

Energy Statement

Victoria Point

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Executive Summary

This report and energy modelling analysis has been prepared by Atelier Ten on behalf of Empiric Student Properties. It demonstrates compliance against the relevant energy and carbon emission policies of the City of Manchester Local Development Framework. In addition, the Ene 01 BREEAM Excellent prerequisite has been achieved through a combination of high fabric performance and system efficiencies outlined in this report.

High Standards of energy performance have been applied across the design of the various buildings that will reduce their operational energy and associated carbon emissions. This includes using electric air source heat pumps (ASHP) for domestic hot water and significant PV arrays across the development.

The project is implementing the BREEAM assessment methodology as part of its sustainability response with Excellent certification targeted. Furthermore, EPC 'A' ratings for each of the extensions are targeted as well as ambitious whole building operational energy benchmarks that are in line with CRREM standards.

In terms of the development's energy strategy, a hierarchal process of reducing energy demand through enhanced fabric thermal performance has been applied which is demonstrated via the passive design analysis included within this report, followed by using highly efficient equipment and low carbon technologies. A key element of the proposals includes the use of air source heat pumps as the heat generating technology domestic hot water heating and PV arrays installed across the development. This low carbon technology will allow the building to achieve net zero carbon in operation as the national grid decarbonises, while also delivering a fossil fuel free development as an all-electric building.

The energy and building services strategies outlined in this report demonstrates compliance with Part L 2021 Building Regulations and all carbon dioxide (CO₂) emission saving targets set by Manchester City Council local planning policies.

Results					
	Block 1	Block 2	Block 3	Block 4	Block 5+
HVAC System	Electric Panels and MVHR to accommodation spaces VRF to Amenity areas				
Renewables (proportional to new build area)	PV Area = 5.0m ²	PV Area = 90.5m ²	PV Area = 88.0m ²	PV Area = 217.1m ²	PV Area = 244m ²
BER kg.CO ₂ /m ²	0.24	2.4	2.48	2.16	2.53
TER kg.CO ₂ /m ²	3.02	2.42	2.52	2.18	2.58
% BER/TER Betterment over Part L 2021	92.1%	0.8%	1.6%	0.9%	1.9%
BPER kWh/m ²	1.89	24.56	25.4	22.35	26.11
TPER kWh/m ²	32.75	25.08	26.06	22.84	27.04
% BPER/TPER Betterment over Part L 2021	94.2%	2.1%	2.5%	2.1%	3.4%
BREEAM Ene 01 Credits achieved	7	7	7	6	7
Part L 2021 Compliance Achieved	PASS	PASS	PASS	PASS	PASS
15% pass over Part L 2010 (Policy EN 6)	PASS	PASS	PASS	PASS	PASS
EPC Rating	A	A	A	A	A
Prerequisite for BREEAM Excellent Achieved (min. 4 credits)	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED

1 Introduction

The Manchester City Council has an ambition to become net zero carbon by 2038, meaning that all new buildings must be net zero carbon. The Manchester Local Plan is being developed to align with the Council's Climate Change Action Plan. This energy statement will focus on the thermal modelling to meet the requirements of national and local planning regulations.

With the UK Government declaring a climate change emergency, it is important that the built environment responds to reducing greenhouse gas emissions while addressing the broader sustainability issues affecting the environment, economy, and society. This is why low-carbon design and sustainability feature high on the agenda for the Victoria Point development.

This report therefore aims to quantify the carbon and energy performance of the proposals while also responding to the energy and carbon emission reduction policies of Part L2 of the Building Regulations and Manchester's Local Development Framework.

To achieve a low-carbon building, an energy hierarchy process that focuses on passive measures first to reduce energy demand has been applied. This is followed by implementing highly efficient active systems and plant choices that incorporate heat recovery and smart controls to ensure energy-consuming systems are operating effectively and efficiently. Finally, the opportunities for renewable technologies, such as photovoltaic panels and solar thermal systems, are explored to provide renewable energy to the building. This hierarchy process is illustrated in Figure 1.1 below.

