	Issued for Coordination	21.02.2025
P02	Issued for Planning Submission Review	28.02.2025
P03	Issued for Planning Submission Review	19.03.2025
P04	Issued for Planning	21.03.2025
P05	Issued for Planning	26.03.2025
P06	Issued for Review and Comment	31.10.2025
P07	Issued for Planning	07.11.2025

KEY

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- Metal soffit cladding with integrated lighting at entrance

Note:
All colours, material specifications, perforation design, and finishes to be agreed upon discharging conditions.

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Project
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Drawing
Proposed Newton Street
Elevation

Scale @ A1
1 : 100

Date
February 2025

Drawn By
HECW

Checked By
JT

Job Number
210258

Status
S2

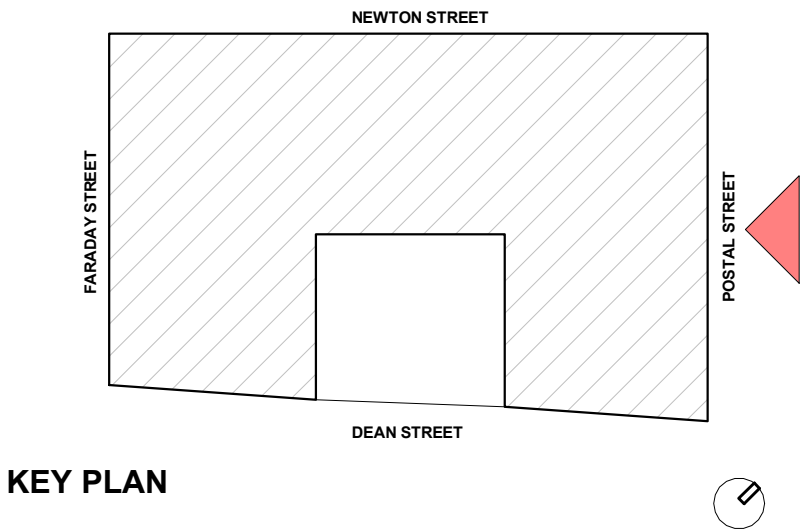
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P07



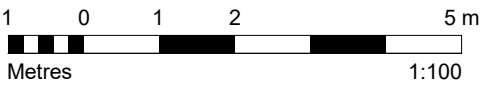
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KEY PLAN



Proposed Postal Street Elevation
1 : 100



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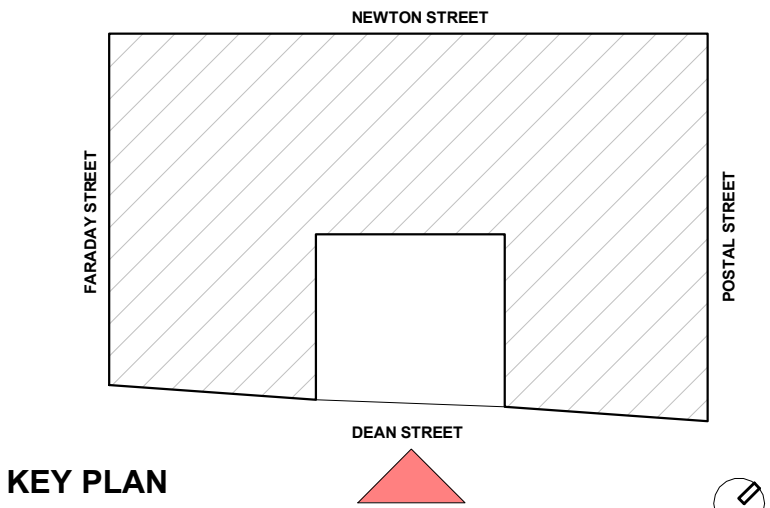
Drawing
Proposed Postal Street Elevation

Scale @ A1 1 : 100	Date February 2025
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Drawn By HECW	Checked By JT
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Job Number 210258	Status S2	Purpose of Issue For Information
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Drawing No. POST-HBA-SW-ZZ-DR-A-080200	Rev P07
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Drawing
Proposed Dean Street Elevation

Scale @ A1 1 : 100		Date February 2025
Drawn By HECW		Checked By JT
Job Number 210258	Status S2	Purpose of Issue For Information

Drawing No.
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Rev
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Proposed Dean Street Elevation
1 : 100

1 0 1 2 5 m
Metres 1:100

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Rev	Description	Date
P01	Issued for Coordination	21.02.2025
P02	Issued for Planning Submission Review	28.02.2025
P03	Issued for Planning Submission Review	19.03.2025
P04	Issued for Planning	21.03.2025
P05	Issued for Planning	26.03.2025
P06	Issued for Review and Comment	31.10.2025
P07	Issued for Planning	07.11.2025

KEY

- Handset brickwork grey multi with complementary grey mortar, stretcher bond
- Handset brickwork grey multi with complementary grey mortar, stretcher bond, recessed
- Feature brickwork, grey multi with complementary grey mortar, stack bond
- Feature brickwork, coloured, (glazed or textured)
- Red anodised aluminium vertical panel with perforations recessed in brickwork opening
- Red anodised aluminium panel with perforations set above and within the glazed openings
- Red aluminium framed doorset and bespoke Juliette balustrade in PPC 'special' finish to match anodised aluminium
- Red aluminium framed operable window in PPC 'special' finish to match anodised aluminium
- Glazed curtain walling, with expressed mullion caps, red aluminium in PPC 'special' finish to match anodised aluminium
- Glazed entrance door set in curtain walling
- Red anodised aluminium panel with perforations set in curtain walling
- Red anodised aluminium service door
- Red louvred substation door in PPC 'special' finish to match anodised aluminium
- Public art installation applied over metal panels and doors
- Aluminium parapet coping
- Metal cladding/screening to rooftop overruns and plant enclosures
- Backlit building naming signage fixed back to brickwork
- Bespoke balustrade in PPC 'special' finish to match anodised aluminium and Juliette balustrades
- Illuminated fin signage to commercial units
- Feature entrance paving tiles. Tile setting out, colour and texture TBC
- Metal soffit cladding with integrated lighting at entrance

Note:
All colours, material specifications, perforation design, and finishes to be agreed upon discharging conditions.

26-28 Hilton Street
Manchester M1 2EH

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Hawkins\Brown

Project
Postal Street
Manchester
M1 2EH

Drawing
Proposed Faraday Street
Elevation

Scale @ A1
1 : 100

Date
February 2025

Drawn By
HECW

Checked By
JT

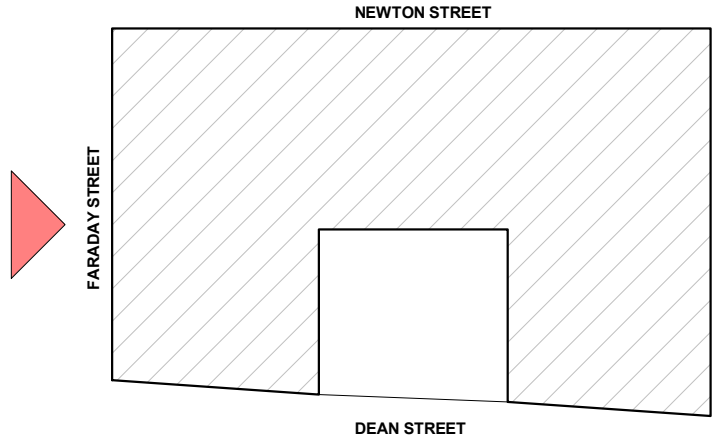
Job Number
210258

Status
S2

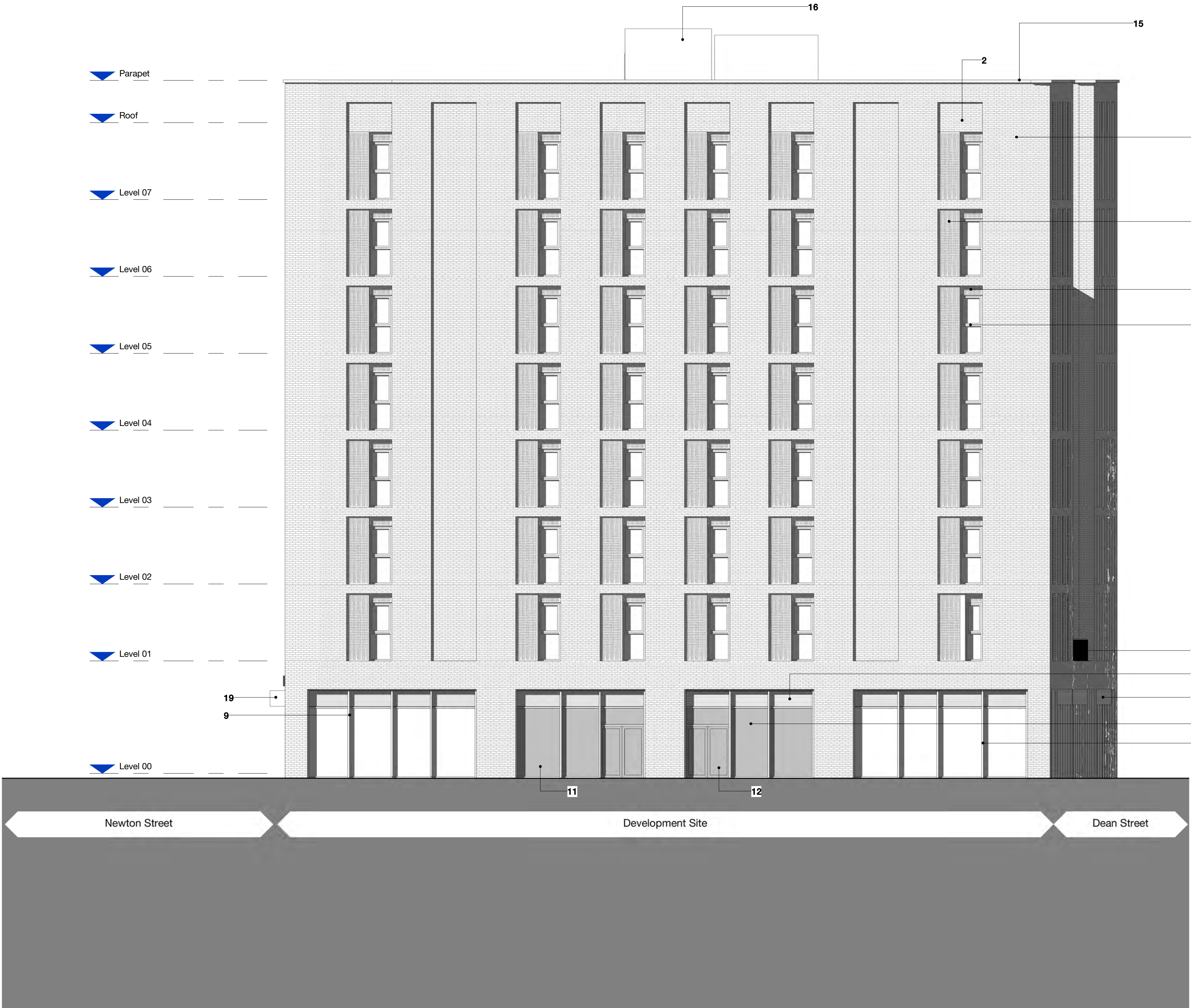
Purpose of Issue
For Information

Drawing No.
POST-HBA-SW-ZZ-DR-A-080202

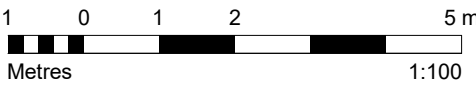
Rev
P07



KEY PLAN



Proposed Faraday Street Elevation
1 : 100



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Rev	Description	Date
P01	Issued for Coordination	13.11.2025

26-28 Hilton Street
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Project
Postal Street
Manchester
M1 2EH

Drawing
Proposed Ground Floor Plan -
Thermal Line Boundary

Scale @ A1 1 : 100	Date November 2025
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Drawn By AG	Checked By RK
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Job Number 210258	Status S1	Purpose of Issue For Coordination
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Drawing No. POST-HBA-SW-00-SK-A-SK-0150	Rev P01
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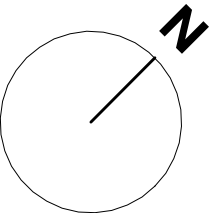
NEWTON STREET

FARADAY STREET

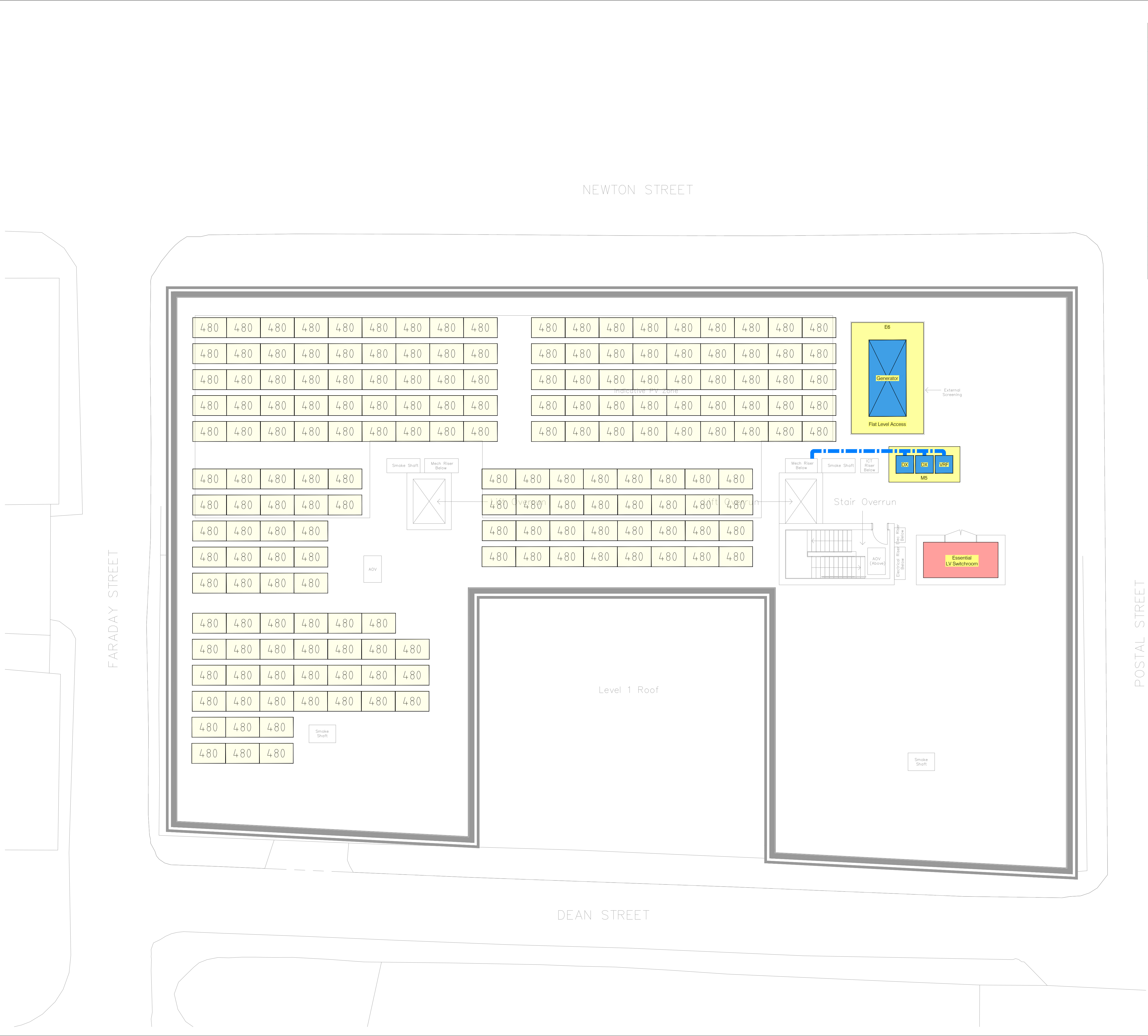
POSTAL STREET

DEAN STREET

Level 00 Plan - Thermal Line Boundary
1 : 100



MEP Services Plant Space			
Ref	Description	Dimensions	Notes
M1	Domestic Potable Water Tank	6.30mL x 5.0mW x 3.75mH	External double door access preferred.
M2	Sprinkler Water Tank Room	6.30mL x 7.85mW x 3.75mH	External double door access preferred.
M3	Mechanical Services Riser	0.8mL x 1.8mW x Full Height	Full width & height riser door access (all floors)
M4	High Level Supply & Extract Louvres	N/A x Full Width x 0.5mH	
M5	VRF / DX Split Condensers	4.0mL x 2.0mW x 1.5mH	
FF1	Dry Riser	0.8mL x 0.8mW x Full Height	Access of main stair
FF2	Natural Smoke Ventilation - Supply Shaft	1.875mL x 0.8mW x Full Height	Min 1.00m ² AOV at roof level - AOV at top of stair
FF3	Natural Smoke Ventilation - Extract Shaft	1.5mL x 1.0mW x Full Height	Min 1.50m ² AOV at roof level - AOV at top of stair
E1	IDNO Standard Transformer	4.0mL x 4.0mW x 3.75mH	External double door access required (ideally from public highway) with level threshold for DNO access
E2	Non-Essential LV Switchroom	3.0mL x 4.0mW x 3.75mH	Position adjacent to E1 IDNO Substation
E3	Non-Essential Electrical Riser	1.8mL x 0.8mW x Full Height	Full width & height riser door access (all floors)
E4	Essential Electrical Riser	0.8mL x 0.65mW x Full Height	Full width & height riser door access (all floors)
E5	Essential LV Switchroom	4.2mL x 2.0mW x 3.0mH	Ideal position adjacent to E6 Standby Generator
E6	Standby Generator	6.25mL x 4.2mH x 3.0mH	Inlet & discharge on different facades preferred
T1	Incoming Telecoms	2.0mL x 2.7mW x 3.75mH	To be accessed externally/off landlord operated area
T2	Telecoms Riser	1.0mL x 0.8mW x Full Height	Full width & height riser door access (all floors)



P01	03	Stage 3 Issue	SD	U
	04			
	25			
Date	Date	Description	Drawn	Checked
Client: This City				
Project: Postal Street, Manchester				
Design Stage: Design Stage 3				
Drawing Title: Plant & Riser Space Requirements Roof Level				
HAN Project Number: 4062		Scale @ A1: 1:100		
Drawing Number: POST - HAN - SW - R1 - DR - ME - 005102				
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This City

Postal Street, Manchester

Low Carbon Heat Appraisal

Date: 28th November 2025

Ref: 4062-HAN-ZZ-XX-RP-ME-0011

Revision P02 – Planning Issue

Document Control

Document Authority

Prepared by	Matthew Dalley
Date	31/10/2025
Checked by	Tim Bell
Date	31/10/2025
Approved by	Philippa Spivey
Date	31/10/2025

Document History

Issue	Issue Date	Status
Rev P01	31/10/2025	Draft Issue
Rev P02	28/11/2025	Planning Issue

Contents

1.0	Introduction
2.0	Objectives
3.0	Planning Policy
4.0	Options Appraisal
5.0	Conclusion

1.0 Introduction

This Low Carbon Heat Appraisal has been prepared to support the planning application for the proposed Postal Street development.

The site of Postal Street is situated within the Northern Quarter, an inner-city neighbourhood located within Manchester City Centre, sitting within the Piccadilly Ward. The site is bounded by Postal Street to the east, Newton Street to the north, Faraday Street to the west and Dean Street to the south.

This appraisal demonstrates how the proposed development has been designed to deliver low carbon heat that is cost effective and affordable for residents, in accordance with the local energy and carbon policy requirements of the Greater Manchester Combined Authority (GMCA).

1.1 Project Overview

The City Council Development comprises the erection of a residential apartment building (Use Class C3a), of 8 storeys; together with ground floor commercial units (Use Class E), cycle parking provision, and other associated works.

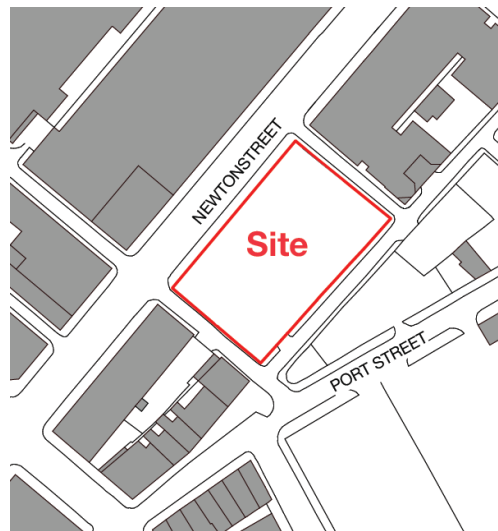


Figure 1 Site location plan.



Figure 2 Proposed site plan.



Figure 3 Proposed site plan.

1.2 The Need for Low Carbon Heat

Due to the location and weather conditions of the UK, there is a significant need for both heat and hot water across the country's property portfolio. The energy required to heat buildings and supply them with adequate hot water accounts for approximately 20% of the UK's total carbon emissions.

Heating and hot water generation are a critical factor which must be addressed in order for Greater Manchester to meet its targets and become a carbon-neutral city region by 2038.

It is therefore essential that new buildings do not use fossil fuels for heating and hot water and that they are equipped with low carbon heating systems which are compliant with the pathway towards net zero.

2.0 Objectives

The Low Carbon Heat Appraisal aims to frame the scope of the current assessment:

- Explore Low Carbon technologies
- Analyse upfront costs
- Estimate the running costs of managing the heat demand
- Assess the potential impact on the surroundings in terms of air quality

3.0 Planning Policy

The following statutory requirements, separated by their national, regional and local relevance, have been identified as key policy drivers and considered during the development of this statement. Further details regarding the specific policies relevant to energy and carbon are provided in Appendix 1 of the Energy and Carbon Statement.

Policy Reference	
National	National Planning Policy Framework (December 2024)
Regional	Greater Manchester Combined Authority Places for Everyone Joint Development Plan (adopted March 2024)
Local	Manchester Core Strategy 2012-2027 (adopted July 2012)

Table 1 Statutory requirements.

A key driver of the local energy and carbon policy requirements that apply to the proposed development is the Greater Manchester ambition to become a carbon neutral city-region by 2038, following the declaration of a Climate Emergency by the GMCA in July 2019. A primary element of achieving this target is to set out a pathway for new development to be net zero carbon by 2028 at the latest. Policies within the Places for Everyone Joint Development Plan (PfE) and the Manchester Core Strategy support the delivery of a carbon neutral Greater Manchester by encouraging a range of measures that contribute to reducing greenhouse gas emissions from new development in the area.

The Manchester Core Strategy Policy sections EN 4 to EN 7 and Draft Manchester Local Plan (DMLP) reinforce the GMCA target and states that development shall support Manchester becoming carbon neutral by minimising carbon emissions; maximising carbon storage and sequestration; mitigating and adapting to the impacts of climate change; and responding to the economic and policy changes that are likely to accompany climate change. Other policies of relevance within the PfE and DMLP include:

- Policy JP-S1 Sustainable Development
- Policy JP-S2 Carbon and Energy
- Policy JP-S3 Heat and Energy Networks
- Policy ZC 2 Towards Net Zero Carbon
- Policy ZC 3 Renewable and Low Carbon Energy Developments

3.1 Policy JP-S3 Heat and Energy Networks

Policy JP-S3 is part of the “Places for Everyone” Joint Development Plan which focuses on promoting renewable and low carbon heat and energy networks, particularly in designated “Heat and Energy Network Opportunity Areas”. This policy supports the delivery of renewable and low carbon energy schemes by encouraging the use of decentralized energy networks. It builds upon existing policies (EN 5 and EN 7) to further transition towards a low carbon economy.

The Places for Everyone - Policy JP-S3: Heat and Energy Networks Policy states:

1. Delivery of renewable and low carbon energy schemes will be supported with particular emphasis on the use of decentralised energy networks in areas identified as “Heat and Energy Network Opportunity Areas”. These have been identified where:
 - a) Existing heat/energy networks are operational or have been commissioned;
 - b) Proposals for new heat networks/energy networks are being progressed, or future opportunities have been identified in city-region master planning;
 - c) Sufficient density of existing heat demand occurs; and
 - d) Significant future development is proposed at the strategic development locations.
2. Within the identified “Heat and Energy Network Opportunity Areas”, unless it can be demonstrated that there are more effective alternatives for minimising carbon emissions or such connection is not practicable or financially viable, it is expected that:
 - a) New residential developments that are '10 dwellings or more' or other developments over 1,000 m² floorspace shall:
 - i. Connect to an existing or planned heat/energy network or be designed to enable future connection (where within 500m of such a network); and/or

- ii. Install a site-wide or communal heat/energy network solution.
- b) An expectation that new industrial development will demonstrate that opportunities for using waste heat locally have been fully examined, and included in proposals;
- c) An expectation that where publicly-owned buildings and assets adjoin new major development sites, opportunities for these buildings and assets to connect to site-wide proposals will be considered; and
- d) An expectation that any site-wide networks will be designed so as to enable future expansion to adjoining buildings or assets as appropriate.

3.2 Case Identification

Developments that are between 10-149 homes and/or 1,000-4,999m² of non-residential space are considered to be 'major developments'. Major developments are likely to be located in four different types of locations, which will affect how they should apply Policy JP-S3:

- Case 1: the site is within 500m of an existing low carbon heat network
- Case 2: the site is within 500m of a planned low carbon heat network
- Case 3: the site is within a low carbon heat network opportunity area
- Case 4: any other location in Greater Manchester



Figure 3 Map of Greater Manchester showing the three different types of heat network areas (as of December 2024).

3.2.1 Site Case Location

Based on an assessment of the location of proposed development and the low carbon heat networks map, the development falls within the Case 3 type location (see red arrow below).

Case 3: the site is within a low carbon heat network opportunity area

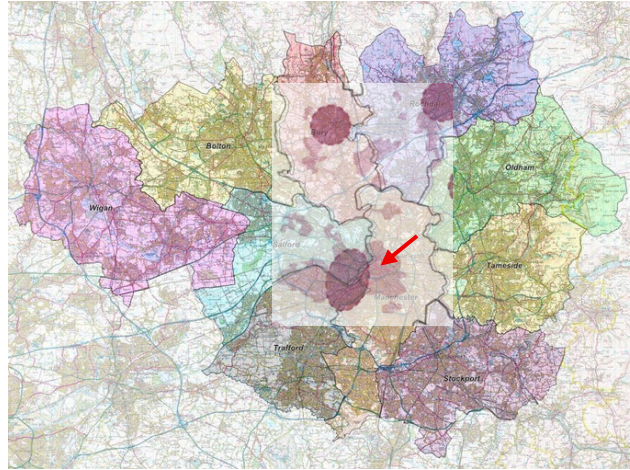


Figure 4 Map showing the site location, the planned low carbon heat network areas in the immediate vicinity and map overlay of the local area.

3.3 LPA Engagement

As part of the appraisal, it is a requirement that the applicant liaises with the LPA to enquire about the case classification and to understand the likely development programme of the planned low carbon heat network.

In this case, the LPA is Manchester City Council and LPA contact has been initiated through the project planning consultant (Deloitte LLP).

4.0 Options Appraisal

In accordance with the recently published GMCA Net Zero Carbon Design Guidance, an appraisal of the following three system options has been carried out to enable the selection of the most suitable low carbon heating system.

4.1 System Option 1: Notional Low Carbon Heat Network

District heating uses a singular central heat source to distribute hot water through a network of pipes to multiple dwellings, connecting several buildings together and to a low carbon heat source.

Performance Area	Key Performance Indicator	Unit
Environmental performance	Fossil fuel use	No
	Carbon content of heat delivered (As per Net Zero Guidance)	100 gCO₂/kWh Carbon emission factor = 0.0689
	Local pollution	N/A
Impact on residents / building users	Estimated energy costs for heating and hot water	£ 22,073/yr DHW = 25.13 kWh/m ² /yr Heating = 0.991 kWh/m ² /yr (8.53p/kWh source: Swaffham Prior Heat Network) Standing charge not included.
	Estimated maintenance costs	£ 2,490/yr
	Estimated replacement costs	£ 18,986/yr
Impact on viability	Estimated capital cost of heating system	£ 975,728 total £ 332,386 Internal pipework £ 480,483 External pipework £ 252 Works on the highway' permission application £ 162,607 Main contractor allowance
Infrastructure development	Connection to low carbon heat network	Yes
	Scale of application	9,907 m ² GIA

Table 2 Notional low carbon heat network.

4.1.1 Scheme Considerations

Electrical Capacity

- The overall development electrical load is anticipated to be approximately 700KVA with a TX capacity of 800KVA, with the full load proposed to be provided via 1x new DNO substations.

- The electrical load and point of connection to serve the development have been secured from the local DNO (ENWL).

Technical Design

- The system design strategy should the notional low carbon heat network be viable: heat emitters would be wet panel heaters, the vectors for delivering heat is radiant/convection and the primary flow temperatures below 45°C and return temperatures around 25°C to 15°C (based on data from A roadmap to achieve 5th generation heat networks in the UK).
- The development has space constraints, and available free roof area is limited due to the potential requirement of photovoltaic panels. Any connection to a low carbon heat network would require a dedicated plant space on the ground floor.

Ease of Operation and Maintenance

- 5th generation heat networks utilise smart control systems to manage the network's temperature to optimise efficiency of the system, minimise heat losses, and facilitate the integration of diverse heat sources. These controls are crucial for maximising the efficiency, managing heat losses, and integrating various heat sources and sinks, including renewable energy and waste heat.
- Individual apartments would have their own heat interface units (HIUs) to further customise heating and hot water delivery.
- Operation and maintenance of the systems are crucial to their success and longevity. The systems themselves are managed through a wider agreement; however, the building-specific maintenance requires periodic maintenance, including checking for leaks, cleaning components, and inspecting electrical connections.

Carbon Emissions

- As well as the operational carbon outlined in the table, the likely embodied carbon impacts of a 126-unit residential system as per CIBSE TM65.1 would be 70kgCO₂e/m² (60 years).
- Heat networks primarily utilise water for heat distribution. This removes the use of refrigerants and minimises the GWP of the system.

Communal Systems (building scale or district)

- Typical heat network losses vary significantly, with many older networks operating at 35-45%. However, modern networks can achieve 65-70% efficiency between generation and transmission.
- There is an increased risk of overheating due to heat emission from communal heat distribution pipework.
- Apartment-specific energy/heat metering would be required to enable billing to cover individual occupiers and provide for live energy management.

Embodied Carbon

- The below extract from TM65.1: 2022 shows the embodied carbon results per square metre (kgCO₂e/m²) for both individual and communal heating options for a 61m² apartment in a 100-unit residential scheme with ultra-low-energy building fabric.



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MEP Design Solutions

4.2 System Option 2: Hot Water Heat Pump + Direct Electric

Space heating and domestic hot water are provided separately. Space heating is provided through electric panel heaters, and domestic hot water is generated by a hot water heat pump cylinder located within each apartment.

Performance Area	Key Performance Indicator	Unit
Environmental performance	Fossil fuel use	No
	Carbon content of heat delivered (HM Treasury Green Book 15yr average)	31.25 gCO ₂ /kWh (space heating system) 9.30gCO ₂ /kWh (hot water system)
	Local pollution	N/A
Impact on residents/building users	Estimated energy costs for heating and hot water	£66,584/yr DHW = 25.13 kWh/m ² /yr Heating = 0.991 kWh/m ² /yr 25.73 pence per kilowatt hour (kWh) (source: Ofgem) Standing charge not included.
	Estimated maintenance costs	£2,611 /yr
	Estimated replacement costs	£36,000/yr = 15-20 years lifespan
	Additional operating costs compared with benchmark low carbon heating system	141%
Impact on viability	Estimated capital cost of heating system	£720,130 total £384,104 System £249,000 Installation £87,026 Main contractor allowance
	Additional cost compared with benchmark low carbon heating system	-26 %
Infrastructure development	Connection to low carbon heat network	No
	Scale of application	9,907 m ² GIA

Table 3 Hot Water Heat Pump + Direct Electric.

4.2.1 Scheme Considerations

Electrical Capacity

- The overall development electrical load is anticipated to be approximately 700KVA with a TX capacity of 800KVA, with the full load proposed to be provided via 1x new DNO substations.
- The electrical load and point of connection to serve the development have been secured from the local DNO (ENWL).

Technical Design

- The system design strategy is based on space heating provided by direct electric panel heaters. Domestic hot water will be generated by hot water heat pump cylinders. The vectors for delivering heat are not applicable due to the all-electric nature of the system.
- The development has space constraints; however, the proposed design would utilise an apartment located hot water heat pump + direct electric, which do not require additional central plant space.
- A PV array will be provided, which will generate electricity on-site and contribute to energy reduction.

Ease of Operation and Maintenance

- Operation and maintenance of a local hot water heat pump + direct electric system would require operation and maintenance in-house, which would be the responsibility of the building owner/operator.
- Equipment is readily available; therefore, there should be no supply chain issues.

Carbon Emissions

- As well as the operational carbon outlined in the table, the likely embodied carbon impacts of the system as per CIBSE TM65 for DHWHP: integrated heat pump for DHW, direct electric heating is 78 kgCO₂e/m² (60 years).

Communal Systems (building scale or district)

- Heat losses over the system are determined by a number of factors, including the nature of the system. ASHP systems can be of a hybrid type, which utilises both refrigerant and water as a transmission medium. This enables a reduction of GWP refrigerants but has an impact on pipe sizes and the need for greater insulation etc. These factors will have to be further reviewed in line with the specifics of the developed design.
- There is a reduced risk of overheating with this system as there is no communal heating distribution pipework.
- Each apartment will be individually metered to enable energy use to be recorded and billed.

Embodied Carbon

- The below extract from TM65.1: 2022 shows the embodied carbon results per square metre (kgCO₂e/m²) for both individual and communal heating options for a 61 m² apartment in a 100-unit residential scheme with ultra-low-energy building fabric.

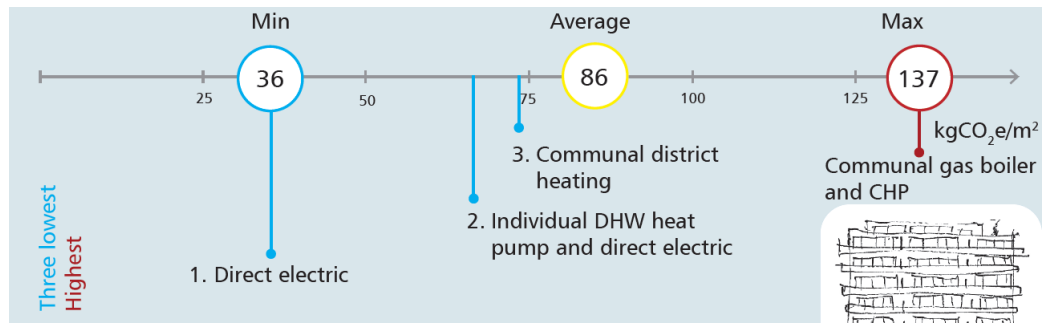


Figure 7 TM65.1: 2022.

- The extract above shows that both the individual DHW heat pump + direct electric heating system and the communal district heating system are below the 86kgCO₂e/m² average. The individual DHW heat pump, in conjunction with direct electric heating (2), is significantly lower than the communal district heating system (3).

4.2.2 Methodology for Carbon Content of Heat Delivered Calculation

As both the heating and hot water systems are fully electric, the estimated carbon content of the proposed system can be calculated based on the average fuel carbon factor for UK electricity provided in the HM Treasury Green Book, in accordance with GMCA guidance.

The average carbon conversion factor for electricity has been calculated using the consumption-based domestic emissions factors over the first 15 years from the development's predicted completion date. This value therefore represents the carbon intensity over the heating system's lifetime and reflects the gradual decarbonisation of the UK electricity grid, also accounting for transmission and distribution losses, as shown in the table below.

Year	Electricity Emissions Factors kgCO ₂ e/kWh
2027	0.073
2028	0.063
2029	0.054
2030	0.049
2031	0.042
2032	0.033
2033	0.026
2034	0.021
2035	0.020
2036	0.020
2037	0.018
2038	0.018
2039	0.017
2040	0.016
2041	0.015
2042	0.015
Average	0.03125 kgCO₂e

Table 4 Carbon emissions factors for electricity.

As the electric panel heaters have a COP of 1.0, every kWh of energy consumed to produce heat is equivalent to 31.25 grams of CO₂. The estimated total carbon generated by the space heat system is 3,068 KgCO₂/kWh/yr.

As the hot water heat pump cylinders are highly efficient and have a COP of 3.36, every kWh of energy consumed to produce hot water is equivalent to 9.30 grams of CO₂. The estimated total carbon generated by the hot water system is therefore 23,153 kgCO₂/kWh/yr.

4.3 System Option 3: Biomass Boiler

Space heating and domestic hot water are provided via a singular central heat source that distributes hot water through a network of pipes to enable heat interface units to transfer the heat to a standalone system within each apartment.

Performance Area	Key Performance Indicator	Unit
Environmental performance	Fossil fuel use	Yes
	Carbon content of heat delivered (Greenhouse gas reporting: conversion factors 2024)	113.2 gCO₂/kWh Carbon emission factor = 0.01132
	Local pollution	Combustion likely to generate localised VOCs and other GHGs.
Impact on residents / building users	Estimated energy costs for heating and hot water	£12,939/yr DHW = 25.13 kWh/m ² /yr Heating = 0.991 kWh/m ² /yr Pellets: £250/tonne (with 5,000 kWh/tonne) = 5 pence per kWh (source: Green central) Standing charge not included.
	Estimated maintenance costs	£15,000/yr
	Estimated replacement costs	£54,029/yr = 12 years lifespan
	Additional operating costs compared with benchmark low carbon heating system	188%
Impact on viability	Estimated capital cost of heating system	£1,260,427 total £648,342 System £225,000 Installation £387,085 Main contractor allowance
	Additional cost compared with benchmark low carbon heating system	29 %
Infrastructure development	Connection to low carbon heat network	No
	Scale of application	9,907 m ² GIA

Table 5 Biomass Boiler.

4.3.1 Scheme Considerations

Electrical Capacity

- The overall development electrical load is anticipated to be approximately 700KVA with a TX capacity of 800KVA, with the full load proposed to be provided via 1x new DNO substations.
- The electrical load and point of connection to serve the development have been secured from the local DNO (ENWL).

Technical Design

- The system design strategy for biomass boiler: heat emitters are wet panel heaters, the vectors for delivering heat are radiant/convection, and the typical flow temperatures range from 70°C to 95°C, with return temperatures ideally around 65°C to prevent boiler corrosion.
- The development has spatial constraints which impact on available space needed for the storage of biomass and the need for a delivery and drop-off area.
- The system cannot be integrated with an alternative system, such as PV and battery storage.

Ease of Operation and Maintenance

- Operation and maintenance of a biomass system would require operation and maintenance in-house, with all responsibility with the building owner/operator.
- Equipment is readily available; therefore, there should be no supply chain issues.

Carbon Emissions

- As well as the operational carbon outlined in the table, there are other emissions associated with burning biomass, such as particulate matter and nitrogen dioxide, which contribute significantly to air pollution and are detrimental to human health. The negative impacts of these pollutants are greatest in areas where atmospheric pollutant concentrations are already high due to emissions from other sources, for example, in large cities or in areas close to major roads.
- GWP of the refrigerant type – N/A.

Communal Systems (Building scale or district)

- Heat losses over the system are determined by a number of factors, including direct heating, heating interfaces, hot water only etc. These factors would have to be further reviewed in line with the specifics of the developed design.
- There is an increased risk of overheating due to heat emission from communal heat distribution pipework.
- Apartment-specific energy/heat metering will be required to enable billing to cover individual occupiers and provide for live energy management.

5.0 Conclusion

The current development is classed as a major development with over 125+ residential apartments. As such, this appraisal has considered the predicted performance of the proposed system (option 2) against a range of key performance indicators.

The location of the Postal Street scheme is classified as case 3: the site is within a low carbon heat network opportunity area.

There are currently no existing low carbon heat networks in the area to enable immediate connection. Without this essential network, the conclusion of this report is based on the potential to connect to a heat network in the future and provides a comparison between a notional low carbon heat network and alternative schemes.

A summary of the three system options considered is provided in the table below. All figures and estimates are based on early-stage design information and indicative cost information available from various online sources.

Systems Considered	Carbon Emissions gCO ₂ /kWh (heat delivered)	Cost of Heat £/dwelling/year	Capital Cost £/unit	Overall Suitability
Notional Low Carbon Heat Network	100	175	975,728	• Future proofed technology • Reliable heating compared to individual systems • Purchase energy in bulk, potentially securing better prices • Constrained by the lack of existing networks in the area to enable an immediate connection
Hot water heat pump + Direct Electric	31.25	528	720,130	• No external units required • Low distribution losses • Low impact on overheating • Zero carbon ready
Biomass Boiler	113.2	102	1,260,427	• Purchase fuel in bulk, potentially securing better prices • Negative impact on local air quality • High capital cost

Table 6 Low carbon heat appraisal summary.

In conclusion, given the lack of low carbon heat networks and the high-carbon nature of the existing heat networks within the Greater Manchester area, it is not feasible to connect to, or install, a low carbon heat network at this time. This, combined with the higher costs and higher carbon emissions associated with the heat delivered, limits the suitability of a low carbon heat network heating system when compared to the proposed all-electric hot water heat pump + direct electric system.

Biomass boilers are not considered to be a feasible option given the high carbon content of heat delivered. Additionally, the capital costs are significantly higher than the proposed system option, and there would be a greater need for larger storage and manoeuvring space for deliveries which would adversely affect the development. The negative impact of a biomass boiler of this size on the local air quality in comparison to the other technologies is considerable and is also a detracting factor that would limit the carbon emissions reductions possible.

Consequently, the use of an all-electric hot water heat pump + direct electric system also has the benefit of not generating any air pollutants in the immediate vicinity of the development, and therefore supports the Greater Manchester Combined Authority's Five-Year Environment Plan, which aims to improve air quality.

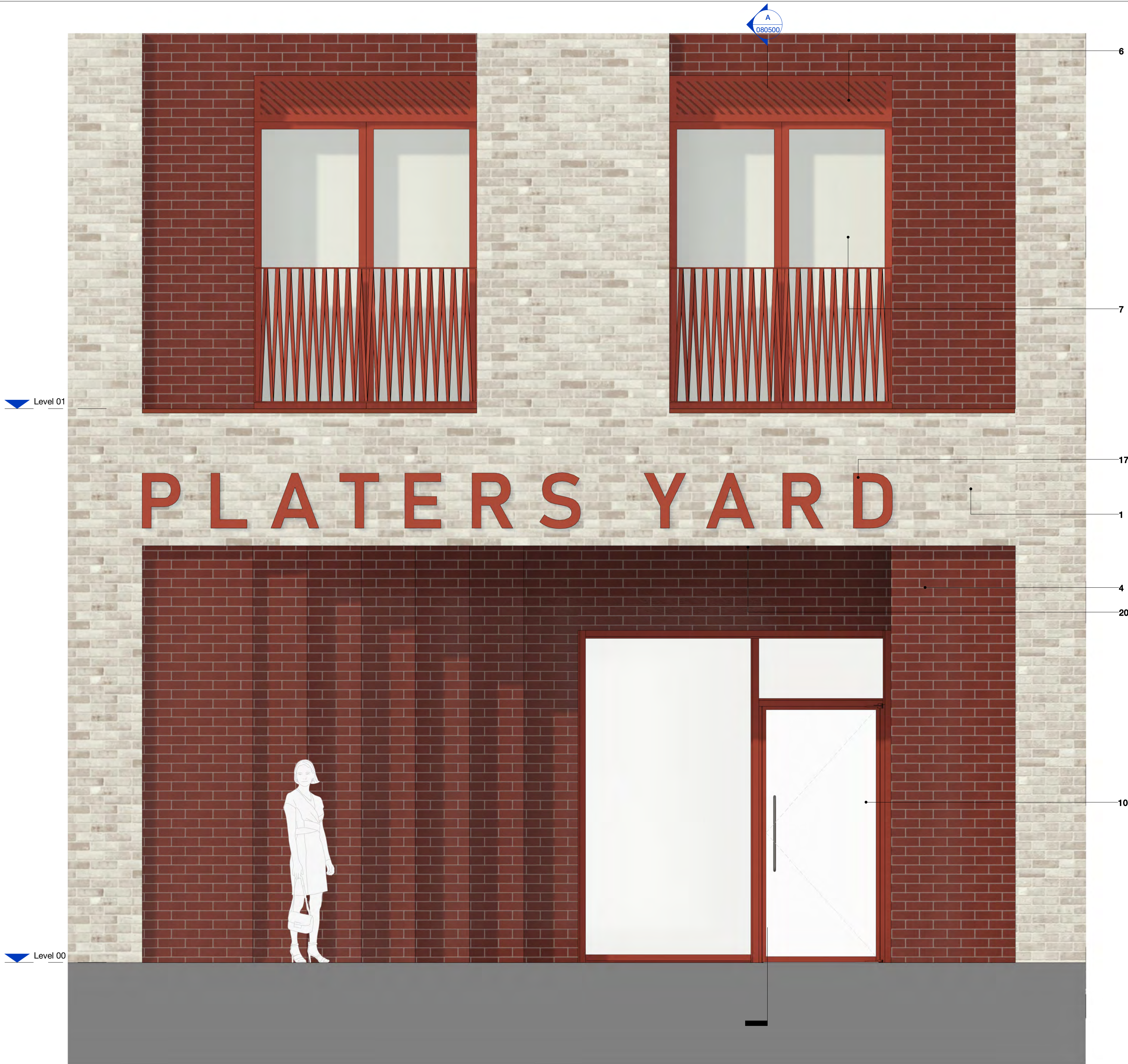
The proposed all-electric hot water heat pump + direct electric system provides a low carbon non-fossil fuel approach, which will become decarbonised over time due to the greening of the national grid.

Hannan Associates

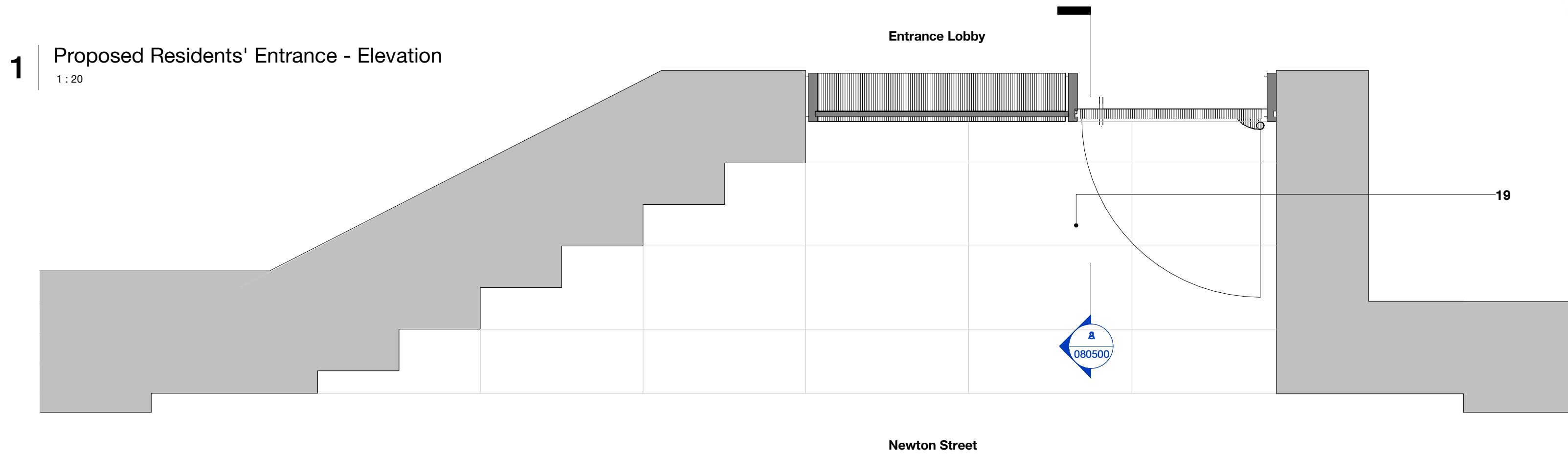
MEP Design Solutions

Mechanical | Electrical | Public Health

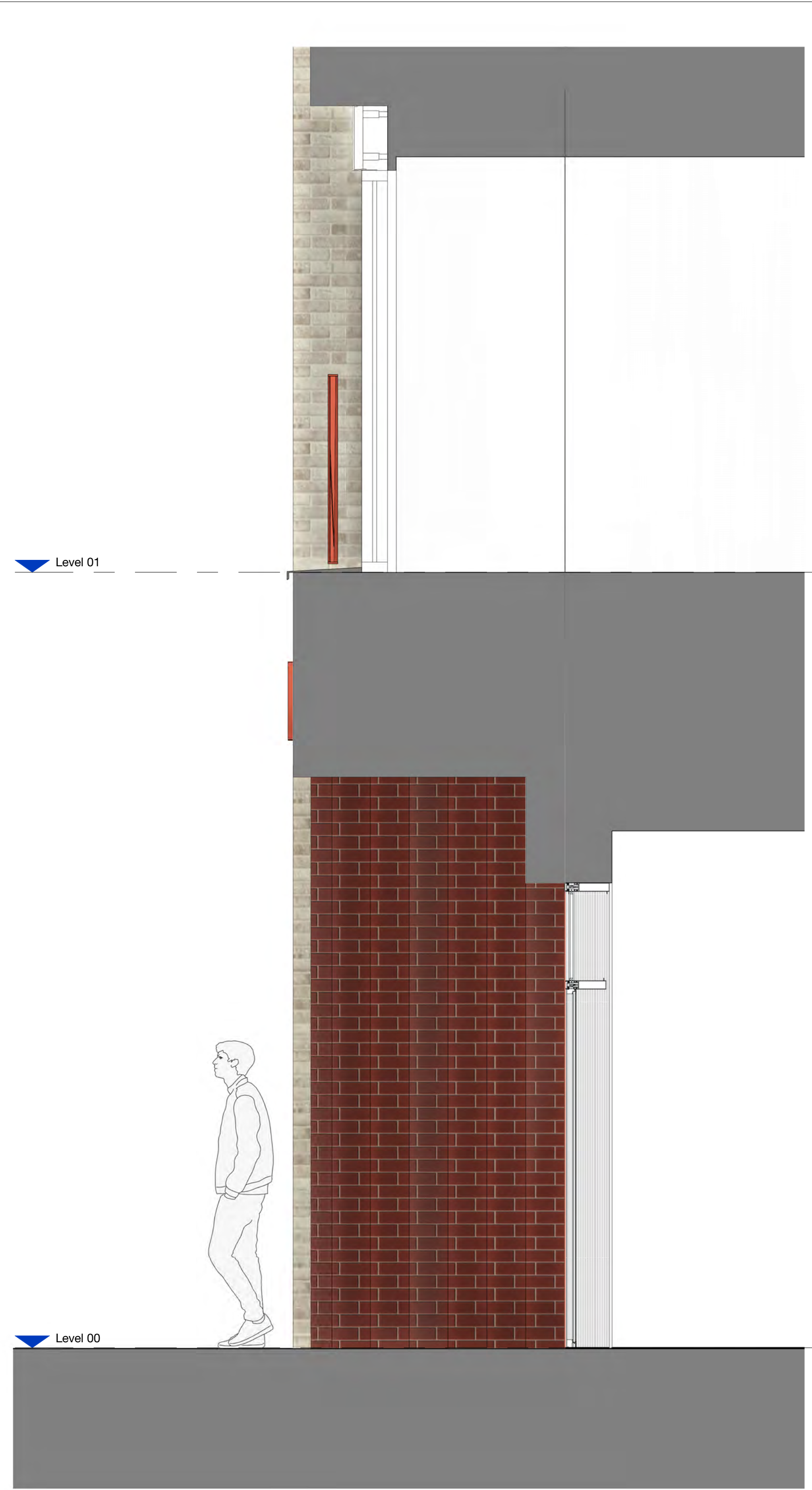
Hannan Associates, Beta House, Alphagate Drive
Manchester Road, Denton, Manchester, M34 3SH
Tel: (0)161 337 2200 :: Web: www.hannan-uk.com



1 Proposed Residents' Entrance - Elevation
1 : 20



2 Proposed Residents' Entrance - Plan
1 : 20



A Proposed Residents' Entrance - Section
1 : 20

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P04	Issued for Planning	25.03.2025
P05	Issued for Review and Comment	31.10.2025

KEY

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Note:
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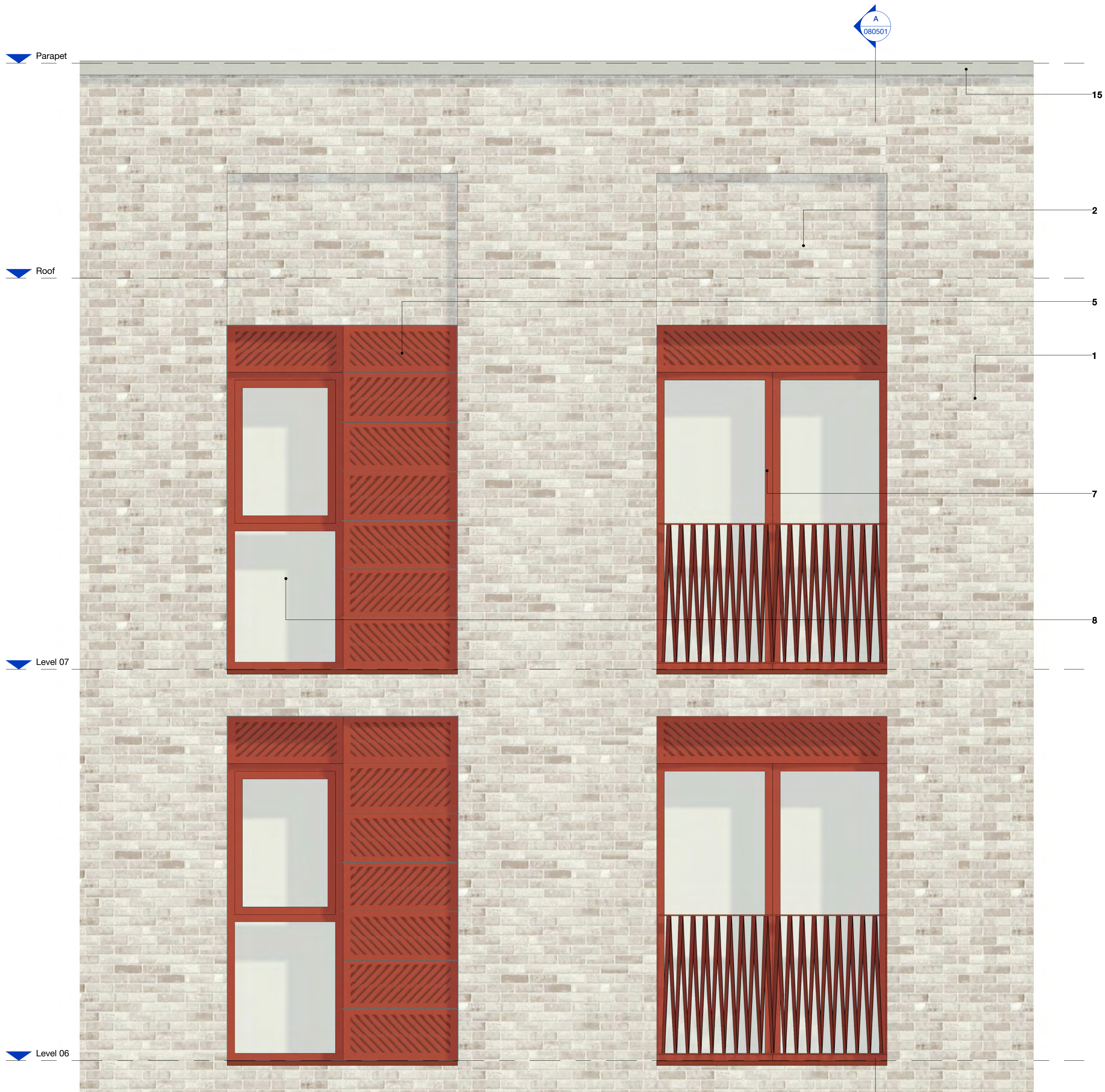
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Scale @ A1
1 : 20
Date
February 2025