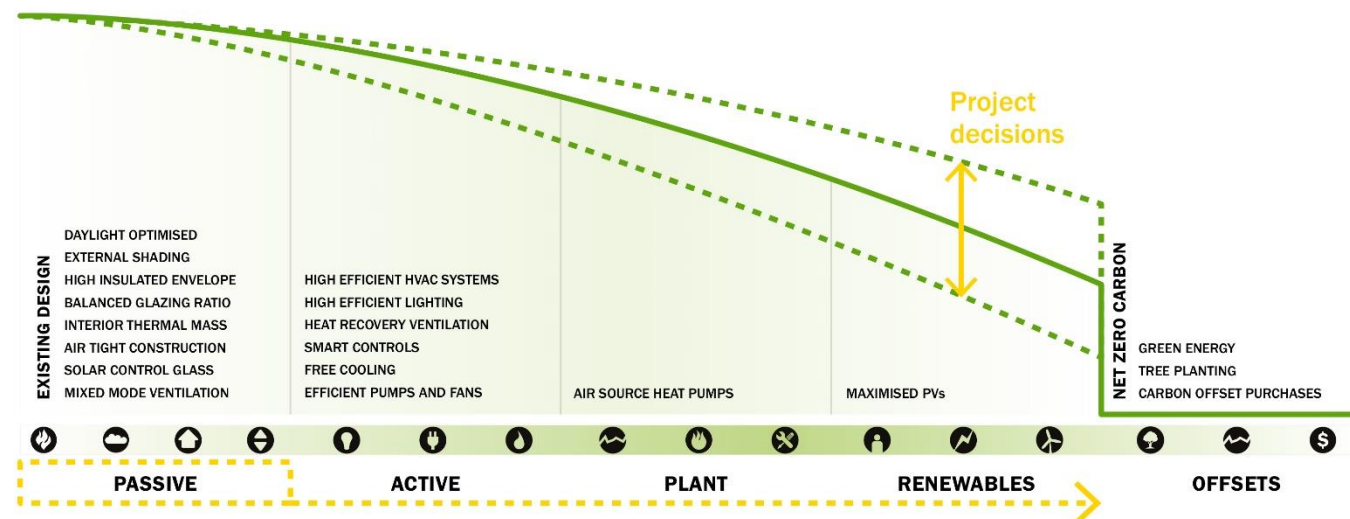


Figure 1.1 Pathway to zero carbon

1.1 Proposed Development

Redevelopment of existing student accommodation blocks (6 in total) to include the phased demolition and extension of existing buildings to provide a total number of 876 student beds at a maximum height of 12 storeys, including associated ancillary internal and external amenity space, ground floor community/commercial space (Use Class E, F1 and F2), hard and soft landscaping and associated highway works. Blocks 5/6 will be referred to as a single block for the proposed, "Block 5+".