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HECW
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Status
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Purpose of Issue
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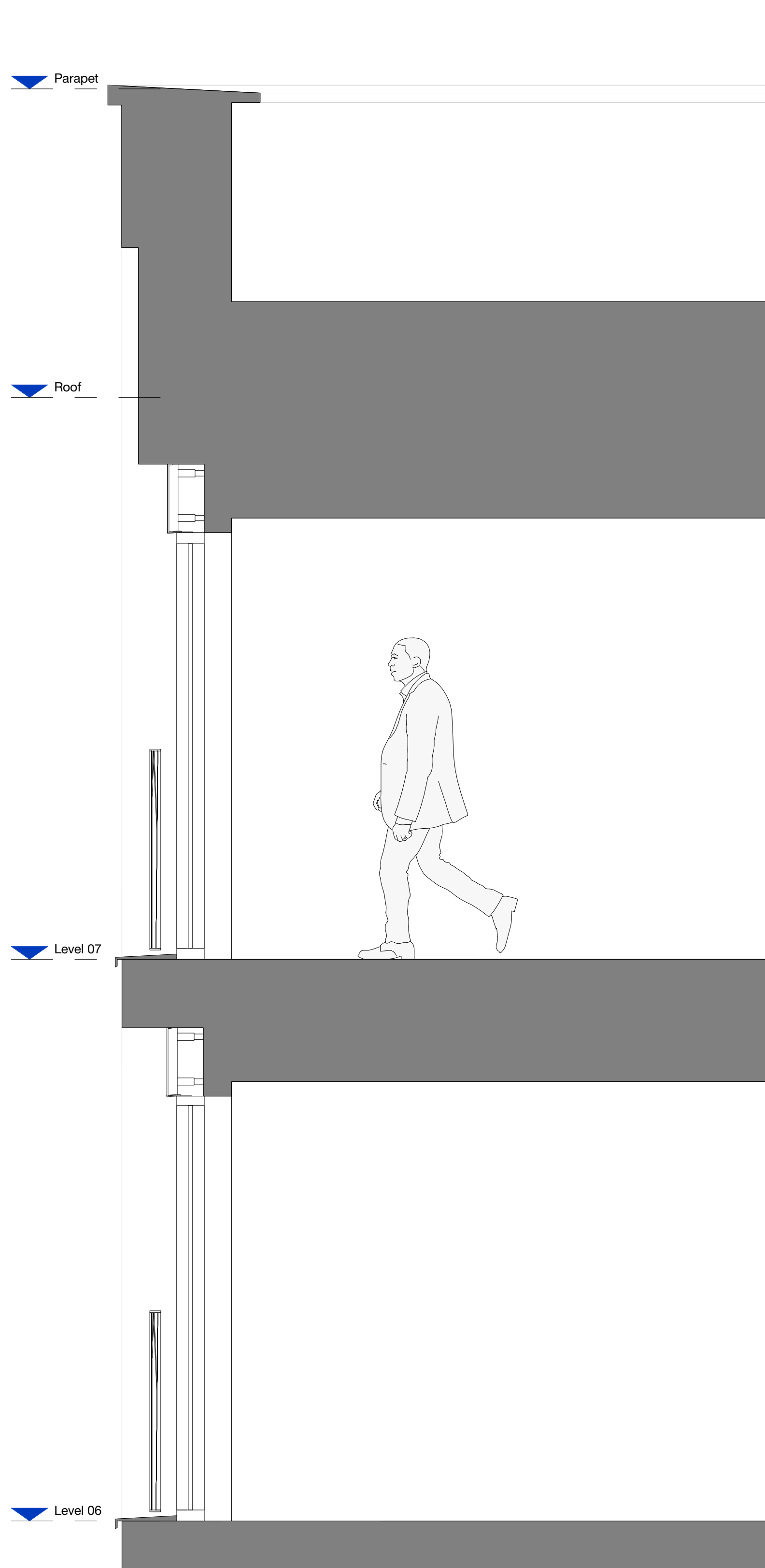
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Rev
P05



1 Proposed Upper Levels and Parapet - Elevation
1 : 20



2 Proposed Upper Levels and Parapet - Plan
1 : 20



A Proposed Upper Levels and Parapet - Section
1 : 20

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Drawing
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Commercial Frontage

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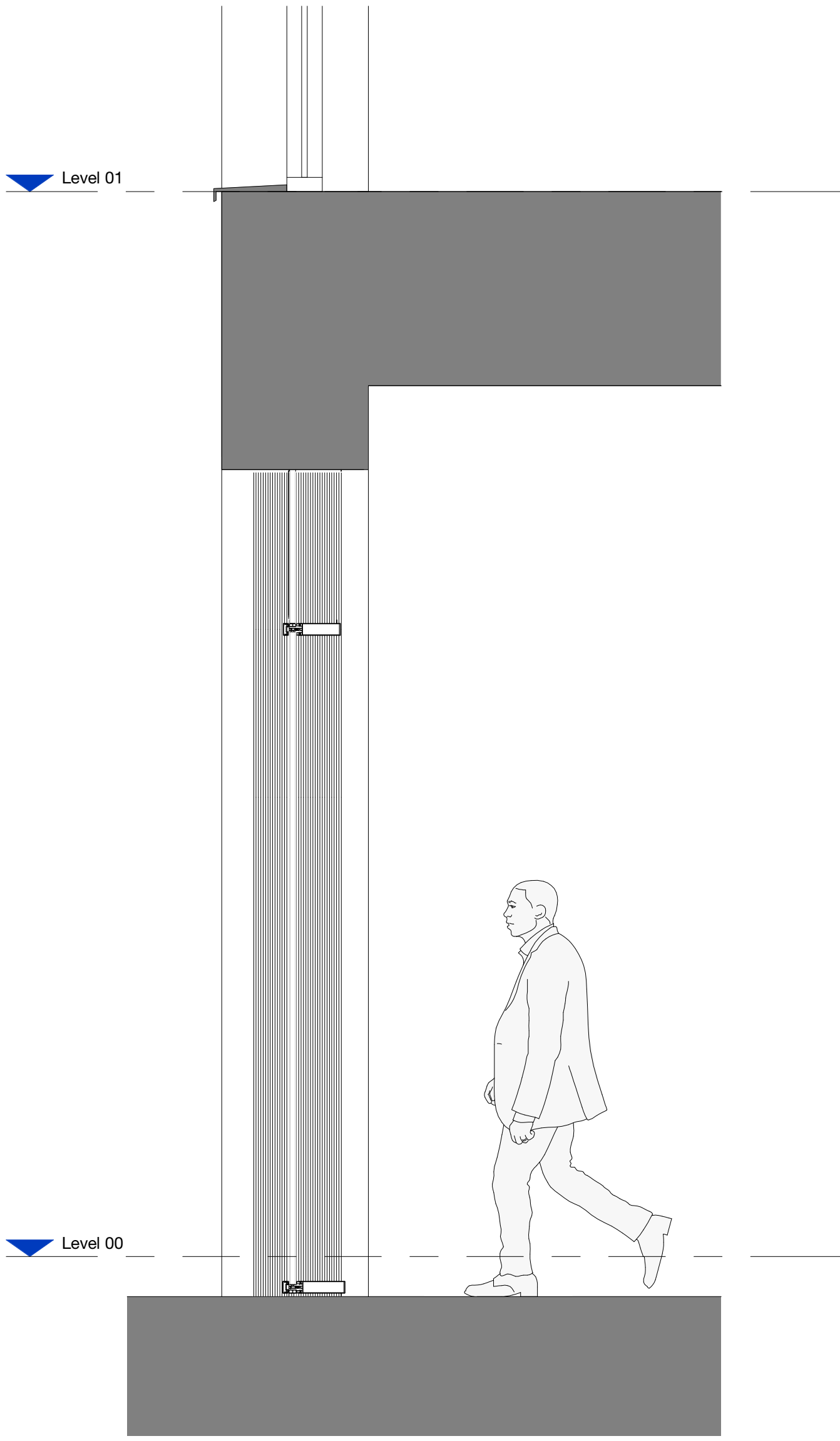
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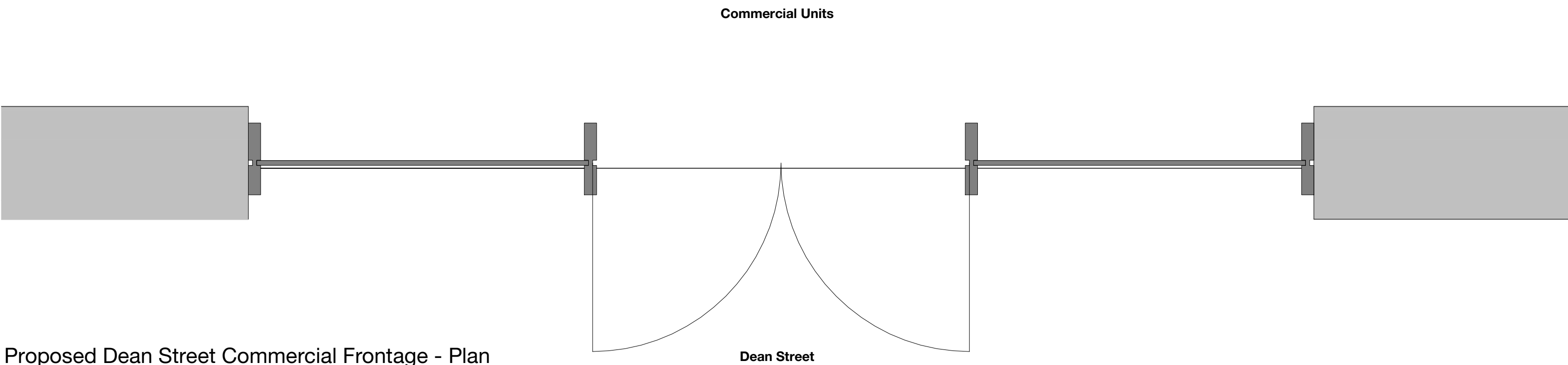
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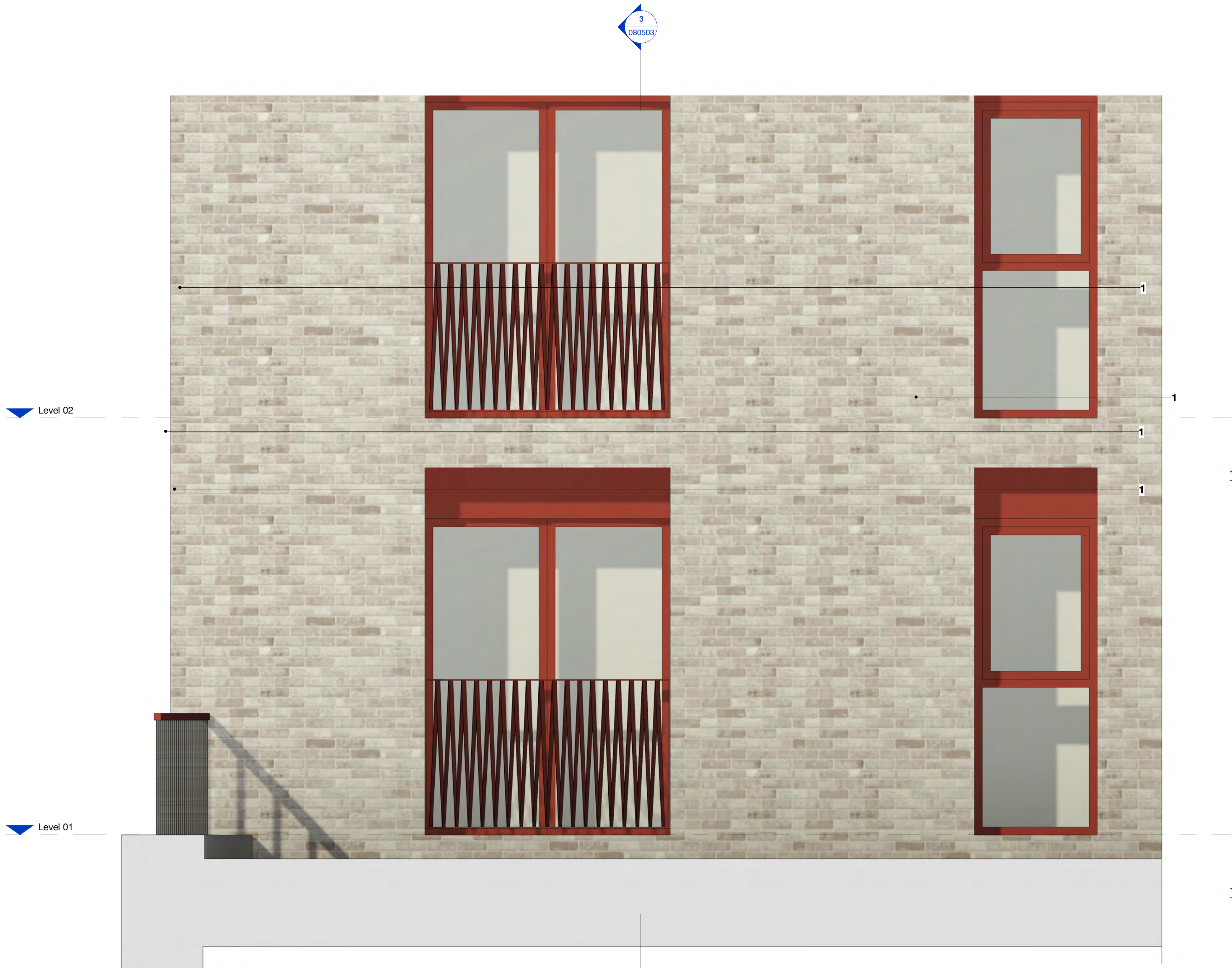
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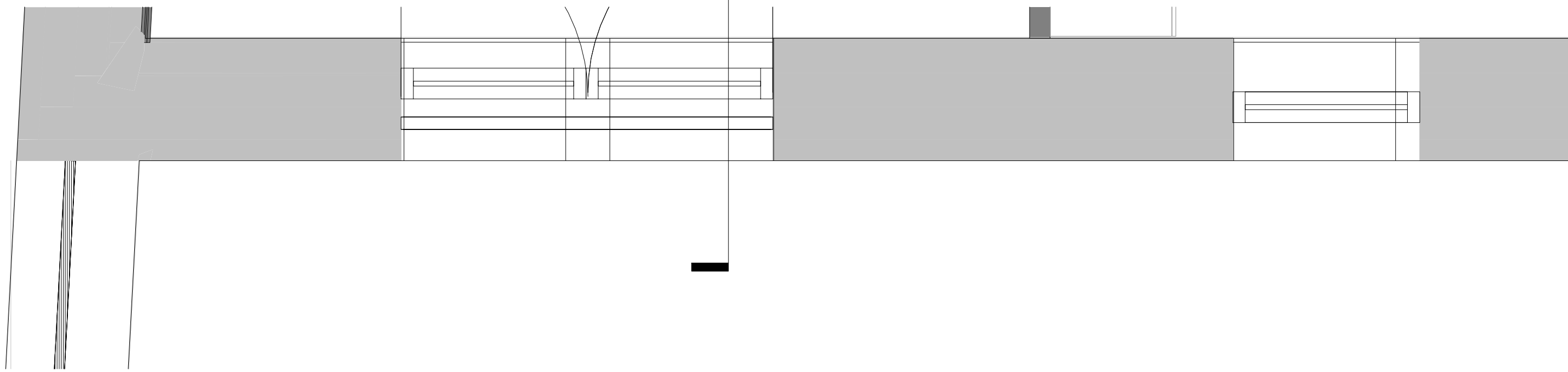
3 Proposed Dean Street Commercial Frontage - Section 1
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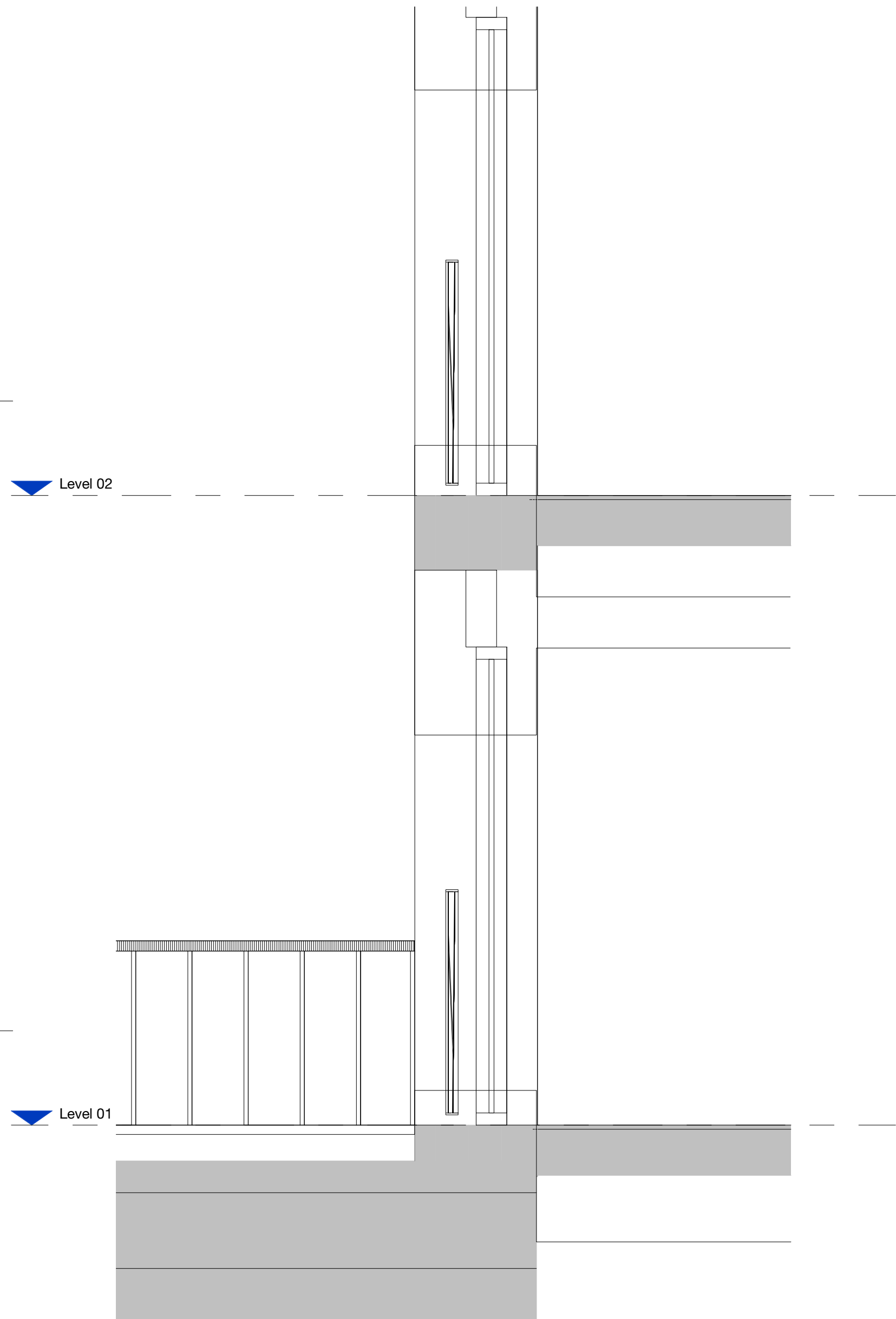
2 Proposed Dean Street Commercial Frontage - Plan
1 : 20



1 Proposed Courtyard Corner - Elevation
1 : 20



2 Proposed Courtyard Corner - Plan
1 : 20



3 Proposed Courtyard Corner - Section
1 : 20

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Rev
P02

Manchester City Council

Postal Street, Manchester

Approved Doc O Limiting Overheating Analysis Report

Ref: 4062-HAN-ZZ-XX-RP-ME-0006

Issue P03

Last Updated 12/11/2025

Document Control

Document Authority

Original Prepared by	Jack Hopper
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Checked by	Sean Duffy
Date	03 / 03 / 2025
Approved by	Ian Joyce
Date	03 / 03 / 2025

Document History

Issue	Issue Date	Status
Issue P01	03 / 03 / 2025	DRAFT Issue
Issue P02	20 / 03 / 2025	Updated - Issued for Planning
Issue P03	12 / 11 / 2025	Updated

Contents

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- 2.0 Introduction
- 3.0 Approved Document O Requirements
- 4.0 Proposed Development Overview
- 5.0 Overheating Assessment Criteria
- 6.0 Simulation Input Data
- 7.0 Reference Data
- 8.0 Internal Gains
- 9.0 Ventilation Strategy
- 10.0 Modelling Simulation Results
- 11.0 Conclusion

Appendix A – Approved Document O Report - 2020 Weather File

1.0 Executive Summary

This report has been produced to detail the results of the Stage 3 overheating analysis carried out for the Postal Street development in Manchester.

Overheating analysis has been completed for all occupied spaces within the building using dynamic thermal modelling to check for compliance based on the Approved Document O (2021) methodology. The guidance (released 2021) sets the minimum standards for overheating mitigation in new residential buildings and assesses the overheating risk in habitable rooms and communal corridors.

The results of the analysis indicate that bedrooms, living / kitchen areas and communal corridors comply with the relevant overheating criteria outlined in the subsequent sections of this report.

The overheating analysis has been carried out using IES Virtual Environment 2025.1.0.0.

2.0 Introduction

This overheating analysis report relates to the bedrooms and living / kitchen areas within dwellings, in addition to the core circulation corridor areas.

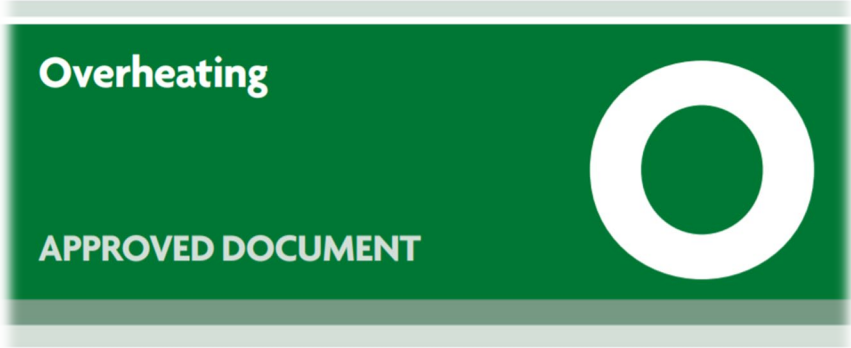
An environmental noise survey has been carried out by Sandy Brown acoustic consultants to determine the existing sound levels in the area. The noise survey was performed between 28th November and 3rd December 2024, and an Acoustic Design Report issued February 2025.

The nighttime (23:00-07:00) noise levels are anticipated to exceed the maximum levels outlined in Part O and as such, all windows should be assumed to remain closed during these hours on all facades.

The findings of a Level 1 assessment in line with the Acoustics Ventilation and Overheating (AVO) Guide indicated that a Level 2 assessment would be required. The findings of a Level 2 assessment for a sample of five apartments suggested that it would not be suitable to solely rely on openable windows to control overheating during the daytime at this site, and other measures to control overheating would likely be required.

As such a full mechanical ventilation strategy has been modelled for the bedrooms and living / kitchen areas in all apartments in the building, this is for background ventilation as well as increased summer boost ventilation rates provided as a means of mitigating overheating risks.

The Building Regulations 2010



Requirement O1: Overheating mitigation
Regulations: 40B

A means of purge ventilation shall also be provided to each habitable room (in line with Approved Document F). Purge ventilation is the introduction of rapid ventilation into a habitable room to aid the removal of high concentrations of pollutants and water vapour from occasional activities, such as painting and decorating. Purge ventilation shall be achieved via openable windows.

3.0 Approved Document O Requirements

Building Regulations Part O introduces a new requirement to assess and limit the risk of overheating in homes, other types of residences, and associated common rooms and spaces (e.g. corridors).

The aim of ADO is to protect the health and welfare of occupants of the building by reducing the occurrence of high indoor temperatures. The criteria are met by designing and constructing the building to achieve both of the following:

- a) Limit unwanted solar gains in summer.
- b) Provide adequate means of removing excess heat from the indoor environment.

Compliance can be demonstrated by either of the following methods:

- 1. Section 1: Simplified Method
- 2. Section 2: Dynamic thermal modelling

Section 3 sets out guidance to ensure the overheating mitigation strategy is usable and covers noise, pollution, security, and safety (protection from falling and entrapment). The latter of which apply to openings and features such as louvres and shading.

3.1 Simplified Method

The Simplified Method sets maximum limits on glazed areas and minimum limits on free areas for ventilation through openings. These limits depend on:

Site Location

- A large part of London is defined as high risk, and the rest of the country moderate risk. Glazing and free area limits differ, and shading is required in high-risk locations.
Note that Central Manchester (postcodes M1, M2, M3, M5, M15, M16 and M50) may also have elevated night-time temperatures therefore guidance for higher risk locations for buildings in these postcodes should be considered.

Orientation of the Façade with the Largest Area of Glazing

- Limits are generally more onerous in South and West orientations i.e. smaller glazed areas, larger free areas.

Cross Flow Ventilation

- Whether the home is cross ventilated i.e. with openings on opposing sides of the dwelling. If not, the glazing and free area limits are more onerous. Note a corner apartment is not considered to be provided with cross flow ventilation.

3.2 Dynamic Thermal Modelling Method

The dynamic modelling route uses the CIBSE TM59 (2017) comfort criteria and approach, with some adaptations. Compared to the Simplified Method, which relies on natural openings to dissipate heat, compliance may be demonstrated with more design flexibility and using mechanical ventilation where night-time openings cannot be relied upon (e.g. due to noise, pollution etc.). If passive measures have been exhausted, cooling may also be accepted towards compliance, however, it is actively discouraged and should only be included as a last resort.

The scheme has been assessed under Section 2 using the Dynamic Thermal Modelling Method.

4.0 Proposed Development Overview

The proposed development shall deliver a total of 126nr dwellings, comprised of 70nr 1-Bed apartments, 56nr 2-bed apartments spread throughout levels 01 to 07.