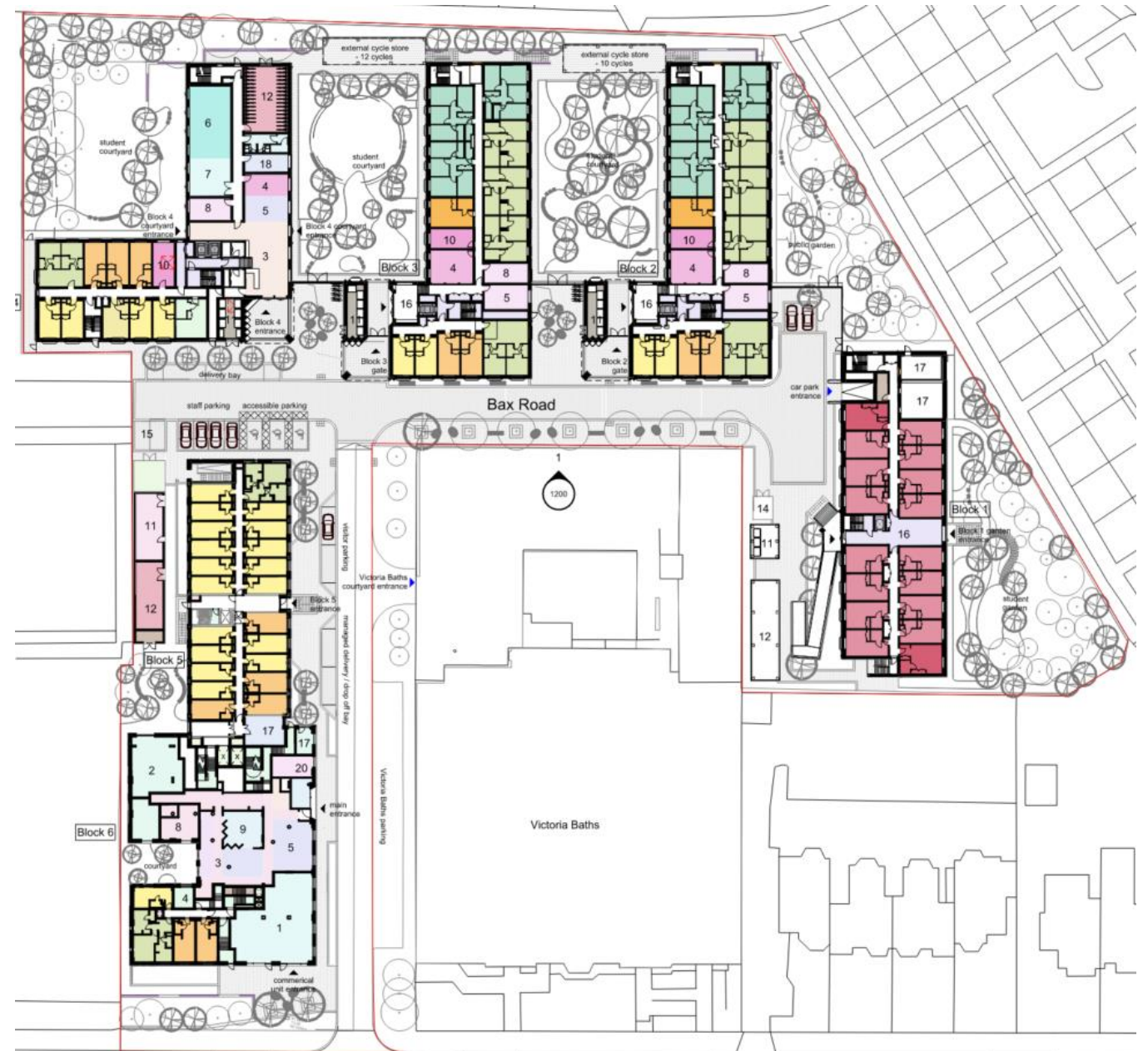


Figure 1.2 Proposed development layout

2 Planning Policy

Several planning policies are relevant to the proposed development. This section of the report summarises the carbon and sustainability policies that apply to the development addressed in this report. These are the National Planning Policy Framework, Part L of the Building Regulations, the Manchester Local Development Framework, and the relevant supplementary planning guidance.

2.1 National Planning Policy Framework (December 2023)

The National Planning Policy Framework (NPPF) is a key part of the Government's reforms to make the planning system less complex and more accessible, protect the environment, and promote sustainable development. It sets out the Government's planning policies for England and how these are expected to be applied. The NPPF replaces the previous suite of national Planning Policy Statements, Planning Policy Guidance Notes, and some Circulars, except PPS10 (Waste).

Regarding energy policies, the NPPF states the following in paragraph 160:

To help increase the use and supply of renewable and low-carbon energy and heat, plans should:

- a. provide a positive strategy for energy from these sources that maximises the potential for suitable development and their future re-powering and life extension while ensuring that adverse impacts are addressed appropriately (including cumulative landscape and visual impacts).
- b. consider identifying suitable areas for renewable and low-carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c. identify opportunities for development to draw its energy supply from decentralised, renewable, or low-carbon energy supply systems and for co-locating potential heat customers and suppliers.

2.2 Building Regulations Part L (June 2022)

Approved Document Part L of the Building Regulations relates to the conservation of fuel and power in buildings and is divided into the following sections:

- Volume 1 relates to dwellings.
- Volume 2 relates to buildings other than dwellings.

Part L1(a) of Schedule 1 of the Building Regulations states that reasonable provision shall be made for the conservation of fuel and power in buildings by:

- d. Limiting heat gains and losses:
 - i. Through thermal elements and other parts of the building
 - ii. From pipes, ducts and vessels used for space heating, space cooling and hot water services
- e. Providing fixed building services which:
 - i. Are energy efficient to a reasonable standard,
 - ii. Have effective controls and
 - iii. Are commissioned by testing and adjusting as necessary to ensure they use no more fuel and power than is reasonable in the circumstances.