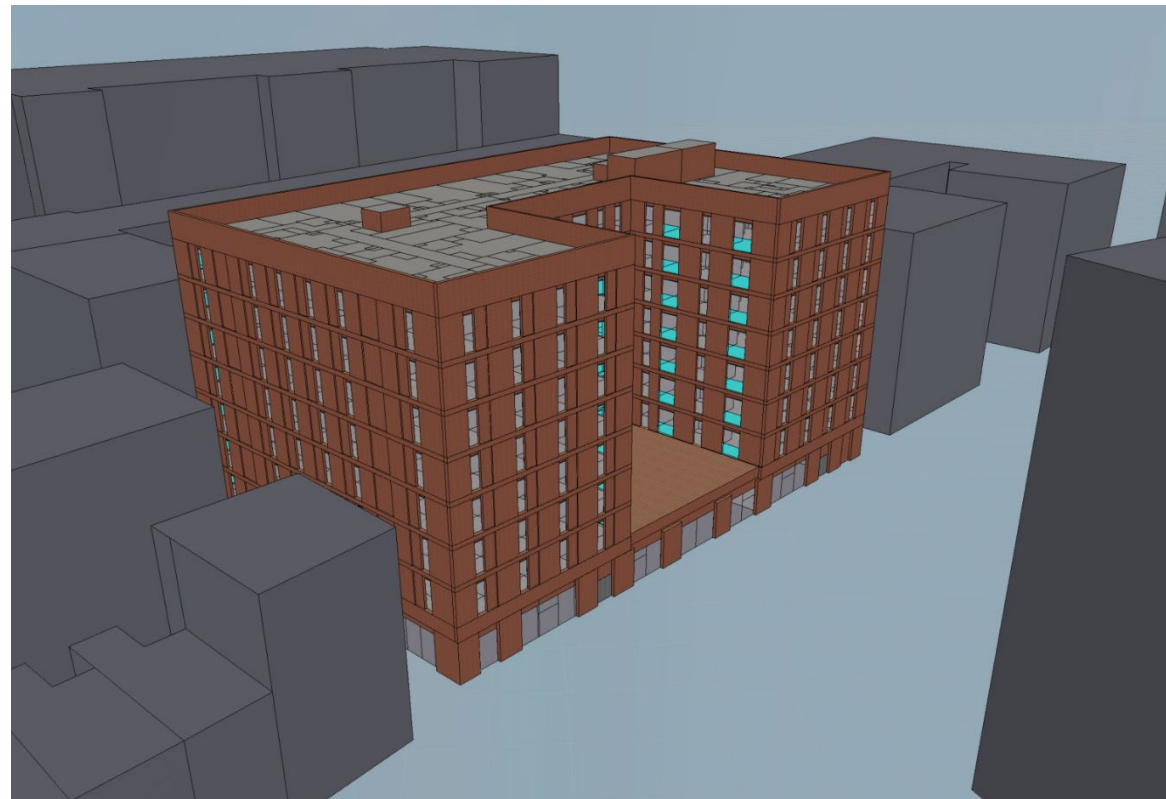


Figure 1: Building Model – South Elevation

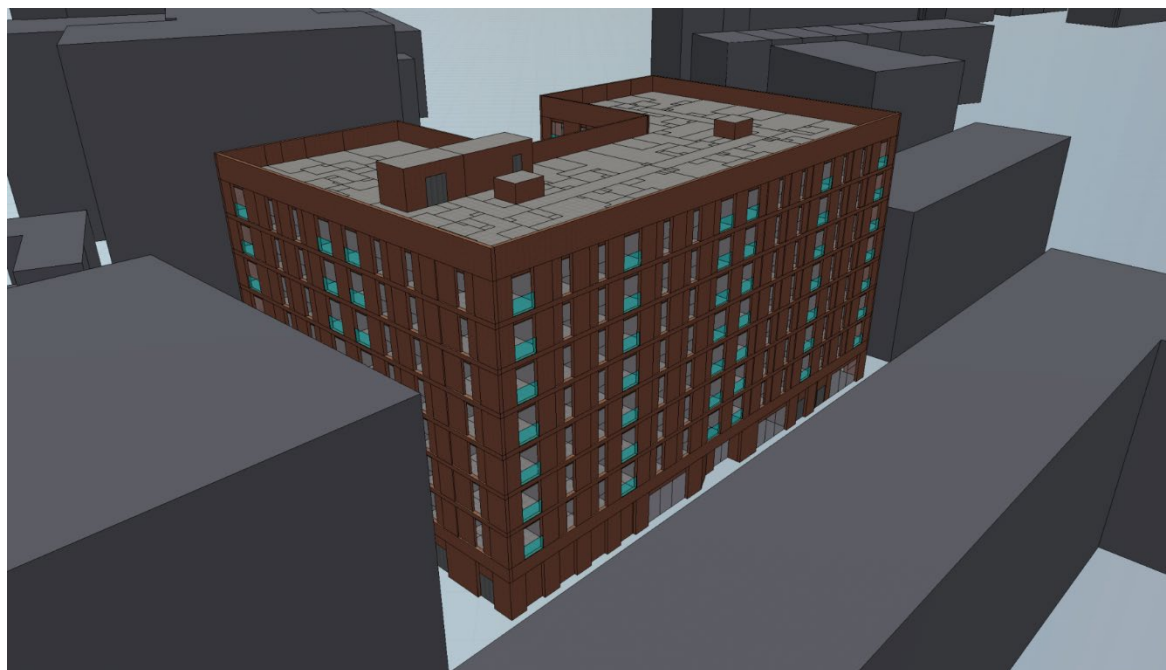


Figure 2: Building Model – North Elevation

5.0 Overheating Assessment Criteria

To demonstrate compliance using the dynamic thermal modelling method, the following guidance should be followed.

- CIBSE's TM59 methodology for predicting overheating risk.
- The limits on the use of CIBSE's TM59 methodology.
- The acceptable strategies for reducing overheating risk.

5.1 Naturally Ventilated Bedrooms and Living/Kitchen Areas

CIBSE TM59 (2017) sets out the following two criteria for predominantly naturally ventilated rooms:

- For bedrooms and living/kitchen areas: the number of hours during which the temperature difference (ΔT) is greater than or equal to one degree (K) during the period May to September inclusive shall not be more than 3% of occupied hours.
- For bedrooms only: the operative temperature from 10pm to 7am shall not exceed 26°C for more than 1% of annual hours.

Bedrooms must pass both criteria.

5.2 Mechanically Ventilated Bedrooms and Living/Kitchen Areas

CIBSE TM59 (2017) sets out the following criterion for predominantly mechanically ventilated rooms:

- For homes with restricted window openings, the CIBSE fixed temperature test must be followed, i.e. all occupied rooms should not exceed an operative temperature of 26°C for more than 3% of the annual occupied annual hours.

5.3 Communal Corridor Areas

Whilst there is no mandatory target to meet within CIBSE TM59 (2017), if an operative temperature of 28°C is exceeded for more than 3% of the total annual hours, then this should be identified as a significant risk within the report.

6.0 Simulation Input Data

6.1 Air Permeability

An air infiltration rate of 0.0174 l/s/m².façade has been applied to the model, equivalent to a design air permeability of approximately 1.0 m³/h/m² @ 50 Pa.

6.2 Building Fabric Performance

Table 1: Fabric Performance

Opaque Element	Proposed U-value (W/m²K)
Roof	0.11
External Wall	0.15
Walls between Heated and Unheated Stairwell	0.26
Walls between Heated and Unheated Lift Shaft	0.26
Ground and Exposed Floor	0.12
Heated-to-Unheated Floor (i.e. commercial units / refuse areas / cycle store / plant)	0.12
External Solid Personnel Doors	1.00

Table 2: Glazing Specification

Vision / Glazed Construction Elements	Primary Window Type
Type	Triple Glazing
Whole Unit U-value (W/m²K)	0.80
Proposed G-value	0.35
Proposed L _T	0.70

6.3 Internal Window Blinds

Although internal blinds and curtains provide some reduction in solar gains, they should not be taken into account when considering whether requirement O1 has been met, therefore the use of window blinds has been excluded from the assessment.

6.4 External Shading

Juliet balcony doors are partially shaded by a fixed balcony, this is modelled as 50% solid at all times.

6.5 Internal Comfort Parameters

Global room design settings for occupant comfort have been included in the analysis of habitable spaces with the input parameters as shown in the table below.

Table 3: Modelled Comfort Conditions

Comfort Conditions	Simulation Input
Nominal Design Air Speed	0.10 m/s
Building Category	Category II (normal)
Summer (elevated) Air Speed	0.10 m/s

6.6 Weather

The building is to be constructed in Manchester; therefore, the closest suitable weather files are for the city of Manchester. The weather file used to complete the assessment is "Manchester_DSY1_2020High50", where the peak summer temperature is 30°C.

CIBSE TM59 (2017) recommends the use of the DSY1 (Design Summer Year) weather file for 2020's, high emissions, 50% percentile as a minimum as it is considered a more stringent test of overheating conditions.

6.7 Site Orientation

The apartment building has been modelled with the orientation represented in the image below, with North set at 315° within the IES software.

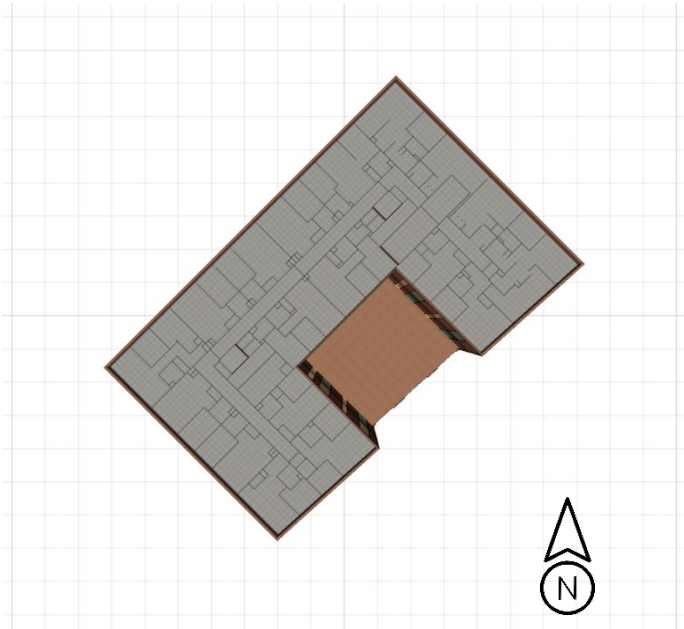


Figure 3: Building Orientation

7.0 Reference Data

7.1 Design Information Used for Analysis

The apartments are based on design information provided by the architect, as listed below:

Table 4: Schedule of Architects Design Information

Drawing Number	Drawing Name	Date Received
POST-HBA-SW-00-DR-A-200100	Proposed Floor Plan - Levels 00	14/10/2025
POST-HBA-SW-ZZ-DR-A-200101	Proposed Floor Plan – Levels 01-06	14/10/2025
POST-HBA-SW-RF-DR-A-200108	Proposed Roof Plan	14/10/2025
POST-HBA-SW-ZZ-DR-A-200200	Proposed Postal Street Elevation	22/10/2025
POST-HBA-SW-ZZ-DR-A-200201	Proposed Dean Street Elevation	22/10/2025
POST-HBA-SW-ZZ-DR-A-200202	Proposed Faraday Street Elevation	22/10/2025
POST-HBA-SW-ZZ-DR-A-200203	Proposed Newton Street Elevation	22/10/2025
POST-HBA-SW-ZZ-DR-A-200204	Proposed West Courtyard Elevation	22/10/2025
POST-HBA-SW-ZZ-DR-A-200205	Proposed East Courtyard Elevation	22/10/2025

7.2 Building Form & Geometry

The proposed development comprises 126nr new residential apartments to be constructed over 7nr residential floors above ground floor.

The main entrance area is located to the north-west elevation of the building. The cycle stores, refuse store and plant areas can also be found on the ground floor.

Table 5: Accommodation Schedule

Floor Level	1-Bed	2-Bed	Total
Ground Floor	0	0	0
Level 01 to 07	10	8	126
Total	70	56	126

8.0 Internal Gains

All internal gains for bedrooms and living areas have been derived from CIBSE TM59 (2017).

8.1 Occupancy Gains

Based on CIBSE Guide A (2015a), a maximum sensible heat gain of 75W/person is assumed in the living spaces. An allowance for 30% reduced gain during sleeping is based on Addendum G to ANSI/ASHRAE Standard 55-2010.

Table 6: Heat Gains Per Person

Activity	Sensible Heat Gain Per Person (W)
Standard	75
Sleeping	52.5

Table 7: Occupancy Profiles

Unit/Room Type	Occupancy Profile
Double Bedroom	2 people at 70% gain from 11 pm to 8 am 2 people at full gain from 8 am to 9 am and from 10 pm to 11 pm 1 person at full gain from 9 am to 10 pm
1 Bedroom Apartment: Living / Kitchen Area	1 person at 100% gain from 9am to 10pm Room is unoccupied for the rest of the day
2 Bedroom Apartment: Living / Kitchen Area	2 people at 100% gain from 9am to 10pm Room is unoccupied for the rest of the day
Communal Corridor	As per NCM Template

8.2 Lighting Gains

Lighting energy is assumed to be proportional to floor area. A value of 2.0W/m² has been applied to all occupied areas.

Table 8: Lighting Gain Profiles

Unit/Room Type	Lighting Profiles
Double Bedroom	2.0W/m² from 6pm to 11pm
Living / Kitchen Area	2.0W/m² from 6pm to 11pm
Communal Corridors	Zero (PIR sensors assumed)

The above assumes that adequate daylight levels are available. There are no lighting gains associated with the adjacent communal corridors as PIR sensors are provided to these areas, in accordance with CIBSE TM59 (2017).

The lights within all occupied rooms of each dwelling have been simulated as being manually switched by the occupant.

8.3 Equipment Gains

Equipment gains per room type are listed below as per Table 2 of CIBSE TM59 (2017);

Table 9: Equipment Gain Profiles

Unit/Room Type	Equipment Profiles
Double Bedroom	Peak load of 80W from 8 am to 11 pm Base load of 10W during sleeping hours
Living / Kitchen Area	Peak load of 450W from 6pm to 8pm 200W from 8pm to 10pm 110W from 9am to 6pm and from 10pm to 12pm Base load of 85W for the rest of the day
Communal Corridor	As per NCM Template

9.0 Ventilation Strategy

Section 3 of Approved Document O sets standards to ensure the overheating mitigation/ventilation strategy is usable and should take cognisance of the following environmental and design considerations:

Table 10: Environmental & Design Considerations

Environmental & Design Considerations		
	Noise	Acoustic restrictions often dictate the strategy for limiting overheating i.e. resulting in Mechanically Ventilated Dwellings. Results of the noise survey undertaken and subsequent content of the Noise Impact Assessment mean there are acoustic restrictions when considering openable windows to satisfy the requirements of Approved Doc O.
	Pollution	Buildings near to pollution sources should be designed to minimise the intake of external air pollutants. The site is not known to be near to any notable sources of pollution.
	Security	When determining free area for ventilation during sleeping hours, only the proportion of openings which can be opened securely should be considered (ground floor or easily accessible bedrooms typically cannot take the benefit of openable windows). No windows or doors are to be modelled as open at night due to noise restrictions.
	Entrapment	Window & guarding design should not allow body parts to become trapped i.e. not allow passage of a Ø100mm sphere. Any railings will be designed to not allow passage of a Ø100mm sphere.
	Protection from Falling	Only openings which can be opened with 'a very low risk of occupants falling from height' should be considered to form part of the overheating mitigation strategy. Openings that can be opened further than 100mm may form part of the overheating mitigation strategy where they meet the following conditions: i. Window handles on windows which open out are not more than 650mm from the inside face of the wall when at max open angle. ii. Guarding is provided which meets the requirements of ADO Table 3.1 iii. Guarding does not allow children to climb i.e. horizontal bars. Internal dimension measured from finished floor level to transom / openable portion of the window shall achieve ≥1,100mm. Where this is not achieved, reference shall be made to the Architects risk assessment.

9.1 Window / External Door Opening

Windows and doors have been simulated to operate as per the profiles dictated by Approved Document O:

Table 11: AD O Window Opening Profiles

Opening Profile	Description
Section 2.6a*	When a room is occupied during the day (08:00am to 23:00pm), openings should be modelled to do all of the following. i. Start to open when the internal temperature exceeds 22°C. ii. Be fully open when the internal temperature exceeds 26°C. iii. Start to close when the internal temperature falls below 26°C. iv. Be fully closed when the internal temperature falls below 22°C.
Section 2.6b	At night (23:00pm to 08:00am), openings should be modelled as fully open if both of the following apply. i. The opening is on the first floor or above and not easily accessible. ii. The internal temperature exceeds 23°C at 11pm.
Section 2.6c	When a ground floor or easily accessible room is unoccupied, both of the following apply. i. During the day, windows, patio doors and balcony doors should be modelled as open, if this can be done securely. ii. At night, windows, patio doors and balcony doors should be modelled as closed.
Section 2.6d	An entrance door should be included, which should be shut all the time.

*It should be noted that the occupied hours referenced within the AD O opening profiles extends beyond the TM59 occupied hours for Living / Kitchen areas.

9.2 Natural Ventilation Strategy

All windows and doors have been included in the model to reflect the locations and dimensions as indicated on architectural drawings but shall remain closed for the purposes of the Overheating Assessment.

9.3 Mechanical Ventilation Strategy

All dwellings are provided with an MVHR unit providing general day-to-day background ventilation supplying fresh air to habitable rooms and extracting stale air from 'wet' areas (kitchen & bathroom). The continuous 'whole house' ventilation rates within habitable rooms are as defined in Part F Vol 1 Table 1.3.

Continuous trickle ventilation is provided, however additional ventilation is supplied by the MVHR units operating in summertime 'boost' mode, which is used to reduce the risk of overheating. The summertime boost rate is simulated to be activated manually by the occupants when the internal temperature exceeds 20°C.

Table 12: MVHR Summertime Boost Rates

Unit/Room Type	Summertime Boost Rate
Double Bedrooms	25 l/s
Living / Kitchens	50 l/s

10.0 Modelling Simulation Results

Based on the proposed ventilation strategies as outlined within this report, the overheating criteria as detailed within CIBSE TM59 (2017) for all habitable rooms (bedrooms and living / kitchen areas) within each dwelling has been assessed based on the current 2020 weather file.

10.1 Doc O Simulation – 2020 Weather File

Refer to Appendix A for the results of the simulation using the inputs described in this report.

All bedrooms and living / kitchen areas within apartments are predicted to comply with the overheating criteria as detailed within CIBSE TM59 (2017) and therefore Approved Document O.

The results also indicate that there is no significant overheating risk within communal corridor areas.

10.2 Future Weather Scenarios

To test resilience to a warming climate; two additional simulations were undertaken to model the building and review performance when applying 2050 and 2080 Design Summer Year weather files.

When assessing for Doc O compliance against the 2050 weather scenario, our initial assessment suggested:

- 96 living / kitchen areas fail Criterion A
- 175 bedrooms fail Criterion A

When assessing for Doc O compliance against the 2080 weather scenario, our initial assessment suggested:

- All living / kitchen areas fail Criterion A
- All bedrooms fail Criterion A

Assessment criteria are described in sections 5.1 and 5.2, the relevant criteria that have been breached in the results above are also listed below for convenience:

- Mechanical ventilation Criterion A states that occupied rooms should not exceed an operative temperature of 26°C for more than 3% of the annual occupied annual hours.

To demonstrate compliance with the future weather scenario, additional measures would be required to be incorporated into the design. Several options could be considered for inclusion, however would need to be assessed for any impact/other design considerations, including, but not limited to those summarised in Table 13.

Table 13: Future Overheating Mitigation Measures

Option	Potential Option	Notes / Considerations
01	Incorporate fixings to the façade/window package to enable future installation of solar shading to the head of windows.	Would likely impact thermal bridging, potentially resulting in additional heat loss.
02	Incorporate passive solar shading to high-risk locations (typically south and west elevations).	Would require re-submission of planning application & would likely impact thermal bridging. Shading would need to extend from the façade to have a noticeable impact (60° shading angle typically required in the UK to provide full shading)
03	Replace glazing with alternative spec incorporating lower G-value.	Would reduce daylighting & reduce the beneficial heat gain in winter months.
04	Replace more windows/incorporate further portions of secure openable ventilation panel.	Would require re-submission of planning application. Not recommended at this time, however traffic noise may reduce in the future due to adoption of electric vehicles etc.
05	Reduce overall proportion of glazing in high-risk areas.	Would require re-submission of planning application, consider daylighting etc.
06	Increase mechanical ventilation flow rates.	Consider impact on noise criteria, additional energy use, limited perceived improvement.
07	Introduce mechanical cooling.	Should only be considered if all other passive measures/solutions not suitable.
08	Increase thermal mass of the building.	Significant disruption & impact on residents, planning implications, cost etc.

11.0 Conclusion

A design stage assessment has been undertaken to assess the development for compliance with Approved Document O. All habitable rooms have been demonstrated to comply with the corresponding overheating criteria using the input data noted in the previous sections of this report.

It is the appointed Design & Build Contractor's responsibility to undertake their own assessment to independently validate the results presented within this report, taking account of any updates to the design information contained herein as the scheme approaches completion.

Appendix A

Approved Document O Report - 2020 Weather File

Approved Document O report
Overheating risk in residential buildings
for
Postal Street

Postal Street

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Building details

Project name: Postal Street	Date: 10-11-2025 16:07:12
Location: Manchester Ap, United Kingdom	
Address: Postal Street Manchester M1 2EE	
Building use: Residential	
Are there any security, noise, or pollution issues: Noise restriction on all facades	

Designer's details

Designer's name: Jack Hopper
Designer's organisation: Hannan Associates
Designer's address: Beta House Alpha Gate Drive Denton Manchester M34 3SH

Dynamic thermal model

Software: IESVE version 2025.1.0.0	
Weather file: Manchester_DSY1_2020High50_.epw	
Results file: 4062-PS-DocO-251014-R52.aps	
Number of rooms analysed: 336	
TM59: summer elevated air speed: 0.1	
TM59: occupant category: Category II (normal)	
Overheating mitigation strategy: Mechanical Ventilation	
Has the building construction proposal been modelled accurately?	YES
Have the analysed rooms passed the assessment for Approved Doc O Dynamic Thermal Modelling Method (CIBSE TM 59)?	YES
Designer's signature:	

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Summary

CIBSE TM59 overheating methodology for predominantly naturally ventilated rooms assesses against two criteria, (a) and (b) (for Category I occupancy, T_{max} is reduced by 1K):

- Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours
- Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Approved document O applies limits to CIBSE TM59 section 3.3 (openings); these requirements are applied by appropriate assignment of MacroFlo types / scripted profiles in the model (see Modelled Openings Section).

CIBSE TM59 overheating methodology for predominantly mechanically ventilated rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

CIBSE TM59 also states that the inclusion of corridors in the overheating analysis is mandatory where community heating pipework runs through them. While there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of the total annual hours this should be identified as a significant risk.

Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L01: Bed 1b A01 Dbl	-	-	Pass	-
L01: Bed 1b A03 Dbl	-	-	Pass	-
L01: Bed 1b A04 Dbl	-	-	Pass	-
L01: Bed 1b A05 Dbl	-	-	Pass	-
L01: Bed 1b A07 Dbl	-	-	Pass	-
L01: Bed 1b A08 Dbl	-	-	Pass	-
L01: Bed 1b A09 Dbl	-	-	Pass	-
L01: Bed 1b A12 Dbl	-	-	Pass	-
L01: Bed 1b A13 Dbl	-	-	Pass	-
L01: Bed 1b A16 Dbl	-	-	Pass	-
L01: Bed 2b B1 A02 Dbl	-	-	Pass	-
L01: Bed 2b B1 A06 Dbl	-	-	Pass	-
L01: Bed 2b B1 A10 Dbl	-	-	Pass	-
L01: Bed 2b B1 A11 Dbl	-	-	Pass	-
L01: Bed 2b B1 A14 Dbl	-	-	Pass	-
L01: Bed 2b B1 A15 Dbl	-	-	Pass	-
L01: Bed 2b B1 A17 Dbl	-	-	Pass	-
L01: Bed 2b B1 A18 Dbl	-	-	Pass	-
L01: Bed 2b B2 A02 Dbl	-	-	Pass	-
L01: Bed 2b B2 A06 Dbl	-	-	Pass	-
L01: Bed 2b B2 A10 Dbl	-	-	Pass	-
L01: Bed 2b B2 A11 Dbl	-	-	Pass	-
L01: Bed 2b B2 A14 Dbl	-	-	Pass	-
L01: Bed 2b B2 A15 Dbl	-	-	Pass	-
L01: Bed 2b B2 A17 Dbl	-	-	Pass	-
L01: Bed 2b B2 A18 Dbl	-	-	Pass	-
L01: Circulation, Corridor	-	-	-	No
L01: Circulation, Corridor	-	-	-	No
L01: Circulation, Corridor	-	-	-	No