Developments are expected to achieve the above by limiting unwanted heat losses by meeting the limiting values for HVAC and fabric efficiencies. New development must also meet the Target Emissions Rate (TER) set by a notional building of the same type and geometry but with standardised fabric and HVAC systems. Therefore, the development's Building Emissions Rate (BER) must be lower than the TER. Similarly, the Target Primary Energy Rate (TPER) has to be met or bettered by the Building Primary Energy Rate (BPER).

2.3 Local Development Framework - Core Strategy (July 2012)

The Adopted Local Plan sets out the Council's vision and strategy for the area until 2027. The Core Strategy is the principal strategic document within the Local Plan. An adopted Supplementary Planning Document (SPD) that expands on the Local Plan's requirements is the Guide to Development in Manchester.

Manchester has set an ambitious target to become zero carbon by 2038, with new developments to achieve zero carbon by 2038. A short-term target is not included in the current policy. However, it is expected that new developments will support the Council's vision by incorporating low and zero-carbon renewable technologies instead of direct-emission heating systems.

The policies applicable to the proposal regarding energy and carbon emissions include the following

- Policy EN 4 (Reducing CO₂ emissions by enabling low and zero carbon development).
- Policy EN 6 (Target Framework for CO₂ reductions from low or zero carbon energy supplies).
- Policy EN 7 (Energy infrastructure opportunities)

2.3.1 Policy EN 4: Reducing CO₂ Emissions by Enabling Low and Zero Carbon Development

Policy EN 4 within the Core Strategy document states:

- 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.

2.3.2 Policy EN 6: Target framework for CO₂ Reductions from Low or Zero Carbon Energy Supplies

Policy EN 6 within the Core Strategy document states that all non-domestic development over 1,000m² will need to achieve the targets in Table 2.1 compared to the Part L 2010 required TER.

Table 2.1 Policy EN 6 non-domestic CO₂ emissions reductions targets

Target	% Minimum Requirement
Target 1: Network development area	CHP/district heating anchor or connection or where not feasible a 15% increase on Part L 2010
Target 2: Electricity intense buildings	+10% increase on Part L 2010
Target 3: Micro generation area	+15% increase on Part L 2010

Approved document Part L has been updated twice after the publication of the Core Strategy, with the following approximate reductions:

- Part L 2013 brought a 9% reduction in carbon emissions compared to Part L 2010 across all building types
- Part L 2021 introduced further carbon emissions reductions, 31% for domestic and 27% for non-domestic.

2.3.3 Policy EN 7: Energy Infrastructure Opportunities

Policy EN 7 of the Core Strategy states that there will be a general presumption in favour of low and zero carbon decentralised energy schemes, subject to the following considerations:

- Any new generating plant capable of producing heat and cooling as well as electricity should be located in a way that facilitates future connection to a local distributed energy system.
- That any energy centre, including generating plant, standby/boiler plant, and substations, shall be located, and designed to a high quality so as to integrate with and contribute to the townscape.

- Biofuels should be obtained from sustainable sources and processes and in a way that minimises transport impacts, following a sequential approach in order to minimise CO₂ emissions - firstly prioritising local and regional sources, followed by national, European, and international.
- Consideration should be given to biofuel delivery by rail and waterways where possible. Where large-scale fuel or feedstock delivery is required by road the energy centre must be located in or adjacent to light industrial, industrial or leisure uses with any impact on local residential amenity minimised.
- The cumulative impact of energy schemes will be taken into account when considering applications, to include modelled impacts on air quality and landscape character, with reference to Policy EN 16.
- In determining proposals for development, consideration will be given to the need to safeguard strategic energy sites and network routes, both proposed or existing, where there have been identified as having strategic significance for the delivery of low or zero carbon energy infrastructure or, would be required in order to achieve the successful regeneration of an area in line with targets for reducing carbon emissions.

3 District Heating Appraisal

This section of the report presents the results from district heating feasibility analysis for the proposed Victoria Point development in accordance with Core Strategy EN7.

3.1 Heat Map & Existing / Proposed Networks

Heat mapping is an important tool to help identify locations where heat distribution is most likely beneficial and economical. Heat maps can utilise information on both demand (domestic, industrial, and commercial) and supply for renewable heat.