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L01: Circulation, Corridor	-	-	-	No
L01: LivKit 1b A01	-	-	Pass	-
L01: LivKit 1b A03	-	-	Pass	-
L01: LivKit 1b A04	-	-	Pass	-
L01: LivKit 1b A05	-	-	Pass	-
L01: LivKit 1b A07	-	-	Pass	-
L01: LivKit 1b A08	-	-	Pass	-
L01: LivKit 1b A09	-	-	Pass	-
L01: LivKit 1b A12	-	-	Pass	-
L01: LivKit 1b A13	-	-	Pass	-
L01: LivKit 1b A16	-	-	Pass	-
L01: LivKit 2b A02	-	-	Pass	-
L01: LivKit 2b A06	-	-	Pass	-
L01: LivKit 2b A10	-	-	Pass	-
L01: LivKit 2b A11	-	-	Pass	-
L01: LivKit 2b A14	-	-	Pass	-
L01: LivKit 2b A15	-	-	Pass	-
L01: LivKit 2b A17	-	-	Pass	-
L01: LivKit 2b A18	-	-	Pass	-
L02: Bed 1b A01 Dbl	-	-	Pass	-
L02: Bed 1b A03 Dbl	-	-	Pass	-
L02: Bed 1b A04 Dbl	-	-	Pass	-
L02: Bed 1b A05 Dbl	-	-	Pass	-
L02: Bed 1b A07 Dbl	-	-	Pass	-
L02: Bed 1b A08 Dbl	-	-	Pass	-
L02: Bed 1b A09 Dbl	-	-	Pass	-
L02: Bed 1b A12 Dbl	-	-	Pass	-
L02: Bed 1b A13 Dbl	-	-	Pass	-
L02: Bed 1b A16 Dbl	-	-	Pass	-
L02: Bed 2b B1 A02 Dbl	-	-	Pass	-
L02: Bed 2b B1 A06 Dbl	-	-	Pass	-
L02: Bed 2b B1 A10 Dbl	-	-	Pass	-
L02: Bed 2b B1 A11 Dbl	-	-	Pass	-
L02: Bed 2b B1 A14 Dbl	-	-	Pass	-
L02: Bed 2b B1 A15 Dbl	-	-	Pass	-
L02: Bed 2b B1 A17 Dbl	-	-	Pass	-
L02: Bed 2b B1 A18 Dbl	-	-	Pass	-
L02: Bed 2b B2 A02 Dbl	-	-	Pass	-
L02: Bed 2b B2 A06 Dbl	-	-	Pass	-
L02: Bed 2b B2 A10 Dbl	-	-	Pass	-
L02: Bed 2b B2 A11 Dbl	-	-	Pass	-
L02: Bed 2b B2 A14 Dbl	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L02: Bed 2b B2 A15 Dbl	-	-	Pass	-
L02: Bed 2b B2 A17 Dbl	-	-	Pass	-
L02: Bed 2b B2 A18 Dbl	-	-	Pass	-
L02: Circulation, Corridor	-	-	-	No
L02: Circulation, Corridor	-	-	-	No
L02: Circulation, Corridor	-	-	-	No
L02: Circulation, Corridor	-	-	-	No
L02: LivKit 1b A01	-	-	Pass	-
L02: LivKit 1b A03	-	-	Pass	-
L02: LivKit 1b A04	-	-	Pass	-
L02: LivKit 1b A05	-	-	Pass	-
L02: LivKit 1b A07	-	-	Pass	-
L02: LivKit 1b A08	-	-	Pass	-
L02: LivKit 1b A09	-	-	Pass	-
L02: LivKit 1b A12	-	-	Pass	-
L02: LivKit 1b A13	-	-	Pass	-
L02: LivKit 1b A16	-	-	Pass	-
L02: LivKit 2b A02	-	-	Pass	-
L02: LivKit 2b A06	-	-	Pass	-
L02: LivKit 2b A10	-	-	Pass	-
L02: LivKit 2b A11	-	-	Pass	-
L02: LivKit 2b A14	-	-	Pass	-
L02: LivKit 2b A15	-	-	Pass	-
L02: LivKit 2b A17	-	-	Pass	-
L02: LivKit 2b A18	-	-	Pass	-
L03: Bed 1b A01 Dbl	-	-	Pass	-
L03: Bed 1b A03 Dbl	-	-	Pass	-
L03: Bed 1b A04 Dbl	-	-	Pass	-
L03: Bed 1b A05 Dbl	-	-	Pass	-
L03: Bed 1b A07 Dbl	-	-	Pass	-
L03: Bed 1b A08 Dbl	-	-	Pass	-
L03: Bed 1b A09 Dbl	-	-	Pass	-
L03: Bed 1b A12 Dbl	-	-	Pass	-
L03: Bed 1b A13 Dbl	-	-	Pass	-
L03: Bed 1b A16 Dbl	-	-	Pass	-
L03: Bed 2b B1 A02 Dbl	-	-	Pass	-
L03: Bed 2b B1 A06 Dbl	-	-	Pass	-
L03: Bed 2b B1 A10 Dbl	-	-	Pass	-
L03: Bed 2b B1 A11 Dbl	-	-	Pass	-
L03: Bed 2b B1 A14 Dbl	-	-	Pass	-
L03: Bed 2b B1 A15 Dbl	-	-	Pass	-
L03: Bed 2b B1 A17 Dbl	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L03: Bed 2b B1 A18 Dbl	-	-	Pass	-
L03: Bed 2b B2 A02 Dbl	-	-	Pass	-
L03: Bed 2b B2 A06 Dbl	-	-	Pass	-
L03: Bed 2b B2 A10 Dbl	-	-	Pass	-
L03: Bed 2b B2 A11 Dbl	-	-	Pass	-
L03: Bed 2b B2 A14 Dbl	-	-	Pass	-
L03: Bed 2b B2 A15 Dbl	-	-	Pass	-
L03: Bed 2b B2 A17 Dbl	-	-	Pass	-
L03: Bed 2b B2 A18 Dbl	-	-	Pass	-
L03: Circulation, Corridor	-	-	-	No
L03: Circulation, Corridor	-	-	-	No
L03: Circulation, Corridor	-	-	-	No
L03: Circulation, Corridor	-	-	-	No
L03: LivKit 1b A01	-	-	Pass	-
L03: LivKit 1b A03	-	-	Pass	-
L03: LivKit 1b A04	-	-	Pass	-
L03: LivKit 1b A05	-	-	Pass	-
L03: LivKit 1b A07	-	-	Pass	-
L03: LivKit 1b A08	-	-	Pass	-
L03: LivKit 1b A09	-	-	Pass	-
L03: LivKit 1b A12	-	-	Pass	-
L03: LivKit 1b A13	-	-	Pass	-
L03: LivKit 1b A16	-	-	Pass	-
L03: LivKit 2b A02	-	-	Pass	-
L03: LivKit 2b A06	-	-	Pass	-
L03: LivKit 2b A10	-	-	Pass	-
L03: LivKit 2b A11	-	-	Pass	-
L03: LivKit 2b A14	-	-	Pass	-
L03: LivKit 2b A15	-	-	Pass	-
L03: LivKit 2b A17	-	-	Pass	-
L03: LivKit 2b A18	-	-	Pass	-
L04: Bed 1b A01 Dbl	-	-	Pass	-
L04: Bed 1b A03 Dbl	-	-	Pass	-
L04: Bed 1b A04 Dbl	-	-	Pass	-
L04: Bed 1b A05 Dbl	-	-	Pass	-
L04: Bed 1b A07 Dbl	-	-	Pass	-
L04: Bed 1b A08 Dbl	-	-	Pass	-
L04: Bed 1b A09 Dbl	-	-	Pass	-
L04: Bed 1b A12 Dbl	-	-	Pass	-
L04: Bed 1b A13 Dbl	-	-	Pass	-
L04: Bed 1b A16 Dbl	-	-	Pass	-
L04: Bed 2b B1 A02 Dbl	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L04: Bed 2b B1 A06 Dbl	-	-	Pass	-
L04: Bed 2b B1 A10 Dbl	-	-	Pass	-
L04: Bed 2b B1 A11 Dbl	-	-	Pass	-
L04: Bed 2b B1 A14 Dbl	-	-	Pass	-
L04: Bed 2b B1 A15 Dbl	-	-	Pass	-
L04: Bed 2b B1 A17 Dbl	-	-	Pass	-
L04: Bed 2b B1 A18 Dbl	-	-	Pass	-
L04: Bed 2b B2 A02 Dbl	-	-	Pass	-
L04: Bed 2b B2 A06 Dbl	-	-	Pass	-
L04: Bed 2b B2 A10 Dbl	-	-	Pass	-
L04: Bed 2b B2 A11 Dbl	-	-	Pass	-
L04: Bed 2b B2 A14 Dbl	-	-	Pass	-
L04: Bed 2b B2 A15 Dbl	-	-	Pass	-
L04: Bed 2b B2 A17 Dbl	-	-	Pass	-
L04: Bed 2b B2 A18 Dbl	-	-	Pass	-
L04: Circulation, Corridor	-	-	-	No
L04: Circulation, Corridor	-	-	-	No
L04: Circulation, Corridor	-	-	-	No
L04: Circulation, Corridor	-	-	-	No
L04: LivKit 1b A01	-	-	Pass	-
L04: LivKit 1b A03	-	-	Pass	-
L04: LivKit 1b A04	-	-	Pass	-
L04: LivKit 1b A05	-	-	Pass	-
L04: LivKit 1b A07	-	-	Pass	-
L04: LivKit 1b A08	-	-	Pass	-
L04: LivKit 1b A09	-	-	Pass	-
L04: LivKit 1b A12	-	-	Pass	-
L04: LivKit 1b A13	-	-	Pass	-
L04: LivKit 1b A16	-	-	Pass	-
L04: LivKit 2b A02	-	-	Pass	-
L04: LivKit 2b A06	-	-	Pass	-
L04: LivKit 2b A10	-	-	Pass	-
L04: LivKit 2b A11	-	-	Pass	-
L04: LivKit 2b A14	-	-	Pass	-
L04: LivKit 2b A15	-	-	Pass	-
L04: LivKit 2b A17	-	-	Pass	-
L04: LivKit 2b A18	-	-	Pass	-
L05: Bed 1b A01 Dbl	-	-	Pass	-
L05: Bed 1b A03 Dbl	-	-	Pass	-
L05: Bed 1b A04 Dbl	-	-	Pass	-
L05: Bed 1b A05 Dbl	-	-	Pass	-
L05: Bed 1b A07 Dbl	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L05: Bed 1b A08 Dbl	-	-	Pass	-
L05: Bed 1b A09 Dbl	-	-	Pass	-
L05: Bed 1b A12 Dbl	-	-	Pass	-
L05: Bed 1b A13 Dbl	-	-	Pass	-
L05: Bed 1b A16 Dbl	-	-	Pass	-
L05: Bed 2b B1 A02 Dbl	-	-	Pass	-
L05: Bed 2b B1 A06 Dbl	-	-	Pass	-
L05: Bed 2b B1 A10 Dbl	-	-	Pass	-
L05: Bed 2b B1 A11 Dbl	-	-	Pass	-
L05: Bed 2b B1 A14 Dbl	-	-	Pass	-
L05: Bed 2b B1 A15 Dbl	-	-	Pass	-
L05: Bed 2b B1 A17 Dbl	-	-	Pass	-
L05: Bed 2b B1 A18 Dbl	-	-	Pass	-
L05: Bed 2b B2 A02 Dbl	-	-	Pass	-
L05: Bed 2b B2 A06 Dbl	-	-	Pass	-
L05: Bed 2b B2 A10 Dbl	-	-	Pass	-
L05: Bed 2b B2 A11 Dbl	-	-	Pass	-
L05: Bed 2b B2 A14 Dbl	-	-	Pass	-
L05: Bed 2b B2 A15 Dbl	-	-	Pass	-
L05: Bed 2b B2 A17 Dbl	-	-	Pass	-
L05: Bed 2b B2 A18 Dbl	-	-	Pass	-
L05: Circulation, Corridor	-	-	-	No
L05: Circulation, Corridor	-	-	-	No
L05: Circulation, Corridor	-	-	-	No
L05: Circulation, Corridor	-	-	-	No
L05: LivKit 1b A01	-	-	Pass	-
L05: LivKit 1b A03	-	-	Pass	-
L05: LivKit 1b A04	-	-	Pass	-
L05: LivKit 1b A05	-	-	Pass	-
L05: LivKit 1b A07	-	-	Pass	-
L05: LivKit 1b A08	-	-	Pass	-
L05: LivKit 1b A09	-	-	Pass	-
L05: LivKit 1b A12	-	-	Pass	-
L05: LivKit 1b A13	-	-	Pass	-
L05: LivKit 1b A16	-	-	Pass	-
L05: LivKit 2b A02	-	-	Pass	-
L05: LivKit 2b A06	-	-	Pass	-
L05: LivKit 2b A10	-	-	Pass	-
L05: LivKit 2b A11	-	-	Pass	-
L05: LivKit 2b A14	-	-	Pass	-
L05: LivKit 2b A15	-	-	Pass	-
L05: LivKit 2b A17	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L05: LivKit 2b A18	-	-	Pass	-
L06: Bed 1b A01 Dbl	-	-	Pass	-
L06: Bed 1b A03 Dbl	-	-	Pass	-
L06: Bed 1b A04 Dbl	-	-	Pass	-
L06: Bed 1b A05 Dbl	-	-	Pass	-
L06: Bed 1b A07 Dbl	-	-	Pass	-
L06: Bed 1b A08 Dbl	-	-	Pass	-
L06: Bed 1b A09 Dbl	-	-	Pass	-
L06: Bed 1b A12 Dbl	-	-	Pass	-
L06: Bed 1b A13 Dbl	-	-	Pass	-
L06: Bed 1b A16 Dbl	-	-	Pass	-
L06: Bed 2b B1 A02 Dbl	-	-	Pass	-
L06: Bed 2b B1 A06 Dbl	-	-	Pass	-
L06: Bed 2b B1 A10 Dbl	-	-	Pass	-
L06: Bed 2b B1 A11 Dbl	-	-	Pass	-
L06: Bed 2b B1 A14 Dbl	-	-	Pass	-
L06: Bed 2b B1 A15 Dbl	-	-	Pass	-
L06: Bed 2b B1 A17 Dbl	-	-	Pass	-
L06: Bed 2b B1 A18 Dbl	-	-	Pass	-
L06: Bed 2b B2 A02 Dbl	-	-	Pass	-
L06: Bed 2b B2 A06 Dbl	-	-	Pass	-
L06: Bed 2b B2 A10 Dbl	-	-	Pass	-
L06: Bed 2b B2 A11 Dbl	-	-	Pass	-
L06: Bed 2b B2 A14 Dbl	-	-	Pass	-
L06: Bed 2b B2 A15 Dbl	-	-	Pass	-
L06: Bed 2b B2 A17 Dbl	-	-	Pass	-
L06: Bed 2b B2 A18 Dbl	-	-	Pass	-
L06: Circulation, Corridor	-	-	-	No
L06: Circulation, Corridor	-	-	-	No
L06: Circulation, Corridor	-	-	-	No
L06: Circulation, Corridor	-	-	-	No
L06: LivKit 1b A01	-	-	Pass	-
L06: LivKit 1b A03	-	-	Pass	-
L06: LivKit 1b A04	-	-	Pass	-
L06: LivKit 1b A05	-	-	Pass	-
L06: LivKit 1b A07	-	-	Pass	-
L06: LivKit 1b A08	-	-	Pass	-
L06: LivKit 1b A09	-	-	Pass	-
L06: LivKit 1b A12	-	-	Pass	-
L06: LivKit 1b A13	-	-	Pass	-
L06: LivKit 1b A16	-	-	Pass	-
L06: LivKit 2b A02	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L06: LivKit 2b A06	-	-	Pass	-
L06: LivKit 2b A10	-	-	Pass	-
L06: LivKit 2b A11	-	-	Pass	-
L06: LivKit 2b A14	-	-	Pass	-
L06: LivKit 2b A15	-	-	Pass	-
L06: LivKit 2b A17	-	-	Pass	-
L06: LivKit 2b A18	-	-	Pass	-
L07: Bed 1b A01 Dbl	-	-	Pass	-
L07: Bed 1b A03 Dbl	-	-	Pass	-
L07: Bed 1b A04 Dbl	-	-	Pass	-
L07: Bed 1b A05 Dbl	-	-	Pass	-
L07: Bed 1b A07 Dbl	-	-	Pass	-
L07: Bed 1b A08 Dbl	-	-	Pass	-
L07: Bed 1b A09 Dbl	-	-	Pass	-
L07: Bed 1b A12 Dbl	-	-	Pass	-
L07: Bed 1b A13 Dbl	-	-	Pass	-
L07: Bed 1b A16 Dbl	-	-	Pass	-
L07: Bed 2b B1 A02 Dbl	-	-	Pass	-
L07: Bed 2b B1 A06 Dbl	-	-	Pass	-
L07: Bed 2b B1 A10 Dbl	-	-	Pass	-
L07: Bed 2b B1 A11 Dbl	-	-	Pass	-
L07: Bed 2b B1 A14 Dbl	-	-	Pass	-
L07: Bed 2b B1 A15 Dbl	-	-	Pass	-
L07: Bed 2b B1 A17 Dbl	-	-	Pass	-
L07: Bed 2b B1 A18 Dbl	-	-	Pass	-
L07: Bed 2b B2 A02 Dbl	-	-	Pass	-
L07: Bed 2b B2 A06 Dbl	-	-	Pass	-
L07: Bed 2b B2 A10 Dbl	-	-	Pass	-
L07: Bed 2b B2 A11 Dbl	-	-	Pass	-
L07: Bed 2b B2 A14 Dbl	-	-	Pass	-
L07: Bed 2b B2 A15 Dbl	-	-	Pass	-
L07: Bed 2b B2 A17 Dbl	-	-	Pass	-
L07: Bed 2b B2 A18 Dbl	-	-	Pass	-
L07: Circulation, Corridor	-	-	-	No
L07: Circulation, Corridor	-	-	-	No
L07: Circulation, Corridor	-	-	-	No
L07: Circulation, Corridor	-	-	-	No
L07: LivKit 1b A01	-	-	Pass	-
L07: LivKit 1b A03	-	-	Pass	-
L07: LivKit 1b A04	-	-	Pass	-
L07: LivKit 1b A05	-	-	Pass	-
L07: LivKit 1b A07	-	-	Pass	-

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Room name	Naturally ventilated Criterion a check	Naturally ventilated Criterion b check	Mechanically ventilated check	Corridor overheating risk check
L07: LivKit 1b A08	-	-	Pass	-
L07: LivKit 1b A09	-	-	Pass	-
L07: LivKit 1b A12	-	-	Pass	-
L07: LivKit 1b A13	-	-	Pass	-
L07: LivKit 1b A16	-	-	Pass	-
L07: LivKit 2b A02	-	-	Pass	-
L07: LivKit 2b A06	-	-	Pass	-
L07: LivKit 2b A10	-	-	Pass	-
L07: LivKit 2b A11	-	-	Pass	-
L07: LivKit 2b A14	-	-	Pass	-
L07: LivKit 2b A15	-	-	Pass	-
L07: LivKit 2b A17	-	-	Pass	-
L07: LivKit 2b A18	-	-	Pass	-

Naturally ventilated rooms – criterion (a)

Criterion (a) states that for living rooms, kitchens and bedrooms, the number of hours during which ΔT is greater than or equal to 1K from May to September (or November to March for southern hemisphere locations) shall not exceed 3% of occupied hours.

Room name	Occupied hours	No. hours $\Delta T \geq 1^\circ\text{K}$	% Occupied hours $\Delta T \geq 1^\circ\text{K}$	Criterion a check
No nat vent rooms	N/A	N/A	N/A	N/A

Naturally ventilated rooms – criterion (b)

Criterion (b) states that the operative temperature of the bedrooms from 22:00-07:00 shall not exceed 26°C for more than 1% of annual hours (33 hours is therefore recorded as a fail). Any rooms that are not bedrooms are therefore not assessed, hence the corresponding N/A values.

Room name	No. hours > 26°C 22:00-24:00	No. hours > 26°C 00:00-07:00	Total hours > 26°C	Criterion b check
No nat vent rooms	N/A	N/A	N/A	N/A

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Mechanically ventilated rooms

CIBSE TM59 overheating methodology for predominantly mech. vent. rooms states the operative temperature of all rooms shall not exceed 26°C for more than 3% of annual occupied hours.

Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L01: Bed 1b A01 Dbl	152	1.7	Pass
L01: Bed 1b A03 Dbl	124	1.4	Pass
L01: Bed 1b A04 Dbl	91	1.0	Pass
L01: Bed 1b A05 Dbl	81	0.9	Pass
L01: Bed 1b A07 Dbl	59	0.7	Pass
L01: Bed 1b A08 Dbl	55	0.6	Pass
L01: Bed 1b A09 Dbl	55	0.6	Pass
L01: Bed 1b A12 Dbl	43	0.5	Pass
L01: Bed 1b A13 Dbl	102	1.2	Pass
L01: Bed 1b A16 Dbl	162	1.8	Pass
L01: Bed 2b B1 A02 Dbl	86	1.0	Pass
L01: Bed 2b B1 A06 Dbl	96	1.1	Pass
L01: Bed 2b B1 A10 Dbl	66	0.8	Pass
L01: Bed 2b B1 A11 Dbl	76	0.9	Pass
L01: Bed 2b B1 A14 Dbl	121	1.4	Pass
L01: Bed 2b B1 A15 Dbl	179	2.0	Pass
L01: Bed 2b B1 A17 Dbl	128	1.5	Pass
L01: Bed 2b B1 A18 Dbl	95	1.1	Pass
L01: Bed 2b B2 A02 Dbl	177	2.0	Pass
L01: Bed 2b B2 A06 Dbl	146	1.7	Pass
L01: Bed 2b B2 A10 Dbl	127	1.4	Pass
L01: Bed 2b B2 A11 Dbl	129	1.5	Pass
L01: Bed 2b B2 A14 Dbl	212	2.4	Pass
L01: Bed 2b B2 A15 Dbl	105	1.2	Pass
L01: Bed 2b B2 A17 Dbl	180	2.1	Pass
L01: Bed 2b B2 A18 Dbl	145	1.7	Pass
L01: LivKit 1b A01	13	0.3	Pass
L01: LivKit 1b A03	16	0.3	Pass
L01: LivKit 1b A04	15	0.3	Pass
L01: LivKit 1b A05	15	0.3	Pass
L01: LivKit 1b A07	30	0.6	Pass
L01: LivKit 1b A08	17	0.4	Pass
L01: LivKit 1b A09	18	0.4	Pass
L01: LivKit 1b A12	8	0.2	Pass
L01: LivKit 1b A13	19	0.4	Pass
L01: LivKit 1b A16	15	0.3	Pass
L01: LivKit 2b A02	74	1.6	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L01: LivKit 2b A06	46	1.0	Pass
L01: LivKit 2b A10	47	1.0	Pass
L01: LivKit 2b A11	45	0.9	Pass
L01: LivKit 2b A14	88	1.9	Pass
L01: LivKit 2b A15	83	1.7	Pass
L01: LivKit 2b A17	86	1.8	Pass
L01: LivKit 2b A18	82	1.7	Pass
L02: Bed 1b A01 Dbl	158	1.8	Pass
L02: Bed 1b A03 Dbl	150	1.7	Pass
L02: Bed 1b A04 Dbl	118	1.3	Pass
L02: Bed 1b A05 Dbl	107	1.2	Pass
L02: Bed 1b A07 Dbl	93	1.1	Pass
L02: Bed 1b A08 Dbl	87	1.0	Pass
L02: Bed 1b A09 Dbl	88	1.0	Pass
L02: Bed 1b A12 Dbl	58	0.7	Pass
L02: Bed 1b A13 Dbl	103	1.2	Pass
L02: Bed 1b A16 Dbl	177	2.0	Pass
L02: Bed 2b B1 A02 Dbl	102	1.2	Pass
L02: Bed 2b B1 A06 Dbl	132	1.5	Pass
L02: Bed 2b B1 A10 Dbl	112	1.3	Pass
L02: Bed 2b B1 A11 Dbl	93	1.1	Pass
L02: Bed 2b B1 A14 Dbl	126	1.4	Pass
L02: Bed 2b B1 A15 Dbl	200	2.3	Pass
L02: Bed 2b B1 A17 Dbl	157	1.8	Pass
L02: Bed 2b B1 A18 Dbl	157	1.8	Pass
L02: Bed 2b B2 A02 Dbl	199	2.3	Pass
L02: Bed 2b B2 A06 Dbl	164	1.9	Pass
L02: Bed 2b B2 A10 Dbl	145	1.7	Pass
L02: Bed 2b B2 A11 Dbl	148	1.7	Pass
L02: Bed 2b B2 A14 Dbl	218	2.5	Pass
L02: Bed 2b B2 A15 Dbl	122	1.4	Pass
L02: Bed 2b B2 A17 Dbl	192	2.2	Pass
L02: Bed 2b B2 A18 Dbl	184	2.1	Pass
L02: LivKit 1b A01	17	0.4	Pass
L02: LivKit 1b A03	28	0.6	Pass
L02: LivKit 1b A04	22	0.5	Pass
L02: LivKit 1b A05	18	0.4	Pass
L02: LivKit 1b A07	38	0.8	Pass
L02: LivKit 1b A08	28	0.6	Pass
L02: LivKit 1b A09	27	0.6	Pass
L02: LivKit 1b A12	10	0.2	Pass
L02: LivKit 1b A13	22	0.5	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L02: LivKit 1b A16	21	0.4	Pass
L02: LivKit 2b A02	92	1.9	Pass
L02: LivKit 2b A06	57	1.2	Pass
L02: LivKit 2b A10	67	1.4	Pass
L02: LivKit 2b A11	61	1.3	Pass
L02: LivKit 2b A14	96	2.0	Pass
L02: LivKit 2b A15	96	2.0	Pass
L02: LivKit 2b A17	87	1.8	Pass
L02: LivKit 2b A18	87	1.8	Pass
L03: Bed 1b A01 Dbl	159	1.8	Pass
L03: Bed 1b A03 Dbl	184	2.1	Pass
L03: Bed 1b A04 Dbl	141	1.6	Pass
L03: Bed 1b A05 Dbl	134	1.5	Pass
L03: Bed 1b A07 Dbl	110	1.3	Pass
L03: Bed 1b A08 Dbl	102	1.2	Pass
L03: Bed 1b A09 Dbl	108	1.2	Pass
L03: Bed 1b A12 Dbl	66	0.8	Pass
L03: Bed 1b A13 Dbl	109	1.2	Pass
L03: Bed 1b A16 Dbl	199	2.3	Pass
L03: Bed 2b B1 A02 Dbl	113	1.3	Pass
L03: Bed 2b B1 A06 Dbl	143	1.6	Pass
L03: Bed 2b B1 A10 Dbl	125	1.4	Pass
L03: Bed 2b B1 A11 Dbl	108	1.2	Pass
L03: Bed 2b B1 A14 Dbl	130	1.5	Pass
L03: Bed 2b B1 A15 Dbl	211	2.4	Pass
L03: Bed 2b B1 A17 Dbl	163	1.9	Pass
L03: Bed 2b B1 A18 Dbl	169	1.9	Pass
L03: Bed 2b B2 A02 Dbl	223	2.5	Pass
L03: Bed 2b B2 A06 Dbl	180	2.1	Pass
L03: Bed 2b B2 A10 Dbl	162	1.8	Pass
L03: Bed 2b B2 A11 Dbl	160	1.8	Pass
L03: Bed 2b B2 A14 Dbl	223	2.5	Pass
L03: Bed 2b B2 A15 Dbl	153	1.7	Pass
L03: Bed 2b B2 A17 Dbl	198	2.3	Pass
L03: Bed 2b B2 A18 Dbl	200	2.3	Pass
L03: LivKit 1b A01	17	0.4	Pass
L03: LivKit 1b A03	44	0.9	Pass
L03: LivKit 1b A04	35	0.7	Pass
L03: LivKit 1b A05	26	0.5	Pass
L03: LivKit 1b A07	45	0.9	Pass
L03: LivKit 1b A08	30	0.6	Pass
L03: LivKit 1b A09	30	0.6	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L03: LivKit 1b A12	16	0.3	Pass
L03: LivKit 1b A13	25	0.5	Pass
L03: LivKit 1b A16	31	0.7	Pass
L03: LivKit 2b A02	101	2.1	Pass
L03: LivKit 2b A06	72	1.5	Pass
L03: LivKit 2b A10	79	1.7	Pass
L03: LivKit 2b A11	74	1.6	Pass
L03: LivKit 2b A14	102	2.1	Pass
L03: LivKit 2b A15	111	2.3	Pass
L03: LivKit 2b A17	92	1.9	Pass
L03: LivKit 2b A18	91	1.9	Pass
L04: Bed 1b A01 Dbl	159	1.8	Pass
L04: Bed 1b A03 Dbl	205	2.3	Pass
L04: Bed 1b A04 Dbl	175	2.0	Pass
L04: Bed 1b A05 Dbl	175	2.0	Pass
L04: Bed 1b A07 Dbl	127	1.4	Pass
L04: Bed 1b A08 Dbl	121	1.4	Pass
L04: Bed 1b A09 Dbl	124	1.4	Pass
L04: Bed 1b A12 Dbl	80	0.9	Pass
L04: Bed 1b A13 Dbl	122	1.4	Pass
L04: Bed 1b A16 Dbl	207	2.4	Pass
L04: Bed 2b B1 A02 Dbl	119	1.4	Pass
L04: Bed 2b B1 A06 Dbl	154	1.8	Pass
L04: Bed 2b B1 A10 Dbl	146	1.7	Pass
L04: Bed 2b B1 A11 Dbl	120	1.4	Pass
L04: Bed 2b B1 A14 Dbl	141	1.6	Pass
L04: Bed 2b B1 A15 Dbl	222	2.5	Pass
L04: Bed 2b B1 A17 Dbl	165	1.9	Pass
L04: Bed 2b B1 A18 Dbl	170	1.9	Pass
L04: Bed 2b B2 A02 Dbl	231	2.6	Pass
L04: Bed 2b B2 A06 Dbl	197	2.2	Pass
L04: Bed 2b B2 A10 Dbl	185	2.1	Pass
L04: Bed 2b B2 A11 Dbl	185	2.1	Pass
L04: Bed 2b B2 A14 Dbl	224	2.6	Pass
L04: Bed 2b B2 A15 Dbl	170	1.9	Pass
L04: Bed 2b B2 A17 Dbl	202	2.3	Pass
L04: Bed 2b B2 A18 Dbl	211	2.4	Pass
L04: LivKit 1b A01	17	0.4	Pass
L04: LivKit 1b A03	58	1.2	Pass
L04: LivKit 1b A04	44	0.9	Pass
L04: LivKit 1b A05	46	1.0	Pass
L04: LivKit 1b A07	54	1.1	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L04: LivKit 1b A08	40	0.8	Pass
L04: LivKit 1b A09	40	0.8	Pass
L04: LivKit 1b A12	19	0.4	Pass
L04: LivKit 1b A13	33	0.7	Pass
L04: LivKit 1b A16	43	0.9	Pass
L04: LivKit 2b A02	108	2.3	Pass
L04: LivKit 2b A06	92	1.9	Pass
L04: LivKit 2b A10	89	1.9	Pass
L04: LivKit 2b A11	83	1.7	Pass
L04: LivKit 2b A14	112	2.4	Pass
L04: LivKit 2b A15	129	2.7	Pass
L04: LivKit 2b A17	99	2.1	Pass
L04: LivKit 2b A18	101	2.1	Pass
L05: Bed 1b A01 Dbl	166	1.9	Pass
L05: Bed 1b A03 Dbl	209	2.4	Pass
L05: Bed 1b A04 Dbl	190	2.2	Pass
L05: Bed 1b A05 Dbl	191	2.2	Pass
L05: Bed 1b A07 Dbl	145	1.7	Pass
L05: Bed 1b A08 Dbl	135	1.5	Pass
L05: Bed 1b A09 Dbl	138	1.6	Pass
L05: Bed 1b A12 Dbl	100	1.1	Pass
L05: Bed 1b A13 Dbl	136	1.6	Pass
L05: Bed 1b A16 Dbl	218	2.5	Pass
L05: Bed 2b B1 A02 Dbl	122	1.4	Pass
L05: Bed 2b B1 A06 Dbl	169	1.9	Pass
L05: Bed 2b B1 A10 Dbl	158	1.8	Pass
L05: Bed 2b B1 A11 Dbl	139	1.6	Pass
L05: Bed 2b B1 A14 Dbl	160	1.8	Pass
L05: Bed 2b B1 A15 Dbl	234	2.7	Pass
L05: Bed 2b B1 A17 Dbl	169	1.9	Pass
L05: Bed 2b B1 A18 Dbl	175	2.0	Pass
L05: Bed 2b B2 A02 Dbl	237	2.7	Pass
L05: Bed 2b B2 A06 Dbl	213	2.4	Pass
L05: Bed 2b B2 A10 Dbl	194	2.2	Pass
L05: Bed 2b B2 A11 Dbl	195	2.2	Pass
L05: Bed 2b B2 A14 Dbl	227	2.6	Pass
L05: Bed 2b B2 A15 Dbl	184	2.1	Pass
L05: Bed 2b B2 A17 Dbl	207	2.4	Pass
L05: Bed 2b B2 A18 Dbl	218	2.5	Pass
L05: LivKit 1b A01	24	0.5	Pass
L05: LivKit 1b A03	65	1.4	Pass
L05: LivKit 1b A04	50	1.1	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L05: LivKit 1b A05	54	1.1	Pass
L05: LivKit 1b A07	60	1.3	Pass
L05: LivKit 1b A08	44	0.9	Pass
L05: LivKit 1b A09	45	0.9	Pass
L05: LivKit 1b A12	25	0.5	Pass
L05: LivKit 1b A13	39	0.8	Pass
L05: LivKit 1b A16	52	1.1	Pass
L05: LivKit 2b A02	111	2.3	Pass
L05: LivKit 2b A06	101	2.1	Pass
L05: LivKit 2b A10	95	2.0	Pass
L05: LivKit 2b A11	96	2.0	Pass
L05: LivKit 2b A14	120	2.5	Pass
L05: LivKit 2b A15	137	2.9	Pass
L05: LivKit 2b A17	106	2.2	Pass
L05: LivKit 2b A18	111	2.3	Pass
L06: Bed 1b A01 Dbl	168	1.9	Pass
L06: Bed 1b A03 Dbl	208	2.4	Pass
L06: Bed 1b A04 Dbl	190	2.2	Pass
L06: Bed 1b A05 Dbl	191	2.2	Pass
L06: Bed 1b A07 Dbl	146	1.7	Pass
L06: Bed 1b A08 Dbl	138	1.6	Pass
L06: Bed 1b A09 Dbl	143	1.6	Pass
L06: Bed 1b A12 Dbl	115	1.3	Pass
L06: Bed 1b A13 Dbl	155	1.8	Pass
L06: Bed 1b A16 Dbl	225	2.6	Pass
L06: Bed 2b B1 A02 Dbl	124	1.4	Pass
L06: Bed 2b B1 A06 Dbl	171	2.0	Pass
L06: Bed 2b B1 A10 Dbl	161	1.8	Pass
L06: Bed 2b B1 A11 Dbl	157	1.8	Pass
L06: Bed 2b B1 A14 Dbl	171	2.0	Pass
L06: Bed 2b B1 A15 Dbl	235	2.7	Pass
L06: Bed 2b B1 A17 Dbl	173	2.0	Pass
L06: Bed 2b B1 A18 Dbl	187	2.1	Pass
L06: Bed 2b B2 A02 Dbl	236	2.7	Pass
L06: Bed 2b B2 A06 Dbl	213	2.4	Pass
L06: Bed 2b B2 A10 Dbl	200	2.3	Pass
L06: Bed 2b B2 A11 Dbl	203	2.3	Pass
L06: Bed 2b B2 A14 Dbl	233	2.7	Pass
L06: Bed 2b B2 A15 Dbl	196	2.2	Pass
L06: Bed 2b B2 A17 Dbl	217	2.5	Pass
L06: Bed 2b B2 A18 Dbl	225	2.6	Pass
L06: LivKit 1b A01	24	0.5	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L06: LivKit 1b A03	64	1.3	Pass
L06: LivKit 1b A04	50	1.1	Pass
L06: LivKit 1b A05	55	1.2	Pass
L06: LivKit 1b A07	61	1.3	Pass
L06: LivKit 1b A08	47	1.0	Pass
L06: LivKit 1b A09	47	1.0	Pass
L06: LivKit 1b A12	35	0.7	Pass
L06: LivKit 1b A13	45	0.9	Pass
L06: LivKit 1b A16	63	1.3	Pass
L06: LivKit 2b A02	113	2.4	Pass
L06: LivKit 2b A06	102	2.1	Pass
L06: LivKit 2b A10	98	2.1	Pass
L06: LivKit 2b A11	109	2.3	Pass
L06: LivKit 2b A14	127	2.7	Pass
L06: LivKit 2b A15	142	3.0	Pass
L06: LivKit 2b A17	116	2.4	Pass
L06: LivKit 2b A18	119	2.5	Pass
L07: Bed 1b A01 Dbl	161	1.8	Pass
L07: Bed 1b A03 Dbl	185	2.1	Pass
L07: Bed 1b A04 Dbl	174	2.0	Pass
L07: Bed 1b A05 Dbl	175	2.0	Pass
L07: Bed 1b A07 Dbl	131	1.5	Pass
L07: Bed 1b A08 Dbl	124	1.4	Pass
L07: Bed 1b A09 Dbl	123	1.4	Pass
L07: Bed 1b A12 Dbl	109	1.2	Pass
L07: Bed 1b A13 Dbl	146	1.7	Pass
L07: Bed 1b A16 Dbl	222	2.5	Pass
L07: Bed 2b B1 A02 Dbl	114	1.3	Pass
L07: Bed 2b B1 A06 Dbl	152	1.7	Pass
L07: Bed 2b B1 A10 Dbl	143	1.6	Pass
L07: Bed 2b B1 A11 Dbl	148	1.7	Pass
L07: Bed 2b B1 A14 Dbl	159	1.8	Pass
L07: Bed 2b B1 A15 Dbl	207	2.4	Pass
L07: Bed 2b B1 A17 Dbl	165	1.9	Pass
L07: Bed 2b B1 A18 Dbl	177	2.0	Pass
L07: Bed 2b B2 A02 Dbl	214	2.4	Pass
L07: Bed 2b B2 A06 Dbl	192	2.2	Pass
L07: Bed 2b B2 A10 Dbl	181	2.1	Pass
L07: Bed 2b B2 A11 Dbl	186	2.1	Pass
L07: Bed 2b B2 A14 Dbl	219	2.5	Pass
L07: Bed 2b B2 A15 Dbl	187	2.1	Pass
L07: Bed 2b B2 A17 Dbl	216	2.5	Pass