The Department for Business, Energy and Industrial Strategy has developed the Heat Networks Planning Database (HNPd), which provides a picture of district and communal heat networks across the UK. The heat map identifies four sizable heat generators in the extended vicinity as listed below, including their distance and heat capacity, where known.

- Octagon House (operational, gas fired CHP): 0.1km
- Manchester Royal Infirmary (under construction, gas fired CHP): 0.54km
- Booth Street East (operational, ASHP): 1.96km
- Manchester Metropolitan University Birley Energy Centre (pre-planning, gas fired CHP): 2.21km

Due to the all-electric building services strategy, gas fired technologies have been deemed not suitable and therefore excludes any potential connection to networks served by these generators. Due to the distance to the only other viable alternative network, located on Booth Street East, from the site a connection is not currently recommended.

3.2 Site Heat Demand

We have completed detailed work identifying key energy demands for the proposed development. The results from energy modelling confirm that the most significant energy load is space heating followed by lighting, as shown in Figure 3.2. The analysis also confirms that the total heat consumption (space heating and DHW combined) accounts for 51% of the building energy demand. Due to the relatively low heat demand, the building would not significantly benefit from a district heating connection.

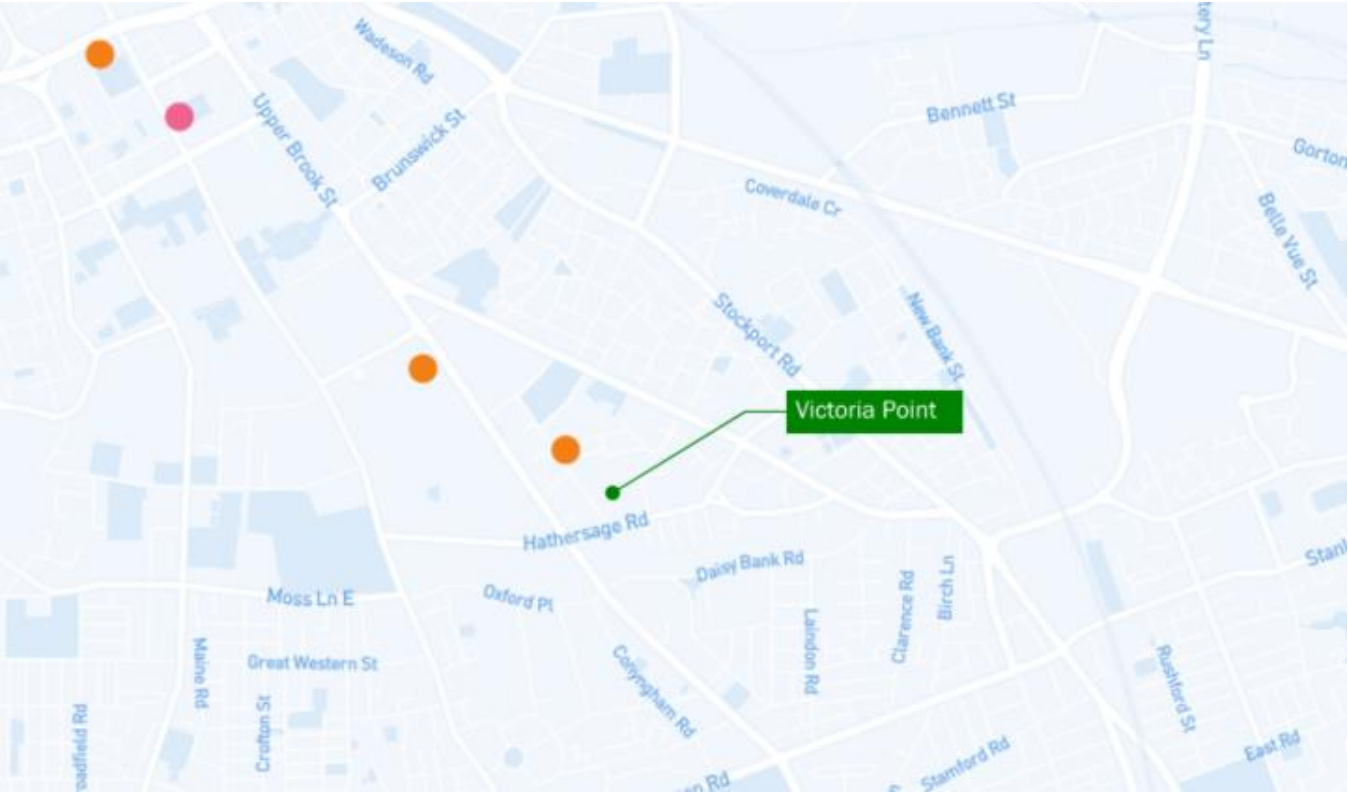


Figure 3.1 Heat Networks Planning Database (https://data.barbour-abi.com/smart-map/repd/beis/?type=heat_network_

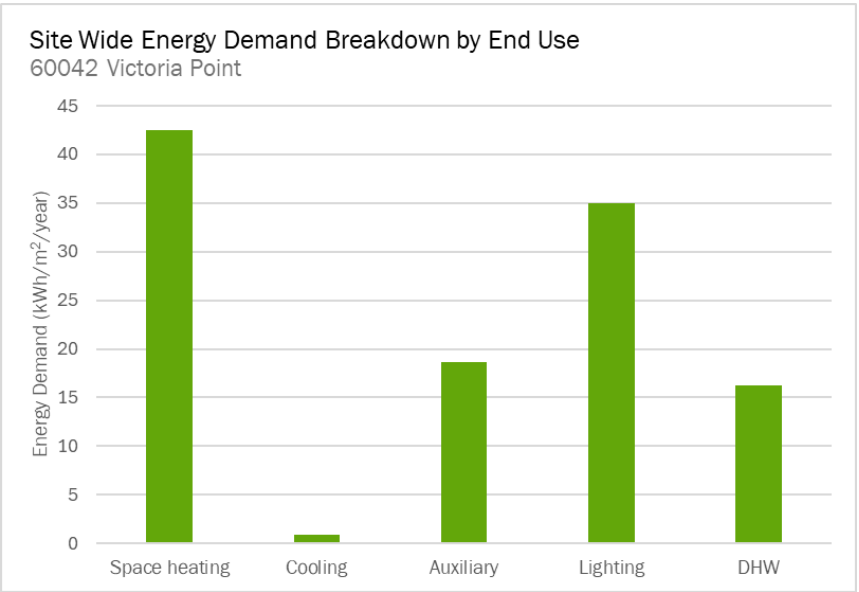


Figure 3.2 Site energy demand breakdown

4 Passive Design Analysis

This section of the report presents the results from passive design and iterative energy modelling for the Victoria Point development. When undertaking passive design analysis, it is important to consider and recognise constraints that limit the opportunity to implement passive measures. Such constraints include physical & environmental constraints of the site, project budget, security considerations, statutory authority requirements, as well as the client requirements in terms of floor area, outward aesthetics and function of the building.

4.1 Introduction

Passive design principles have been proposed in this report to be implemented within the Victoria Point development to result in a meaningful reduction in total operational energy consumption. In line with the energy hierarchy, the aim is to reduce the energy consumption of building services before supplying the remainder of the required energy as efficiently as possible through low/zero carbon technologies most appropriate to the site and building use.

4.1.1 Passive Design Considerations

Extensive dynamic simulation modelling has been carried out to assess the relative impacts in the following areas:

- Site location
- Site weather
- Microclimate
- Building layout
- Building orientation
- Building form
- Building fabric
- Thermal mass or other fabric thermal storage
- Building occupancy type
- Daylighting strategy
- Ventilation strategy
- Adaptation to climate change.

4.1.2 Modelling Approach

Block 1 was chosen to represent a typical building as part of the development and was the focus of this analysis as the strategy will remain consistent throughout the site. A compliance model has been created and a series of iterations were simulated to compare the performance of the actual building and notional building to help quantify the energy reductions of the implementation of various passive design approaches.