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Room name	No. hours > 26°C	% Annual hours > 26°C	Mechanically ventilated check
L07: Bed 2b B2 A18 Dbl	224	2.6	Pass
L07: LivKit 1b A01	23	0.5	Pass
L07: LivKit 1b A03	54	1.1	Pass
L07: LivKit 1b A04	44	0.9	Pass
L07: LivKit 1b A05	50	1.1	Pass
L07: LivKit 1b A07	53	1.1	Pass
L07: LivKit 1b A08	38	0.8	Pass
L07: LivKit 1b A09	38	0.8	Pass
L07: LivKit 1b A12	38	0.8	Pass
L07: LivKit 1b A13	46	1.0	Pass
L07: LivKit 1b A16	58	1.2	Pass
L07: LivKit 2b A02	107	2.3	Pass
L07: LivKit 2b A06	91	1.9	Pass
L07: LivKit 2b A10	88	1.9	Pass
L07: LivKit 2b A11	99	2.1	Pass
L07: LivKit 2b A14	121	2.6	Pass
L07: LivKit 2b A15	133	2.8	Pass
L07: LivKit 2b A17	116	2.4	Pass
L07: LivKit 2b A18	120	2.5	Pass

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Communal corridors

CIBSE TM59 states that whilst there is no mandatory target for communal corridors, if an operative temperature of 28°C is exceeded for more than 3% of annual hours, then this should be identified as a significant risk within the TM59 overheating report.

Room name	No. hours > 28°C	% Annual hours > 28°C	Corridor overheating risk check
L01: Circulation, Corridor	0	0.0	No
L01: Circulation, Corridor	0	0.0	No
L01: Circulation, Corridor	0	0.0	No
L01: Circulation, Corridor	0	0.0	No
L02: Circulation, Corridor	0	0.0	No
L02: Circulation, Corridor	0	0.0	No
L02: Circulation, Corridor	0	0.0	No
L02: Circulation, Corridor	0	0.0	No
L03: Circulation, Corridor	0	0.0	No
L03: Circulation, Corridor	0	0.0	No
L03: Circulation, Corridor	0	0.0	No
L03: Circulation, Corridor	0	0.0	No
L04: Circulation, Corridor	0	0.0	No
L04: Circulation, Corridor	0	0.0	No
L04: Circulation, Corridor	0	0.0	No
L04: Circulation, Corridor	0	0.0	No
L05: Circulation, Corridor	0	0.0	No
L05: Circulation, Corridor	0	0.0	No
L05: Circulation, Corridor	0	0.0	No
L05: Circulation, Corridor	0	0.0	No
L06: Circulation, Corridor	0	0.0	No
L06: Circulation, Corridor	0	0.0	No
L06: Circulation, Corridor	0	0.0	No
L06: Circulation, Corridor	0	0.0	No
L07: Circulation, Corridor	0	0.0	No
L07: Circulation, Corridor	0	0.0	No
L07: Circulation, Corridor	0	0.0	No
L07: Circulation, Corridor	0	0.0	No

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Modelled details & overheating mitigation strategy

Approved document O: Providing Information & Appendix B requires information about the model and the overheating mitigation strategy. The following tables detail the modelling method and mitigation strategies applied to each analysed room. Where multiple active openings per space (windows & louvres) exist they are all listed. Occupancy, equipment and lighting profiles for occupied rooms comply with TM59 section 5.

Modelled occupancy

Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L01: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L01: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L01: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously
L01: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L01: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L01: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L01: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L01: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L01: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L02: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L02: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L02: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L02: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L02: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L02: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L02: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L02: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L03: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L03: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L03: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously
L03: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L03: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L03: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L03: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L03: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L04: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L04: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L04: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously
L04: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L04: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L04: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L04: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L04: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L04: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L05: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L05: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L05: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L05: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L05: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously
L05: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L05: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L05: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L06: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L06: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L06: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously
L06: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L06: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L06: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L06: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L06: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L06: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: Bed 1b A01 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A03 Dbl	12.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A04 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A05 Dbl	14.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A07 Dbl	14.23	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A08 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A09 Dbl	14.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A12 Dbl	14.35	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A13 Dbl	9.99	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 1b A16 Dbl	10.11	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A02 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A06 Dbl	12.46	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A10 Dbl	13.14	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A11 Dbl	12.66	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A14 Dbl	12.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A15 Dbl	15.39	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A17 Dbl	14.24	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B1 A18 Dbl	14.29	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A02 Dbl	9.93	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A06 Dbl	12.07	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A10 Dbl	10.09	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A11 Dbl	9.84	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L07: Bed 2b B2 A14 Dbl	11.01	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A15 Dbl	11.25	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A17 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Bed 2b B2 A18 Dbl	9.59	PS- TM59 - Bedroom Double	Double Bedroom Occupancy	Double Bedroom Equipment	18-23h
L07: Circulation, Corridor	26.57	PS- TM59 - Circulation - Corridors			off continuously
L07: Circulation, Corridor	32.48	PS- TM59 - Circulation - Corridors			off continuously
L07: Circulation, Corridor	32.31	PS- TM59 - Circulation - Corridors			off continuously
L07: Circulation, Corridor	26.6	PS- TM59 - Circulation - Corridors			off continuously
L07: LivKit 1b A01	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A03	32.3	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A04	31.67	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A05	31.86	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A07	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A08	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A09	31.62	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A12	31.72	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 1b A13	23.45	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Room name	Floor area m ²	Thermal template	Occupancy profile	Equipment profile	Lighting profile
L07: LivKit 1b A16	24.57	PS- TM59 - 1 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A02	33.2	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A06	36.57	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A10	32.66	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A11	30.5	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A14	31.34	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A15	36.82	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A17	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h
L07: LivKit 2b A18	30.1	PS- TM59 - 2 Bedroom - Living / Kitchen	Living / Kitchen Occupancy	Living / Kitchen Equipment	18-23h

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Modelled openings

Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L01: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.8	off continuously
L01: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.18	off continuously
L01: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.26	off continuously
L01: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.32	off continuously
L01: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.26	off continuously
L01: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L01: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L01: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.2	off continuously
L01: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.91	off continuously
L01: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.8	off continuously
L01: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L01: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.14	off continuously
L01: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.77	off continuously
L01: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.03	off continuously
L01: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L01: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	5.78	off continuously
L01: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L01: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L01: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L01: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L01: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L01: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L01: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L01: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously
L01: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L01: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L01: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L01: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously
L01: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L01: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L01: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L01: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31, 0.0, 82.41 99981689453 1	11.36	off continuously
L01: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.78	off continuously
L01: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.73	off continuously
L01: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L01: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L01: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L01: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L01: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L01: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L01: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.41999816894531, 100.0	21.14	off continuously
L01: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	19.2	off continuously
L01: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously
L01: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	23.02	off continuously
L01: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.41999816894531, 0.0, 100.0	22.4	off continuously
L01: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.41999816894531, 100.0	19.07	off continuously
L01: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L01: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L02: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously
L02: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.18	off continuously
L02: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.26	off continuously
L02: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.32	off continuously
L02: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.26	off continuously
L02: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.3	off continuously
L02: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.3	off continuously
L02: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.2	off continuously
L02: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.91	off continuously
L02: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously
L02: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.27	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L02: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.14	off continuously
L02: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.77	off continuously
L02: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.03	off continuously
L02: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L02: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	5.78	off continuously
L02: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L02: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L02: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L02: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L02: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously
L02: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L02: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L02: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously
L02: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L02: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L02: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously
L02: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L02: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L02: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L02: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L02: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.41999816894531, 0.0, 82.41999816894531	11.36	off continuously
L02: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.41999816894531	8.78	off continuously
L02: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.41999816894531	8.73	off continuously
L02: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L02: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L02: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L02: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L02: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously
L02: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L02: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.41999816894531, 100.0	21.14	off continuously
L02: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	19.2	off continuously
L02: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously
L02: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	23.02	off continuously
L02: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.41999816894531, 0.0, 100.0	22.4	off continuously
L02: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.41999816894531, 100.0	19.07	off continuously
L02: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L02: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L03: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L03: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.18	off continuously
L03: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.26	off continuously
L03: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.32	off continuously
L03: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.26	off continuously
L03: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L03: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L03: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.2	off continuously
L03: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.91	off continuously
L03: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.8	off continuously
L03: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L03: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.14	off continuously
L03: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.77	off continuously
L03: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.03	off continuously
L03: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L03: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	5.78	off continuously
L03: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L03: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L03: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L03: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L03: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously
L03: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L03: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L03: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L03: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L03: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L03: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously
L03: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L03: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L03: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L03: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L03: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31, 0.0, 82.41 99981689453 1	11.36	off continuously
L03: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.78	off continuously
L03: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.73	off continuously
L03: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L03: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L03: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L03: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L03: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously
L03: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L03: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	21.14	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L03: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	19.2	off continuously
L03: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously
L03: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	23.02	off continuously
L03: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.41999816894531, 0.0, 100.0	22.4	off continuously
L03: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.41999816894531, 100.0	19.07	off continuously
L03: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L03: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L04: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously
L04: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.18	off continuously
L04: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.26	off continuously
L04: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.32	off continuously
L04: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.26	off continuously
L04: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.3	off continuously
L04: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.3	off continuously
L04: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.2	off continuously
L04: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.91	off continuously
L04: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously
L04: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.27	off continuously
L04: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.14	off continuously
L04: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.77	off continuously
L04: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.03	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L04: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L04: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	5.78	off continuously
L04: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L04: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L04: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L04: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L04: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously
L04: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L04: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L04: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously
L04: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L04: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L04: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously
L04: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L04: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L04: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L04: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L04: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31, 0.0, 82.41 99981689453 1	11.36	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L04: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.78	off continuously
L04: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.73	off continuously
L04: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L04: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L04: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L04: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L04: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously
L04: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L04: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	21.14	off continuously
L04: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82. 41999816894 531, 90.0	19.2	off continuously
L04: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously
L04: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82. 41999816894 531, 90.0	23.02	off continuously
L04: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.4199 9816894531, 0.0, 100.0	22.4	off continuously
L04: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	19.07	off continuously
L04: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L04: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L05: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.8	off continuously
L05: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.18	off continuously
L05: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.26	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L05: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.32	off continuously
L05: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.26	off continuously
L05: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L05: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L05: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.2	off continuously
L05: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.91	off continuously
L05: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.8	off continuously
L05: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L05: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.14	off continuously
L05: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.77	off continuously
L05: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.03	off continuously
L05: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L05: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	5.78	off continuously
L05: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L05: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L05: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L05: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L05: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously
L05: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L05: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L05: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously
L05: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L05: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L05: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously
L05: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L05: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L05: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L05: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L05: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31, 0.0, 82.41 99981689453 1	11.36	off continuously
L05: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.78	off continuously
L05: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.73	off continuously
L05: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L05: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L05: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L05: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L05: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously
L05: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L05: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	21.14	off continuously
L05: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.4 1999816894 531, 90.0	19.2	off continuously
L05: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L05: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.41999816894531, 90.0	23.02	off continuously
L05: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.41999816894531, 0.0, 100.0	22.4	off continuously
L05: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.41999816894531, 100.0	19.07	off continuously
L05: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L05: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L06: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously
L06: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.18	off continuously
L06: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.26	off continuously
L06: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.32	off continuously
L06: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.26	off continuously
L06: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.3	off continuously
L06: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.3	off continuously
L06: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.2	off continuously
L06: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.91	off continuously
L06: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	8.8	off continuously
L06: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.27	off continuously
L06: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.14	off continuously
L06: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	6.77	off continuously
L06: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.03	off continuously
L06: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	7.27	off continuously
L06: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999816894531	5.78	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L06: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L06: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L06: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L06: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L06: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously
L06: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L06: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L06: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously
L06: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L06: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L06: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L06: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L06: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously
L06: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L06: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L06: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31, 0.0, 82.41 99981689453 1	11.36	off continuously
L06: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.78	off continuously
L06: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.73	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L06: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L06: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L06: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L06: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L06: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously
L06: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L06: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	21.14	off continuously
L06: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.4 1999816894 531, 90.0	19.2	off continuously
L06: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously
L06: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.4 1999816894 531, 90.0	23.02	off continuously
L06: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.4 199 9816894531, 0.0, 100.0	22.4	off continuously
L06: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	19.07	off continuously
L06: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L06: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L07: Bed 1b A01 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.4 1999 816894531	8.8	off continuously
L07: Bed 1b A03 Dbl	23.82	0.35, 0.35	1.05, 1.08	0.0, 82.4 1999 816894531	7.18	off continuously
L07: Bed 1b A04 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.4 1999 816894531	6.26	off continuously
L07: Bed 1b A05 Dbl	29.28	0.35, 0.35	1.05, 1.08	0.0, 82.4 1999 816894531	6.32	off continuously
L07: Bed 1b A07 Dbl	29.0	0.35, 0.35	1.05, 1.08	0.0, 82.4 1999 816894531	6.26	off continuously
L07: Bed 1b A08 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.4 1999 816894531	6.3	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L07: Bed 1b A09 Dbl	29.19	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.3	off continuously
L07: Bed 1b A12 Dbl	28.81	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.2	off continuously
L07: Bed 1b A13 Dbl	30.39	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.91	off continuously
L07: Bed 1b A16 Dbl	30.18	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.8	off continuously
L07: Bed 2b B1 A02 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L07: Bed 2b B1 A06 Dbl	24.71	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.14	off continuously
L07: Bed 2b B1 A10 Dbl	29.77	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.77	off continuously
L07: Bed 2b B1 A11 Dbl	22.35	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.03	off continuously
L07: Bed 2b B1 A14 Dbl	22.02	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.27	off continuously
L07: Bed 2b B1 A15 Dbl	24.75	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	5.78	off continuously
L07: Bed 2b B1 A17 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.25	off continuously
L07: Bed 2b B1 A18 Dbl	35.63	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	6.23	off continuously
L07: Bed 2b B2 A02 Dbl	25.03	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.96	off continuously
L07: Bed 2b B2 A06 Dbl	26.97	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.37	off continuously
L07: Bed 2b B2 A10 Dbl	30.08	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	8.82	off continuously
L07: Bed 2b B2 A11 Dbl	25.06	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.05	off continuously
L07: Bed 2b B2 A14 Dbl	25.03	0.35, 0.35	1.08, 1.05	82.419998168 94531, 0.0	8.08	off continuously
L07: Bed 2b B2 A15 Dbl	24.04	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	7.91	off continuously
L07: Bed 2b B2 A17 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L07: Bed 2b B2 A18 Dbl	33.23	0.35, 0.35	1.05, 1.08	0.0, 82.41999 816894531	9.28	off continuously
L07: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.28	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L07: Circulation, Corridor	N/A		2.1, 2.1, 1.91, 2.1, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.21	off continuously
L07: Circulation, Corridor	N/A		2.1, 2.1, 2.1, 1.91, 2.1, 2.1, 2.1	90.0, 90.0, 90.0, 90.0, 90.0, 90.0	40.42	off continuously
L07: Circulation, Corridor	N/A		1.91, 2.1, 2.1, 2.1, 1.91	90.0, 90.0, 90.0, 90.0, 90.0	34.24	off continuously
L07: LivKit 1b A01	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L07: LivKit 1b A03	16.69	0.35, 0.35, 0.35, 0.35	2.1, 1.05, 1.08, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31, 0.0, 82.41 99981689453 1	11.36	off continuously
L07: LivKit 1b A04	19.76	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.78	off continuously
L07: LivKit 1b A05	19.63	0.35, 0.35	2.1, 1.05, 1.08	90.0, 0.0, 82.4 19998168945 31	8.73	off continuously
L07: LivKit 1b A07	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L07: LivKit 1b A08	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L07: LivKit 1b A09	39.3	0.35	4.24, 2.1	100.0, 90.0	19.39	off continuously
L07: LivKit 1b A12	39.3	0.35	4.24, 2.1	100.0, 90.0	19.33	off continuously
L07: LivKit 1b A13	58.63	0.35	4.24, 2.1	100.0, 90.0	26.14	off continuously
L07: LivKit 1b A16	55.67	0.35	4.24, 2.1	100.0, 90.0	24.95	off continuously
L07: LivKit 2b A02	26.74	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	21.14	off continuously
L07: LivKit 2b A06	24.74	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.4 1999816894 531, 90.0	19.2	off continuously
L07: LivKit 2b A10	46.32	0.35	4.24, 2.1	100.0, 90.0	18.77	off continuously
L07: LivKit 2b A11	30.1	0.35, 0.35, 0.35	4.24, 1.05, 1.08, 2.1	100.0, 0.0, 82.4 1999816894 531, 90.0	23.02	off continuously

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Room name	Window to wall ratio %	Window g-value (EN 410)	Opening gross area m ²	Opening free area (avg) %	Opening free area / floor area ratio %	Opening profile(s)
L07: LivKit 2b A14	28.81	0.35, 0.35, 0.35	2.1, 1.08, 1.05, 4.24	90.0, 82.4199 9816894531, 0.0, 100.0	22.4	off continuously
L07: LivKit 2b A15	24.98	0.35, 0.35, 0.35	2.1, 1.05, 1.08, 4.24	90.0, 0.0, 82.4 19998168945 31, 100.0	19.07	off continuously
L07: LivKit 2b A17	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously
L07: LivKit 2b A18	50.86	0.35	4.24, 2.1	100.0, 90.0	20.37	off continuously

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Modelled ventilation

Room name	Infiltration rate ACH	Mech vent flow rate ACH
L01: Bed 1b A01 Dbl	0.02	0.89
L01: Bed 1b A03 Dbl	0.02	0.73
L01: Bed 1b A04 Dbl	0.01	0.63
L01: Bed 1b A05 Dbl	0.01	0.64
L01: Bed 1b A07 Dbl	0.01	0.63
L01: Bed 1b A08 Dbl	0.01	0.64
L01: Bed 1b A09 Dbl	0.01	0.64
L01: Bed 1b A12 Dbl	0.01	0.63
L01: Bed 1b A13 Dbl	0.02	0.9
L01: Bed 1b A16 Dbl	0.02	0.89
L01: Bed 2b B1 A02 Dbl	0.02	0.73
L01: Bed 2b B1 A06 Dbl	0.02	0.72
L01: Bed 2b B1 A10 Dbl	0.01	0.68
L01: Bed 2b B1 A11 Dbl	0.02	0.71
L01: Bed 2b B1 A14 Dbl	0.02	0.73
L01: Bed 2b B1 A15 Dbl	0.01	0.58
L01: Bed 2b B1 A17 Dbl	0.01	0.63
L01: Bed 2b B1 A18 Dbl	0.01	0.63
L01: Bed 2b B2 A02 Dbl	0.02	0.91
L01: Bed 2b B2 A06 Dbl	0.02	0.75
L01: Bed 2b B2 A10 Dbl	0.02	0.89
L01: Bed 2b B2 A11 Dbl	0.02	0.91
L01: Bed 2b B2 A14 Dbl	0.02	0.82
L01: Bed 2b B2 A15 Dbl	0.02	0.8
L01: Bed 2b B2 A17 Dbl	0.02	0.94
L01: Bed 2b B2 A18 Dbl	0.02	0.94
L01: Circulation, Corridor	0.0	0
L01: Circulation, Corridor	0.0	0
L01: Circulation, Corridor	0.0	0
L01: Circulation, Corridor	0.0	0
L01: LivKit 1b A01	0.01	0.79
L01: LivKit 1b A03	0.02	0.6
L01: LivKit 1b A04	0.01	0.62
L01: LivKit 1b A05	0.01	0.61
L01: LivKit 1b A07	0.01	0.62
L01: LivKit 1b A08	0.01	0.62
L01: LivKit 1b A09	0.01	0.62
L01: LivKit 1b A12	0.01	0.61
L01: LivKit 1b A13	0.01	0.83
L01: LivKit 1b A16	0.01	0.79

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L01: LivKit 2b A02	0.02	0.59
L01: LivKit 2b A06	0.02	0.53
L01: LivKit 2b A10	0.01	0.6
L01: LivKit 2b A11	0.02	0.64
L01: LivKit 2b A14	0.02	0.62
L01: LivKit 2b A15	0.02	0.53
L01: LivKit 2b A17	0.01	0.65
L01: LivKit 2b A18	0.01	0.65
L02: Bed 1b A01 Dbl	0.02	0.89
L02: Bed 1b A03 Dbl	0.02	0.73
L02: Bed 1b A04 Dbl	0.01	0.63
L02: Bed 1b A05 Dbl	0.01	0.64
L02: Bed 1b A07 Dbl	0.01	0.63
L02: Bed 1b A08 Dbl	0.01	0.64
L02: Bed 1b A09 Dbl	0.01	0.64
L02: Bed 1b A12 Dbl	0.01	0.63
L02: Bed 1b A13 Dbl	0.02	0.9
L02: Bed 1b A16 Dbl	0.02	0.89
L02: Bed 2b B1 A02 Dbl	0.02	0.73
L02: Bed 2b B1 A06 Dbl	0.02	0.72
L02: Bed 2b B1 A10 Dbl	0.01	0.68
L02: Bed 2b B1 A11 Dbl	0.02	0.71
L02: Bed 2b B1 A14 Dbl	0.02	0.73
L02: Bed 2b B1 A15 Dbl	0.01	0.58
L02: Bed 2b B1 A17 Dbl	0.01	0.63
L02: Bed 2b B1 A18 Dbl	0.01	0.63
L02: Bed 2b B2 A02 Dbl	0.02	0.91
L02: Bed 2b B2 A06 Dbl	0.02	0.75
L02: Bed 2b B2 A10 Dbl	0.02	0.89
L02: Bed 2b B2 A11 Dbl	0.02	0.91
L02: Bed 2b B2 A14 Dbl	0.02	0.82
L02: Bed 2b B2 A15 Dbl	0.02	0.8
L02: Bed 2b B2 A17 Dbl	0.02	0.94
L02: Bed 2b B2 A18 Dbl	0.02	0.94
L02: Circulation, Corridor	0.0	0
L02: Circulation, Corridor	0.0	0
L02: Circulation, Corridor	0.0	0
L02: Circulation, Corridor	0.0	0
L02: LivKit 1b A01	0.01	0.79
L02: LivKit 1b A03	0.02	0.6
L02: LivKit 1b A04	0.01	0.62
L02: LivKit 1b A05	0.01	0.61

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L02: LivKit 1b A07	0.01	0.62
L02: LivKit 1b A08	0.01	0.62
L02: LivKit 1b A09	0.01	0.62
L02: LivKit 1b A12	0.01	0.61
L02: LivKit 1b A13	0.01	0.83
L02: LivKit 1b A16	0.01	0.79
L02: LivKit 2b A02	0.02	0.59
L02: LivKit 2b A06	0.02	0.53
L02: LivKit 2b A10	0.01	0.6
L02: LivKit 2b A11	0.02	0.64
L02: LivKit 2b A14	0.02	0.62
L02: LivKit 2b A15	0.02	0.53
L02: LivKit 2b A17	0.01	0.65
L02: LivKit 2b A18	0.01	0.65
L03: Bed 1b A01 Dbl	0.02	0.89
L03: Bed 1b A03 Dbl	0.02	0.73
L03: Bed 1b A04 Dbl	0.01	0.63
L03: Bed 1b A05 Dbl	0.01	0.64
L03: Bed 1b A07 Dbl	0.01	0.63
L03: Bed 1b A08 Dbl	0.01	0.64
L03: Bed 1b A09 Dbl	0.01	0.64
L03: Bed 1b A12 Dbl	0.01	0.63
L03: Bed 1b A13 Dbl	0.02	0.9
L03: Bed 1b A16 Dbl	0.02	0.89
L03: Bed 2b B1 A02 Dbl	0.02	0.73
L03: Bed 2b B1 A06 Dbl	0.02	0.72
L03: Bed 2b B1 A10 Dbl	0.01	0.68
L03: Bed 2b B1 A11 Dbl	0.02	0.71
L03: Bed 2b B1 A14 Dbl	0.02	0.73
L03: Bed 2b B1 A15 Dbl	0.01	0.58
L03: Bed 2b B1 A17 Dbl	0.01	0.63
L03: Bed 2b B1 A18 Dbl	0.01	0.63
L03: Bed 2b B2 A02 Dbl	0.02	0.91
L03: Bed 2b B2 A06 Dbl	0.02	0.75
L03: Bed 2b B2 A10 Dbl	0.02	0.89
L03: Bed 2b B2 A11 Dbl	0.02	0.91
L03: Bed 2b B2 A14 Dbl	0.02	0.82
L03: Bed 2b B2 A15 Dbl	0.02	0.8
L03: Bed 2b B2 A17 Dbl	0.02	0.94
L03: Bed 2b B2 A18 Dbl	0.02	0.94
L03: Circulation, Corridor	0.0	0
L03: Circulation, Corridor	0.0	0

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L03: Circulation, Corridor	0.0	0
L03: Circulation, Corridor	0.0	0
L03: LivKit 1b A01	0.01	0.79
L03: LivKit 1b A03	0.02	0.6
L03: LivKit 1b A04	0.01	0.62
L03: LivKit 1b A05	0.01	0.61
L03: LivKit 1b A07	0.01	0.62
L03: LivKit 1b A08	0.01	0.62
L03: LivKit 1b A09	0.01	0.62
L03: LivKit 1b A12	0.01	0.61
L03: LivKit 1b A13	0.01	0.83
L03: LivKit 1b A16	0.01	0.79
L03: LivKit 2b A02	0.02	0.59
L03: LivKit 2b A06	0.02	0.53
L03: LivKit 2b A10	0.01	0.6
L03: LivKit 2b A11	0.02	0.64
L03: LivKit 2b A14	0.02	0.62
L03: LivKit 2b A15	0.02	0.53
L03: LivKit 2b A17	0.01	0.65
L03: LivKit 2b A18	0.01	0.65
L04: Bed 1b A01 Dbl	0.02	0.89
L04: Bed 1b A03 Dbl	0.02	0.73
L04: Bed 1b A04 Dbl	0.01	0.63
L04: Bed 1b A05 Dbl	0.01	0.64
L04: Bed 1b A07 Dbl	0.01	0.63
L04: Bed 1b A08 Dbl	0.01	0.64
L04: Bed 1b A09 Dbl	0.01	0.64
L04: Bed 1b A12 Dbl	0.01	0.63
L04: Bed 1b A13 Dbl	0.02	0.9
L04: Bed 1b A16 Dbl	0.02	0.89
L04: Bed 2b B1 A02 Dbl	0.02	0.73
L04: Bed 2b B1 A06 Dbl	0.02	0.72
L04: Bed 2b B1 A10 Dbl	0.01	0.68
L04: Bed 2b B1 A11 Dbl	0.02	0.71
L04: Bed 2b B1 A14 Dbl	0.02	0.73
L04: Bed 2b B1 A15 Dbl	0.01	0.58
L04: Bed 2b B1 A17 Dbl	0.01	0.63
L04: Bed 2b B1 A18 Dbl	0.01	0.63
L04: Bed 2b B2 A02 Dbl	0.02	0.91
L04: Bed 2b B2 A06 Dbl	0.02	0.75
L04: Bed 2b B2 A10 Dbl	0.02	0.89
L04: Bed 2b B2 A11 Dbl	0.02	0.91

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L04: Bed 2b B2 A14 Dbl	0.02	0.82
L04: Bed 2b B2 A15 Dbl	0.02	0.8
L04: Bed 2b B2 A17 Dbl	0.02	0.94
L04: Bed 2b B2 A18 Dbl	0.02	0.94
L04: Circulation, Corridor	0.0	0
L04: Circulation, Corridor	0.0	0
L04: Circulation, Corridor	0.0	0
L04: Circulation, Corridor	0.0	0
L04: LivKit 1b A01	0.01	0.79
L04: LivKit 1b A03	0.02	0.6
L04: LivKit 1b A04	0.01	0.62
L04: LivKit 1b A05	0.01	0.61
L04: LivKit 1b A07	0.01	0.62
L04: LivKit 1b A08	0.01	0.62
L04: LivKit 1b A09	0.01	0.62
L04: LivKit 1b A12	0.01	0.61
L04: LivKit 1b A13	0.01	0.83
L04: LivKit 1b A16	0.01	0.79
L04: LivKit 2b A02	0.02	0.59
L04: LivKit 2b A06	0.02	0.53
L04: LivKit 2b A10	0.01	0.6
L04: LivKit 2b A11	0.02	0.64
L04: LivKit 2b A14	0.02	0.62
L04: LivKit 2b A15	0.02	0.53
L04: LivKit 2b A17	0.01	0.65
L04: LivKit 2b A18	0.01	0.65
L05: Bed 1b A01 Dbl	0.02	0.89
L05: Bed 1b A03 Dbl	0.02	0.73
L05: Bed 1b A04 Dbl	0.01	0.63
L05: Bed 1b A05 Dbl	0.01	0.64
L05: Bed 1b A07 Dbl	0.01	0.63
L05: Bed 1b A08 Dbl	0.01	0.64
L05: Bed 1b A09 Dbl	0.01	0.64
L05: Bed 1b A12 Dbl	0.01	0.63
L05: Bed 1b A13 Dbl	0.02	0.9
L05: Bed 1b A16 Dbl	0.02	0.89
L05: Bed 2b B1 A02 Dbl	0.02	0.73
L05: Bed 2b B1 A06 Dbl	0.02	0.72
L05: Bed 2b B1 A10 Dbl	0.01	0.68
L05: Bed 2b B1 A11 Dbl	0.02	0.71
L05: Bed 2b B1 A14 Dbl	0.02	0.73
L05: Bed 2b B1 A15 Dbl	0.01	0.58

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L05: Bed 2b B1 A17 Dbl	0.01	0.63
L05: Bed 2b B1 A18 Dbl	0.01	0.63
L05: Bed 2b B2 A02 Dbl	0.02	0.91
L05: Bed 2b B2 A06 Dbl	0.02	0.75
L05: Bed 2b B2 A10 Dbl	0.02	0.89
L05: Bed 2b B2 A11 Dbl	0.02	0.91
L05: Bed 2b B2 A14 Dbl	0.02	0.82
L05: Bed 2b B2 A15 Dbl	0.02	0.8
L05: Bed 2b B2 A17 Dbl	0.02	0.94
L05: Bed 2b B2 A18 Dbl	0.02	0.94
L05: Circulation, Corridor	0.0	0
L05: Circulation, Corridor	0.0	0
L05: Circulation, Corridor	0.0	0
L05: Circulation, Corridor	0.0	0
L05: LivKit 1b A01	0.01	0.79
L05: LivKit 1b A03	0.02	0.6
L05: LivKit 1b A04	0.01	0.62
L05: LivKit 1b A05	0.01	0.61
L05: LivKit 1b A07	0.01	0.62
L05: LivKit 1b A08	0.01	0.62
L05: LivKit 1b A09	0.01	0.62
L05: LivKit 1b A12	0.01	0.61
L05: LivKit 1b A13	0.01	0.83
L05: LivKit 1b A16	0.01	0.79
L05: LivKit 2b A02	0.02	0.59
L05: LivKit 2b A06	0.02	0.53
L05: LivKit 2b A10	0.01	0.6
L05: LivKit 2b A11	0.02	0.64
L05: LivKit 2b A14	0.02	0.62
L05: LivKit 2b A15	0.02	0.53
L05: LivKit 2b A17	0.01	0.65
L05: LivKit 2b A18	0.01	0.65
L06: Bed 1b A01 Dbl	0.02	0.89
L06: Bed 1b A03 Dbl	0.02	0.73
L06: Bed 1b A04 Dbl	0.01	0.63
L06: Bed 1b A05 Dbl	0.01	0.64
L06: Bed 1b A07 Dbl	0.01	0.63
L06: Bed 1b A08 Dbl	0.01	0.64
L06: Bed 1b A09 Dbl	0.01	0.64
L06: Bed 1b A12 Dbl	0.01	0.63
L06: Bed 1b A13 Dbl	0.02	0.9
L06: Bed 1b A16 Dbl	0.02	0.89

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L06: Bed 2b B1 A02 Dbl	0.02	0.73
L06: Bed 2b B1 A06 Dbl	0.02	0.72
L06: Bed 2b B1 A10 Dbl	0.01	0.68
L06: Bed 2b B1 A11 Dbl	0.02	0.71
L06: Bed 2b B1 A14 Dbl	0.02	0.73
L06: Bed 2b B1 A15 Dbl	0.01	0.58
L06: Bed 2b B1 A17 Dbl	0.01	0.63
L06: Bed 2b B1 A18 Dbl	0.01	0.63
L06: Bed 2b B2 A02 Dbl	0.02	0.91
L06: Bed 2b B2 A06 Dbl	0.02	0.75
L06: Bed 2b B2 A10 Dbl	0.02	0.89
L06: Bed 2b B2 A11 Dbl	0.02	0.91
L06: Bed 2b B2 A14 Dbl	0.02	0.82
L06: Bed 2b B2 A15 Dbl	0.02	0.8
L06: Bed 2b B2 A17 Dbl	0.02	0.94
L06: Bed 2b B2 A18 Dbl	0.02	0.94
L06: Circulation, Corridor	0.0	0
L06: Circulation, Corridor	0.0	0
L06: Circulation, Corridor	0.0	0
L06: Circulation, Corridor	0.0	0
L06: LivKit 1b A01	0.01	0.79
L06: LivKit 1b A03	0.02	0.6
L06: LivKit 1b A04	0.01	0.62
L06: LivKit 1b A05	0.01	0.61
L06: LivKit 1b A07	0.01	0.62
L06: LivKit 1b A08	0.01	0.62
L06: LivKit 1b A09	0.01	0.62
L06: LivKit 1b A12	0.01	0.61
L06: LivKit 1b A13	0.01	0.83
L06: LivKit 1b A16	0.01	0.79
L06: LivKit 2b A02	0.02	0.59
L06: LivKit 2b A06	0.02	0.53
L06: LivKit 2b A10	0.01	0.6
L06: LivKit 2b A11	0.02	0.64
L06: LivKit 2b A14	0.02	0.62
L06: LivKit 2b A15	0.02	0.53
L06: LivKit 2b A17	0.01	0.65
L06: LivKit 2b A18	0.01	0.65
L07: Bed 1b A01 Dbl	0.02	0.89
L07: Bed 1b A03 Dbl	0.02	0.73
L07: Bed 1b A04 Dbl	0.01	0.63
L07: Bed 1b A05 Dbl	0.01	0.64

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L07: Bed 1b A07 Dbl	0.01	0.63
L07: Bed 1b A08 Dbl	0.01	0.64
L07: Bed 1b A09 Dbl	0.01	0.64
L07: Bed 1b A12 Dbl	0.01	0.63
L07: Bed 1b A13 Dbl	0.02	0.9
L07: Bed 1b A16 Dbl	0.02	0.89
L07: Bed 2b B1 A02 Dbl	0.02	0.73
L07: Bed 2b B1 A06 Dbl	0.02	0.72
L07: Bed 2b B1 A10 Dbl	0.01	0.68
L07: Bed 2b B1 A11 Dbl	0.02	0.71
L07: Bed 2b B1 A14 Dbl	0.02	0.73
L07: Bed 2b B1 A15 Dbl	0.01	0.58
L07: Bed 2b B1 A17 Dbl	0.01	0.63
L07: Bed 2b B1 A18 Dbl	0.01	0.63
L07: Bed 2b B2 A02 Dbl	0.02	0.91
L07: Bed 2b B2 A06 Dbl	0.02	0.75
L07: Bed 2b B2 A10 Dbl	0.02	0.89
L07: Bed 2b B2 A11 Dbl	0.02	0.91
L07: Bed 2b B2 A14 Dbl	0.02	0.82
L07: Bed 2b B2 A15 Dbl	0.02	0.8
L07: Bed 2b B2 A17 Dbl	0.02	0.94
L07: Bed 2b B2 A18 Dbl	0.02	0.94
L07: Circulation, Corridor	0.0	0
L07: Circulation, Corridor	0.0	0
L07: Circulation, Corridor	0.0	0
L07: Circulation, Corridor	0.0	0
L07: LivKit 1b A01	0.01	0.79
L07: LivKit 1b A03	0.02	0.6
L07: LivKit 1b A04	0.01	0.62
L07: LivKit 1b A05	0.01	0.61
L07: LivKit 1b A07	0.01	0.62
L07: LivKit 1b A08	0.01	0.62
L07: LivKit 1b A09	0.01	0.62
L07: LivKit 1b A12	0.01	0.61
L07: LivKit 1b A13	0.01	0.83
L07: LivKit 1b A16	0.01	0.79
L07: LivKit 2b A02	0.02	0.59
L07: LivKit 2b A06	0.02	0.53
L07: LivKit 2b A10	0.01	0.6
L07: LivKit 2b A11	0.02	0.64
L07: LivKit 2b A14	0.02	0.62
L07: LivKit 2b A15	0.02	0.53

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Room name	Infiltration rate ACH	Mech vent flow rate ACH
L07: LivKit 2b A17	0.01	0.65
L07: LivKit 2b A18	0.01	0.65

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UPFRONT EMBODIED CARBON ASSESSMENT RIBA STAGE 3 REPORT

Postal Street Manchester

Manchester City Council

5th December 2025

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About This Report

AtkinsRéalis have been appointed to undertake an embodied carbon assessment for the Postal Street Project for Manchester City Council. This aligns with the Council’s Climate Change Action Plan (2025–2030) and the Manchester Climate Change Framework, which set science-based carbon budgets and require all new developments to be “net zero ready.” As the grid decarbonises, embodied carbon is becoming an increasingly significant proportion of a building’s whole-life carbon. Reducing embodied carbon for Postal Street is therefore critical to achieving net zero ready without relying heavily on offsetting or extensive onsite renewables.

This report, prepared during RIBA Stage 3, is based on RIBA Stage 3 design and cost information provided by the design team. Its purpose is to identify the carbon performance early in the design process, enabling the team to prioritise and implement effective embodied carbon reductions.

The assessment scope covers Product stages A1–A3 and Construction stages A4–A5, in line with BS EN 15978:2011 Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method.

The embodied carbon assessment aims to inform design decisions and aligns with the RICS Professional Statement Whole Life Carbon Assessment for the Built Environment, 2nd Edition (2023) as well as Places for Everyone (PfE) guidance for Greater Manchester. At this stage, the report focuses on upfront embodied carbon (A1–A5) only. Appendix A provides a detailed breakdown of results by life cycle stage and building element.

For embodied carbon targets, results, methodology, assumptions, and potential reduction opportunities, please refer to the relevant sections of this report.

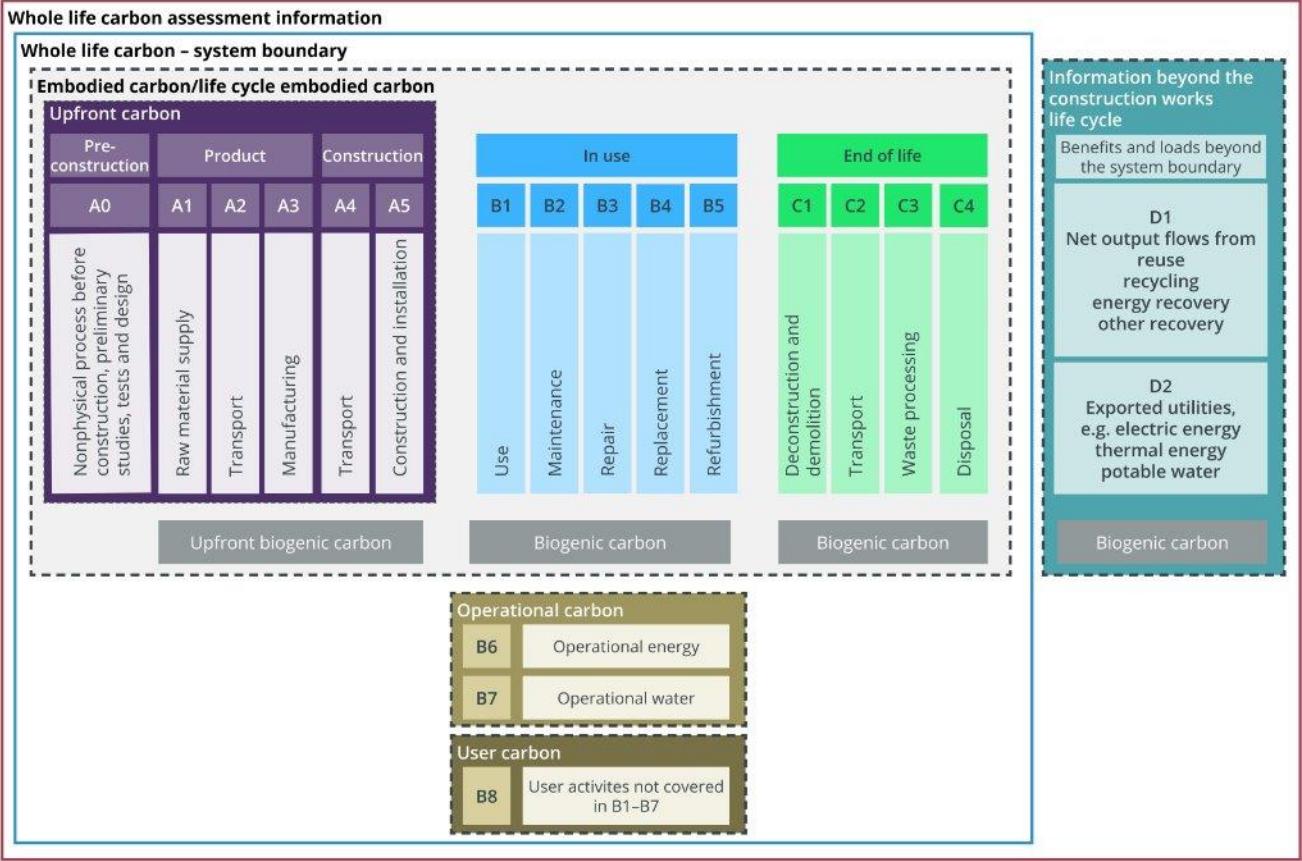


Figure 1: Building and infrastructure life cycle stages and information modules (adapted from EN 15978, EN 17472 and EN 15643, with additions to illustrate biogenic carbon)

About The Project

The Postal Street project is a new-build residential led development located in the heart of Manchester's vibrant Northern Quarter. The scheme will deliver 126 high-quality, low-carbon apartments, at least 20% of which will be offered at Manchester Living Rent, ensuring genuinely affordable homes for local people.

Designed to reflect the area's rich industrial heritage and creative character, the development features a mix of one- and two-bedroom homes, ground floor commercial spaces, and active frontages along Newton, Dean, and Faraday Streets.

The project aims to transform an underutilised brownfield site into a sustainable, community-focused neighbourhood, enhancing the local streetscape and supporting Manchester's ambitions for inclusive, low-carbon urban living.

The building is an 8-storey concrete frame building with reinforced concrete piles foundation. The main façade cladding is brickwork.

The building's Gross Internal Floor Area (GIFA) is based on the RIBA Stage 3 cost plan, which specifies a total area of 10,546 m².



Figure 2: RIBA Stage 3 Proposed Design and Floorplan

Embodied Carbon Scope

Scope

Total embodied emissions are the greenhouse gas (GHG) emissions and removals associated with materials and construction processes, throughout the whole life cycle of an asset (Modules A0-A5, B1-B5, C1-C4 in line with EN 15978).

‘Upfront Carbon’ embodied emissions are the GHG emissions associated with materials and construction processes up to practical completion (Modules A1-A5 as per EN 15978). Upfront carbon excludes the biogenic carbon sequestered in the installed products at practical completion.

The scope of the assessment includes A1-A5 only. Please note this report does not cover any bespoke carbon reduction strategies. Total embodied carbon emissions in product and construction includes the following emissions:

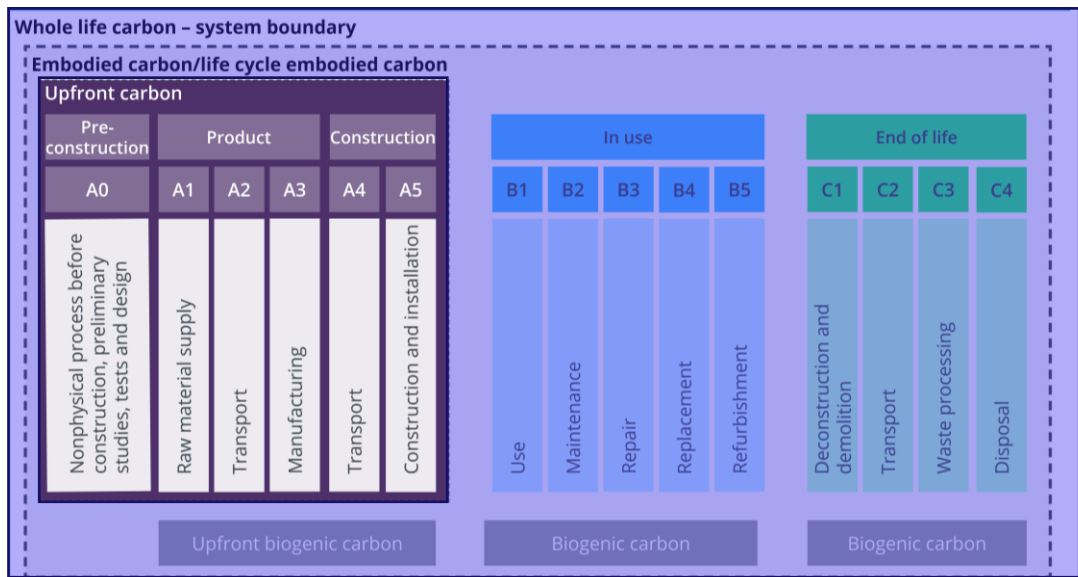


Figure 3: Total embodied carbon lifecycle stages

Building Elements Scope

A complete whole life carbon assessment should cover of all items listed in the project’s cost plan that fall under the building element categories listed in the RICS Professional Statement Whole Life Carbon Assessment for the built environment 2nd Edition, 2023. We have included the following building elements listed in **Table 1**.

Table 1: Elements in scope

Substructure	Substructure	FF&E	FF&E
Superstructure	Frame	Building Services	Building Services
	Upper floors		
	Roof		
	Stairs and Ramps	External Works	Roads, Paths, Paving's and Surfacing's Fencing, Railings and Walls External Fixtures External Drainage External Services
	External Walls		
	Windows and External Doors		
	Internal Walls and Partitions		
	Internal Doors		
	Wall Finishes		
Finishes	Floor Finishes		
	Ceiling Finishes		

RIBA Stage 3 Upfront Embodied Carbon (A1-A5) Results

Upfront embodied carbon (life cycle stages A1-A5) is a metric used broadly across the industry to compare results to other buildings and targets. It is assumed to be more comparable as it excludes the impact of future carbon emissions where there is typically more uncertainty. Upfront embodied carbon, like total embodied carbon, is typically reported per m2 of gross internal floor area (GIFA).

Our estimate of the upfront embodied carbon for the project, based on the RIBA Stage 3 design, is shown below. Please refer to Appendix A for detailed breakdown of the upfront embodied carbon results.

Our estimate of the upfront embodied carbon for the project based on the RIBA Stage 3 design, including contingency, is **711.5 kgCO2e/m²**. The total sequestered carbon of the building is **27 kgCO2e/m²**. We have reported biogenic carbon separately. For details on this and the contingency please refer to Appendix B and D.