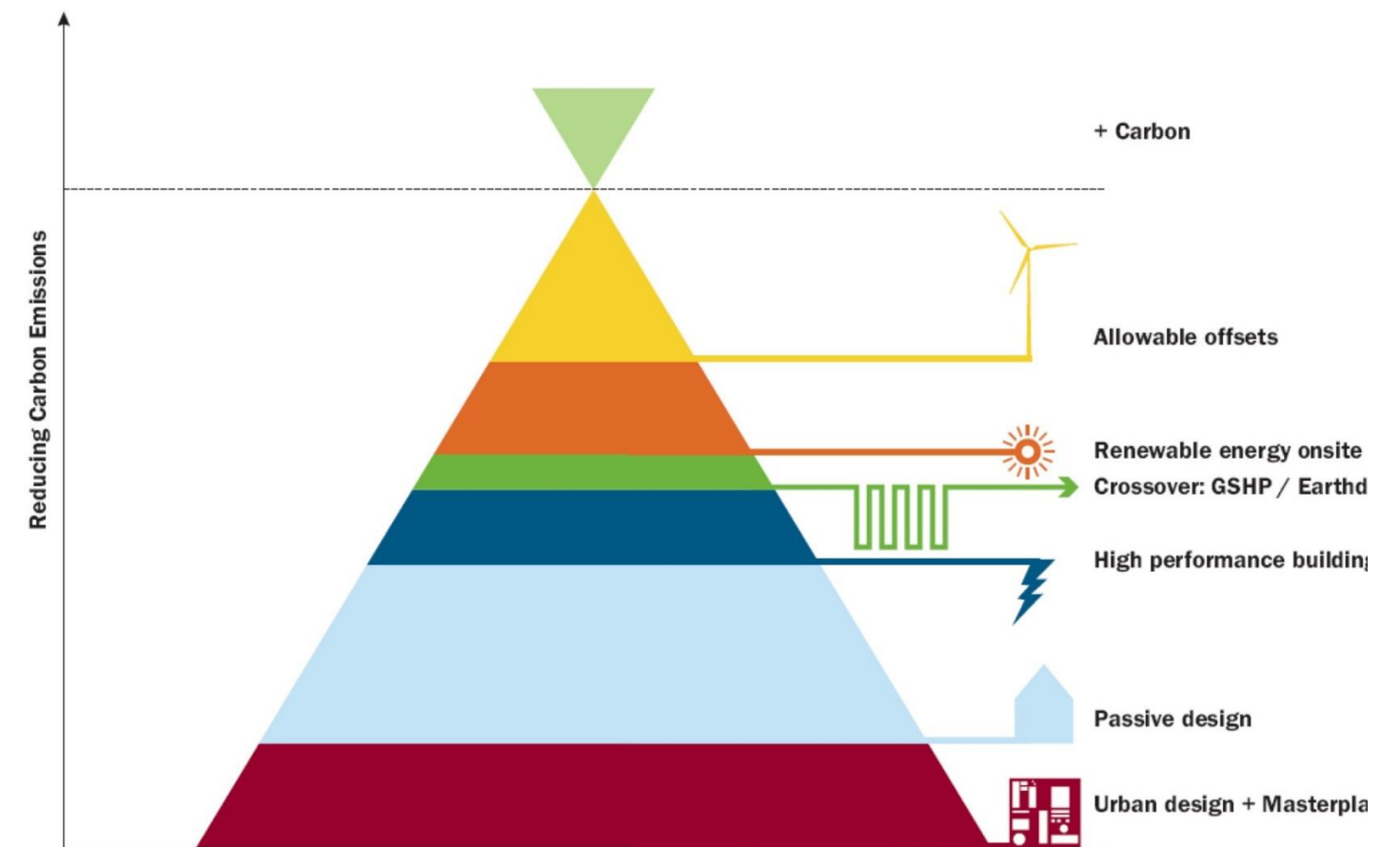


Figure 4.1 Energy hierarchy to follow throughout design process

4.2 Site Location, Weather & Microclimate Review

4.2.1 Site Location Review

The site is in an urban setting with some similar sized adjacent buildings, namely the Octagon Building and the Victoria Baths, and nearby residential areas to the North and East with two major roads surrounding the site to the south and west.