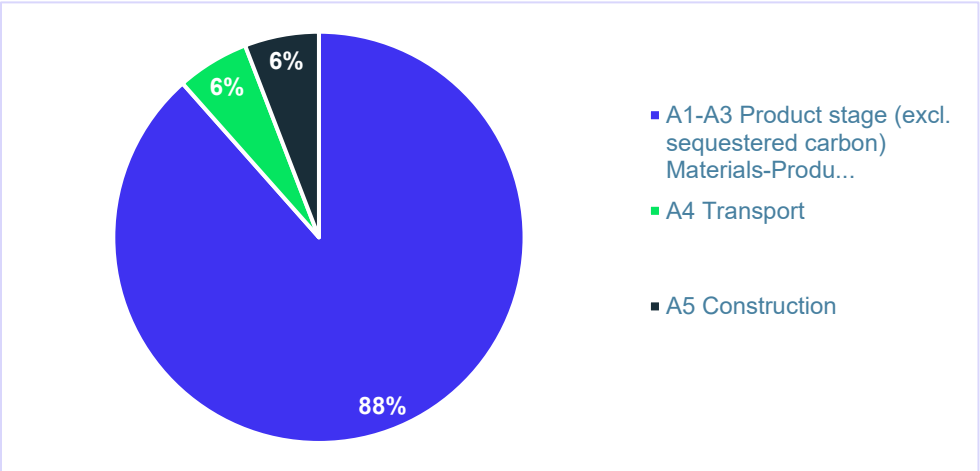


Figure 4: Upfront Embodied Carbon Breakdown by Life Cycle Stages

Table 2: Upfront Embodied Carbon Results

Life Cycle Stages	Total	Total per GIFA m2
A1-A3 Sequestered Carbon Materials	- 283,255	- 26.86
A1-A3 Product stage (excl. sequestered carbon)	6,665,434	632.03
A4 Transport	428,736	40.65
A5 Construction	457,342	38.85
Total Upfront Embodied Carbon A1-A5 (incl. contingency and excl. sequestered carbon)	7,551,512	711.54

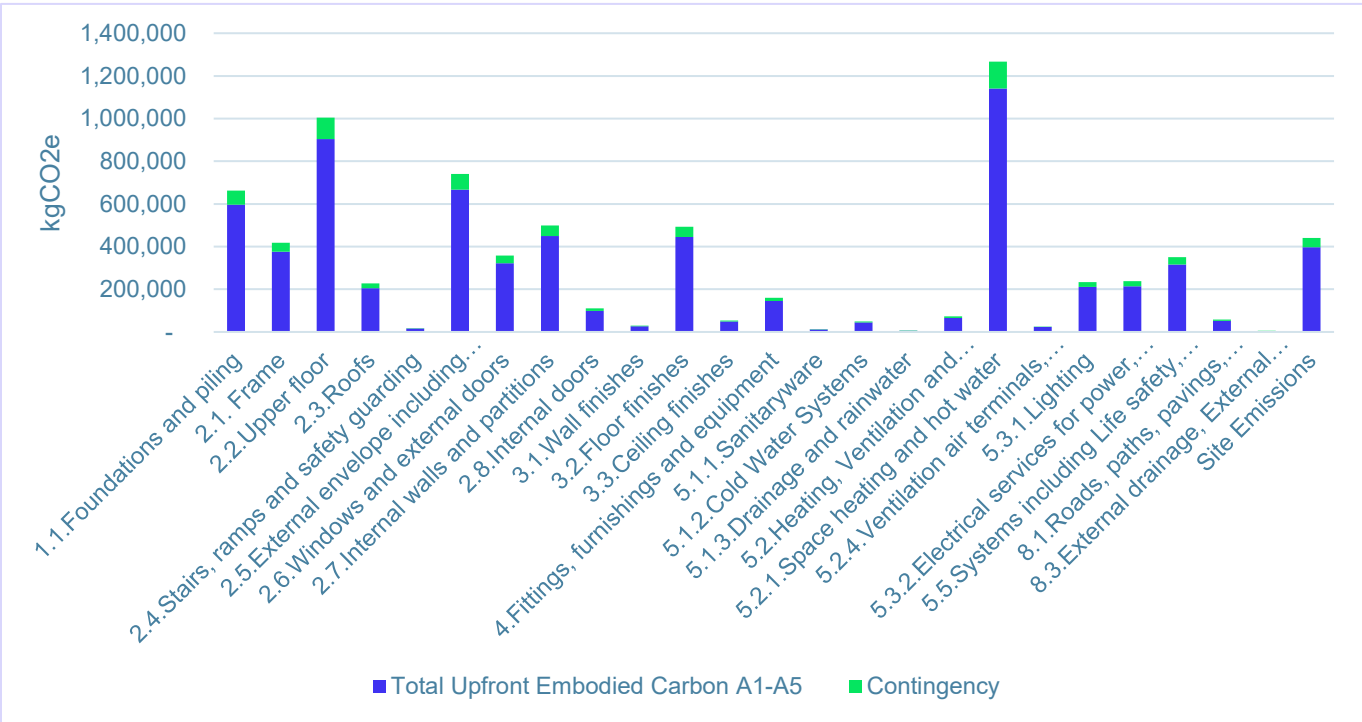
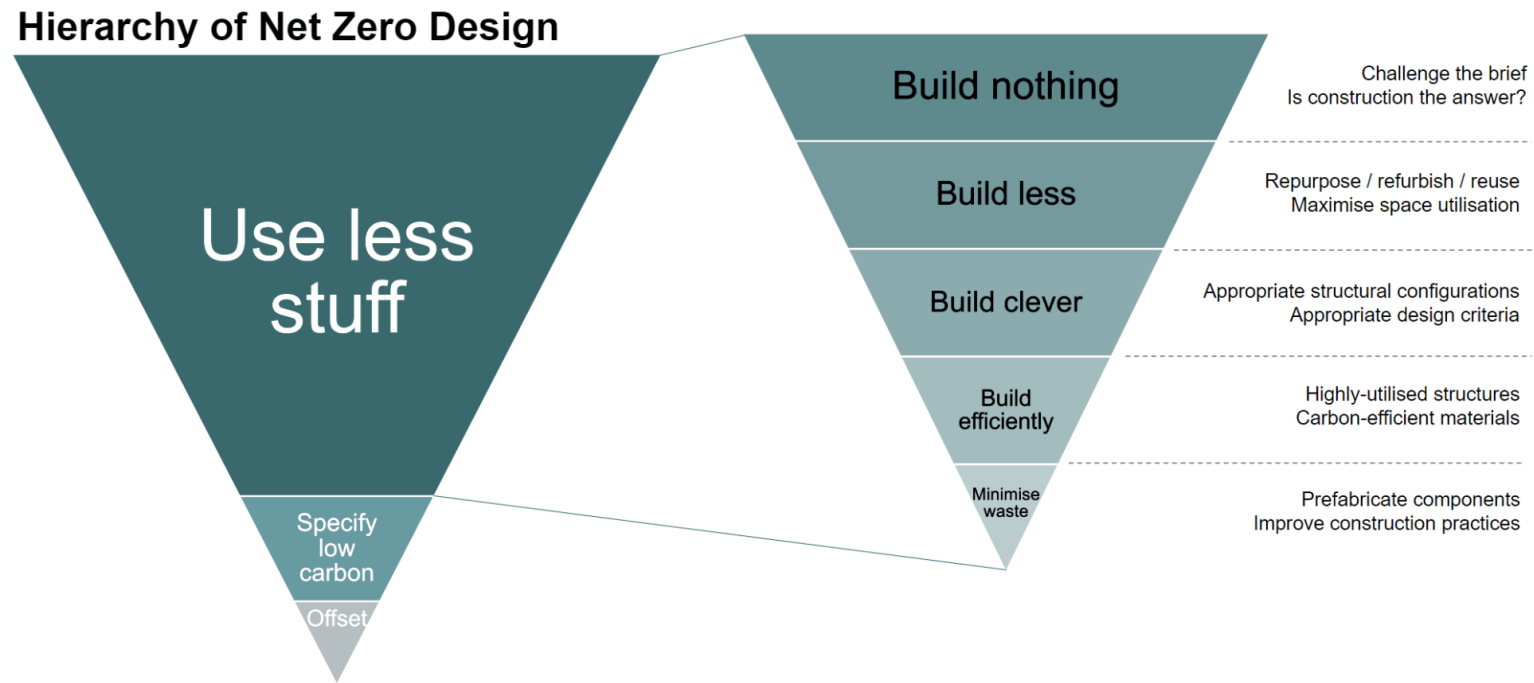


Figure 5: Upfront Embodied Carbon per GIFA m2 Breakdown by Element



Carbon Reduction Potential

When exploring carbon reduction potential for your project, it is important to consider the Hierarchy of Carbon Reduction/Net Zero Design throughout the design stages (illustrated below). At the top of the hierarchy is the need to consider 'building nothing' and 'building less'. We would recommend considering the possibility of reusing existing materials wherever possible, such as steelwork from nearby construction sites. Additionally, more carbon-efficient materials can be considered to achieve 'building efficiently'.



Adapted from PAS 2080

Figure 6: Net Zero Hierarchy of Design, adapted from PAS2080 Carbon Management Standard

Next Steps- Project Roadmap

We would suggest the following next steps, in line with the guidance from LETI shown in Figure 7 to ensure embodied carbon is integrated into the design and construction of Postal Street:

- 1. Issue the findings from this embodied carbon report to the project team.
- 2. Project team to review findings and consider carbon reduction actions.
- 3. Update the result at RIBA Stage 4.

We would also recommend that embodied carbon of the scheme is verified post-construction.

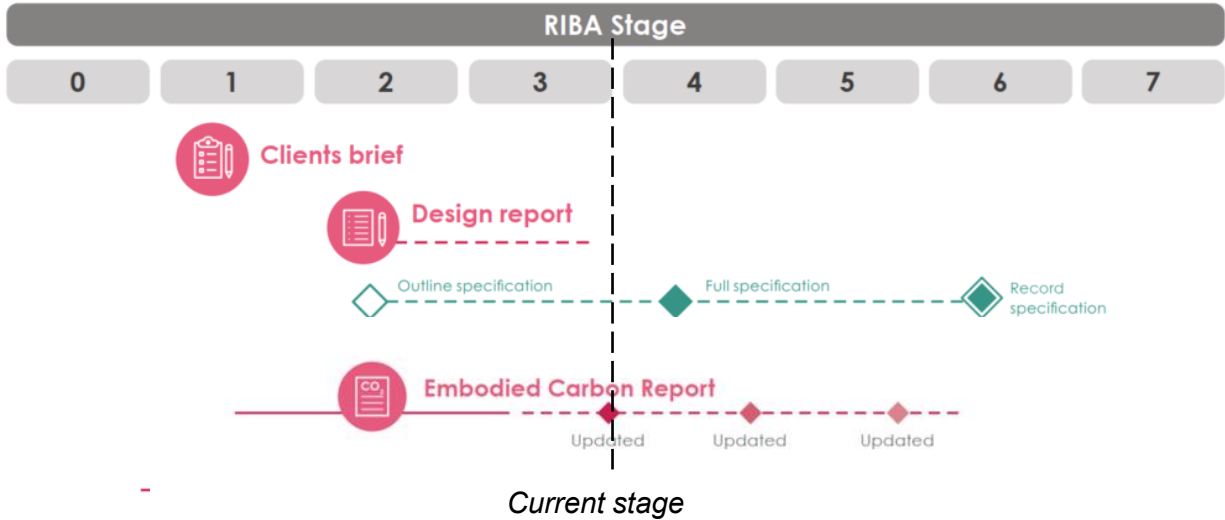


Figure 7: LETI guidance for whole life carbon reporting

Methodology and Assumptions for Embodied Carbon Assessment

The methodology for calculating the embodied carbon emissions for this report is outlined as follows:

1. Project and cost plan information available based on RIBA Stage 3 design was reviewed.
2. The cost plan quantities were converted into suitable units of measurement (e.g. m³, kg) for input into the One Click LCA tool. GIFA was provided by the PM.
3. Available project information details and areas were inputted into the One Click LCA tool.
4. Information from the design report and relevant drawings were reviewed.
5. The cost plan quantity information and specification information from the spec document for all the elements within scope was entered into the One Click LCA tool.
6. Once the materials were modelled, we allowed for an embodied carbon uncertainty factor at this stage. See Appendix B for more information.

Key assumptions made:

- The cement replacement of all concrete in the design was assumed to be 25% (RICS, 2023).
- The weight of reinforcement bars in the reinforced concrete was estimated using the IStructE Structural Carbon Tool.
- We have assumed the piles to be 450mm diameter and 20m depth, as confirmed by the quantity surveyor.
- At this stage, we have assumed C32/40 for all structural concrete, except for the columns and core wall, which are assumed to be C40/50, in line with the structural engineering report.
- In addition to the Stage 3 cost plan, we have allowed for additional glazing of 272.08 m², additional Juliet balconies to the façade, glazed brick in the two central bays to the Newton Street elevation, as confirmed by the quantity surveyor.
- We have assumed the additional acoustic works for windows are additional glazing.

Information and Data Source

The following sources of information is included in the embodied carbon assessment:

- RIBA Stage 3 Cost Plan “MCC Postal Street - RIBA Stage 3 Addendum Cost Plan Options (AN 07.04.25)” received 07/10/2025.
- RIBA Stage 3 design report ‘POST-HBA-XX-XX-RP-A-080000’ received 29/10/2025.
- IStructE How to Calculate Embodied Carbon Version 3
- RICS Professional Statement Whole life carbon assessment for the built environment 2nd edition, November 2023
- LETI Embodied Carbon target alignment

LCA Tool

The One Click LCA tool we’ve used for this assessment is a widely used IMPACT compliant Building Life Cycle Assessment software used to calculate Whole Building Life Cycle Assessments. One Click LCA carries out calculations based off its building material database.

One Click reviews, verifies, curates and integrates data from various public and private sources to the One Click LCA database. All data undergoes a rigorous ten-point verification using a process that has been reviewed by Building Research Establishment. All data in the database is the database is classified, structured, and offered to end users using a dynamic algorithm which ensures users will only be able to choose data in conformity with the data quality requirements of the target certification users are working with.

Life Cycle Stages and Assumptions

Table 3: Life Cycle Stages and Assumptions

Stages	Description	Assumptions
A1-A3	Carbon emissions attributable to the cradle to gate processes; raw material supply, transport and manufacturing	Calculated using EPD's of the products in the specification document. In the absence of specification, the most applicable similar product was selected in accordance with Table 16, RICS PS 2023.
A4	Exhaust emissions resulting from the transport of building products from manufacturer's production plant to building site as well as the environmental impacts of production of the used fuel.	The A4 carbon was estimated using Transportation distance default values for material, based on material type with accordance with Table 17, RICS PS 2023.
A5	Exhaust emissions resulting from using energy during the site operations, the environmental impacts of production processes of fuel and energy and water (A5.2) as well as handling of waste until the end-of waste state (A5.3).	At this stage of design, the A5.2 carbon was estimated in accordance with RICS PS 2023 guidance using 35 kgCO ₂ e/m ² . The A5.3 was estimated using recommended waste rate data primarily from BRE Global Product Category Rules (PCR) for Type III EPD of Construction Products to EN 15804+A2 (2023) or SmartWaste Data in accordance with Table 18, RICS PS 2023.
B1-B5	Environmental impacts from maintaining (B2) and repairing (B3) products in-situ, as well as replacing (B4) building products after they reach the end of their service life. Including impacts from raw material supply, transportation and production of the replaced new material as well as the impacts from manufacturing the replaced material and handling of waste until the end-of-waste state	<i>Please note that this is not in scope for this embodied carbon assessment</i>
B6	Exhaust emissions from any building level energy production as well as the environmental impacts of production processes of fuel and externally produced energy. Energy transmission losses are also considered	<i>Please note that this is not in scope for this embodied carbon assessment.</i>
C1-C4	The impacts of deconstruction include impacts for processing recyclable construction waste flows for recycling (C3) until the end-of-waste stage or the impacts of pre-processing and landfilling for waste streams that cannot be recycled (C4) based on type of material. Additionally, deconstruction impacts include emissions caused by waste energy recovery	<i>Please note that this is not in scope for this embodied carbon assessment.</i>

Appendices

Appendix A. RIBA Stage 3 Upfront Embodied Carbon A1-A5 Breakdown

Category	A1-A3 Sequestered Carbon Materials	A1-A3 Product stage (excl. sequestered carbon)	A4 Transport	A5 Construction	Total Upfront Embodied Carbon A1-A5	Total Upfront per GIFA m2	% of total
1.1. Foundations and piling	- 34	572,219	24,170	-	596,388	56.55	8.8%
2.1. Frame	-	363,681	13,036	-	376,717	35.72	5.6%
2.2. Upper floor	-	868,300	36,152	-	904,452	85.76	13.4%
2.3. Roofs	- 4,270	199,570	6,022	-	205,592	19.49	3.0%
2.4. Stairs, ramps and safety guarding	-	15,515	450	-	15,965	1.51	0.2%
2.5. External envelope including roof finishes	- 202	632,122	34,955	-	667,077	63.25	9.9%
2.6. Windows and external doors	- 41,386	287,060	35,229	-	322,289	30.56	4.8%
2.7. Internal walls and partitions	-	396,274	53,500	-	449,774	42.65	6.7%
2.8. Internal doors	- 85,038	76,652	22,568	-	99,220	9.41	1.5%
3.1. Wall finishes	-	25,766	649	-	26,415	2.50	0.4%
3.2. Floor finishes	- 26,759	424,916	19,615	-	444,531	42.15	6.6%
3.3. Ceiling finishes	- 1,203	45,744	2,891	-	48,635	4.61	0.7%
4. Fittings, furnishings and equipment	- 91,724	130,318	14,319	-	144,636	13.71	2.1%
5.1.1. Sanitaryware	- 4,067	9,271	2,132	-	11,403	1.08	0.2%
5.1.2. Cold Water Systems	-	43,004	1,563	-	44,567	4.23	0.7%
5.1.3. Drainage and rainwater	-	4,821	588	-	5,408	0.51	0.1%
5.2. Heating, Ventilation and Cooling (HVAC)	-	65,131	1,026	-	66,157	6.27	1.0%
5.2.1. Space heating and hot water	-	1,081,123	59,737	-	1,140,860	108.18	16.9%
5.2.4. Ventilation air terminals, ductwork and ancillaries, control dampers, attenuation, fire safety related to ventilation equipment	-	21,678	1,504	-	23,182	2.20	0.3%
5.3.1. Lighting	-	200,764	10,150	-	210,915	20.00	3.1%
5.3.2. Electrical services for power, communications, security, IT and fire detection	-	198,918	15,189	-	214,106	20.30	3.2%
5.5. Systems including Life safety, Fuel installations, Lift and conveyor installations, Services equipment, Disposal installations, Specialist installations, Builders work in connection with services	-	290,993	24,514	-	315,507	29.92	4.7%
8.1. Roads, paths, pavings, surfaces, Fencing, railings, walls, External fixtures	- 502	46,846	5,776	-	52,622	4.99	0.8%
8.3. External drainage, External services, Minor building works	-	4,211	513	-	4,724	0.45	0.1%
Site Emissions	-	-	-	369,110	369,110	35.00	5.5%
Total	- 255,185	6,004,895	386,249	369,110	6,760,254	641.03	100.0%
Total incl. Contingency	- 283,255	6,665,434	428,736	409,712	7,503,882	711.54	

Appendix B. Biogenic Carbon

Trees remove carbon dioxide from the atmosphere through photosynthesis, which is known as 'sequestration'. The carbon from this CO₂ is stored in timber until it is released in the form of a greenhouse gas (CO₂ or CH₄) at the end of its life, for example through burning or decomposition. This stored carbon is called 'biogenic carbon'. Locking biogenic carbon into timber structures is beneficial for the climate as long as the carbon remains within the structure. However, this storage does not negate the immediate effects of fossil carbon emissions (such as those emitted during the production of a timber beam). For the purpose of this embodied carbon assessment, we **have not included biogenic carbon in our overall figures but reported them separately.**

According to the RICS PS, carbon sequestration should be reported separately and can only be included in A1-A3 when the following criteria are met: 1) The whole life carbon assessment of the project includes the impacts of the End-of-Life stage [C], and 2) The timber originates from sustainable sources (certified by FSC, PEFC or equivalent). The negative figure from A1-A3 (the sequestered carbon) has still got to be 're released' and added back into the calculation within the end-of-life stage

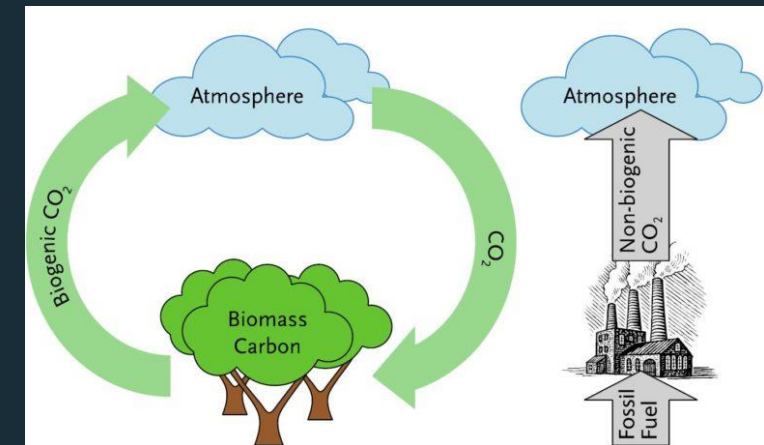
The IStructE also suggests in their "How to calculate embodied carbon (2nd edition)", that if scope of assessment covers:

- Modules A1–A5: do not include biogenic carbon within the A1–A5 total value but report it separately alongside the A1–A5 total
- Stages A–C: include biogenic carbon within the total A–C value reported. It is also possible to report the biogenic carbon separately alongside the A–C total, to help communicate the benefit of locking away carbon during the building's life. Locking sequestered biogenic carbon into a timber structure is a highly beneficial approach for climate change mitigation, especially when the carbon is stored for longer periods of time. This is achieved by designing for life extension, adaptation, deconstruction and reuse.

The rationale behind not including sequestered biogenic carbon when reporting the total A1–A5 value, but reporting it separately alongside, is:

- Including biogenic carbon in the A1–A5 total would typically result in a negative value for A1–A5 embodied carbon (i.e. showing a net extraction of carbon emissions from the atmosphere). This could allow engineers to show that less efficient use of timber results in a lower value (i.e. a greater negative value) of embodied carbon. This must be avoided to prevent unnecessary use of resources
- We should not ignore the fact that sequestration of biogenic carbon happens, and is of climatic benefit — therefore we should report it

The LETI targets also do not include biogenic carbon as stated on page 54 of the LETI Climate Emergency Design Guide



Appendix C. Top Materials

According to RICS PS 2023, the quality and quantities uncertainty factor are considered during RIBA Stage 3. We have provided the top 10 most embodied carbon contributing materials for the building. Please note these are top 10 materials based on their total embodied carbon A-C.

Table 4: Details of Top 10 Materials

No.	Resource name	Total (tonnes CO2e)	Weighting (%)	Carbon data uncertainty factor	Quantities uncertainty factor
1	Ready-mix concrete, in-situ, UK average, C32/40 (IStructE (2025))	1,162	8.7%	2%	1%
2	Reversible air/water heat pump for collective housing, 322.8 kg/unit, P=40 kW, Pompe à chaleur air eau pour logement collectif/bâtiment tertiaire réversible [Pchaud = 40 kW] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	1,057	7.9%	3%	2%
3	Circular galvanized steel pipe with a diameter of 160 mm and a length of 1 m, Conduit métallique circulaire (Uniclimate)	985	7.4%	3%	2%
4	Cooling tower, Tour de refroidissement (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	758	5.7%	3%	2%
5	Reinforcement steel bar (rebar), UK average (IStructE (2025))	586	4.4%	2%	1%
6	Tufted carpet tile with nylon 6 pile material and bitumen backing, 5.2 kg/m2, maximum surface pile weight 1200 g/m2 (One Click LCA)	527	3.9%	2%	1%
7	Electricity distribution system, cabling and central (switchboards/panelboards), per m2 GFA, for all building types, 3.96 kg/m2 (One Click LCA)	490	3.7%	3%	2%
8	Ventilation centralized with heat recovery (Air handling unit (AHU)), capacity: 10 000 m3/h, 704 kg/unit, EN15804+A1, ref. year 2018	443	3.3%	3%	2%
9	Screed - Levelling	424	3.2%	2%	1%
10	Steel pipes for heating and cooling system, DN=65mm, 6.63 kg/m, Tube en acier noir pour usage en chauffage et climatisation (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAULT)	391	2.9%	3%	2%

Please note the Carbon data uncertainty factor is estimated based on Table 11 Carbon data quality matrix in the RICS PS WLCA 2nd Edition. This is estimated based on the selected EPD's geographical representativeness, technological representativeness, Temporal representativeness and Data aspects.

Appendix D. WLCA Uncertainty Factor

According to RICS PS WLCA 2023, the total WLCA uncertainty factor is calculated by combining three component parts. These are outlined below.

- 1. **Contingency factor:** reflects uncertainty regarding the design of the asset, its construction and the quantities and types of materials used.
- 2. **Carbon data uncertainty factor:** reflects uncertainty regarding the representativeness of the carbon data in relation to the impact of the actual products that will be used, and the quality of the data.
- 3. **Quantities uncertainty factor:** reflects uncertainty regarding the quantities of the products that will be used. It should be high when estimates or benchmark data are used, and low when measured quantities are used. We have selected 2% as the quantities are a mix between estimated data and design measured averages.

Each factor is determined individually and outlined in Table 8. Therefore, a WLCA uncertainty factor of **11%** is applied.

Table 5: Outline of WLCA Uncertainty Factors

Contingency Factor	6%
Carbon Data Uncertainty Factor	3%
Quantities Uncertainty Factor	2%
Total	11%

Contingency factor	%
Early design	15%
Technical design + construction	6%
Post-completion	0%

Carbon data uncertainty factor	%
Based on top 10 embodied carbon materials	3%

Quantities uncertainty factor	%
Very good – Actual measured quantities	0%
Good – Design measured averages	1%
Fair – Estimated	3%
Sufficient – Benchmark	4%



Appendix E. WLCA Project Specific ID Matrix

ID	Item	Description
1	Project Name	Postal Street Manchester
2	Asset Type	Residential
3	UPRN (if applicable)	N/A
4	Identification and Description of Sub-Assets to Include their Individually Compliant WLCAs	N/A
5	Project Phase	Stage 3
6	Project Description Relevant to the Stage of Development	The Postal Street project is a new-build residential led development located in the heart of Manchester's vibrant Northern Quarter. The scheme will deliver 126 high-quality, low-carbon apartments, at least 20% of which will be offered at Manchester Living Rent, ensuring genuinely affordable homes for local people.
7	Relationship with other WLCAs	N/A
8	Location (town/postcode/country)	Manchester, UK
9	Date of completion of construction (if a post-construction assessment)	N/A
10	Date of Original Construction if Refurbishment of Existing Asset	N/A
11	Anticipated Start-on-Site and Completion Dates	Estimated completion in 4Q2027
12	Primary Normalisation / Functional Unit (e.g GIA for buildings)	10,546 m2
13	Secondary Normalisation / Functional Unit (typology dependent, e.g NIA for offices)	N/A
14	GIA of any Demolished Assets	N/A
15	Breakdown of GIA by Use Type	Ground Floor Commercial Area: 711 m2 Residential Area: 11,061 m2

ID	Item	Description
16	Specifically for Buildings:	Building Height Above Ground and Below Ground27.7m above, 0m below Number of Storeys Above and Below Ground8 above, 0 below
17	Specifically for Buildings:	FoundationRC Piles Foundations Ground FloorRC slab Vertical Structural ElementRC columns Horizontal Structural ElementRC core walls Floor SlabRC slab CladdingFacing brick and metal cladding FinishesPaint, ceramic tiling, carpet, screed, plasterboard ceiling
18	Specifically for Buildings:	Types of Main Building Services HeatingASHP's & primary distribution, electric radiator in flats. Cooling VentilationMVHR installation

ID	Item	Description
1	Name / Company of the Assessor	Tom Tang, AtkinsRéalis
2	Date of Assessment	05/12/2025
3	Assessment Scope / Type	A1-A5
4	Key Material Quantities with Associated Carbon Factors and Data Sources	See Appendix C
5	Clear Statement and Explanation of Key Assumptions and Scenarios Used to Facilitate the Carbon Calculations	See Methodology and Assumptions



About the Upfront Embodied Carbon Assessment Report

This document and its contents have been prepared and are intended solely as information for Manchester City Council and use in relation to the Postal Street project.

AtkinsRéalis assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Revision	Purpose description	Origin-ated	Checked	Reviewed	Author-ised	Date
Rev 1.0	Embodied Carbon Report RIBA Stage 3 Issue	TT	HP	CF	CD	14.11.25
Rev 1.1	Embodied Carbon Report RIBA Stage 3 Issue with updated GIFA	TT	HP	CF	CD	20.11.25
Rev 1.2	Embodied Carbon Report RIBA Stage 3 Issue with updated GIFA and comments from MCC	TT	HP	CF	CD	05.12.25

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