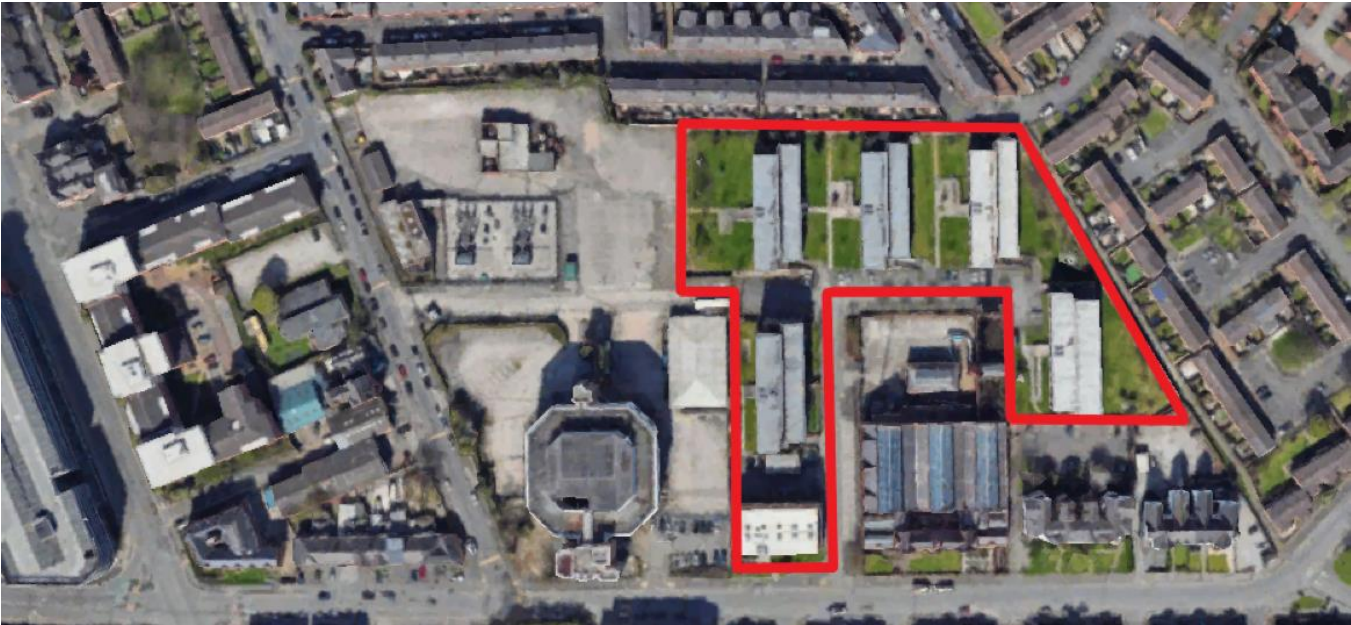


Figure 4.2 Victoria Point development site (image taken from Google Earth)

4.2.2 Microclimate Review

A micro-climate review provides the opportunity to understand the natural environmental aspects of the site. This process helps establish the most appropriate means of building form and orientation to help reduce energy loads required once refurbished. The microclimate analysis helps respond to factors that are critical to the successful design of buildings, exploiting the benefits of the local climate and aspects of the building that require protection. The key micro-climate aspects that effect passive design are ambient external air temperatures, solar gains and daylight.

4.2.3 Temperature

Manchester is located in the Northwest of England to the west of the Pennines. This makes it colder than the south of England where heating loads would typically be lower although there is the added urban heat island effect. The passive analysis will therefore be inclined to balance these heating and cooling loads across a typical year, and further driven by the ambitions of achieving a BREEAM Excellent rating and CREM operational energy benchmarking targets.

The weather file used in this analysis is the Manchester Test Reference Year. The frequency of temperatures can be seen in Figure 4.3 above over the course of a typical year. The occurrence of temperatures over 19 °C happens for a marginal number of hours in the year. With domestic living spaces typically heated to around 20 °C, this means that there will be an external fabric heat loss almost consistently through the year. Higher levels of insulation will help abate the use of mechanical heating plant. Insulation materials have a low thermal conductivity and are a very effective method of providing built-in sustainability into the core of the development. In addition, limiting heat loss as a result of thermal bridging and improving airtightness also significantly contributes to the creation of a thermally efficient envelope. The current and future building regulations are moving in the direction of high efficiency thermal envelopes with U-values and air tightness.

With increased thermal performance and modern lightweight structures, overheating in residential developments can be a risk especially since the provision of mechanical cooling is rare (mitigating the risk of overheating in the development is covered in more detail in a separate report). It is therefore important that a balanced approach to insulation levels, air tightness, solar gain and thermal mass is applied in the passive design strategies of the development to allow for not only acceptable levels of thermal comfort for occupants but also allowing for acceptable levels of daylight into the spaces.

In terms of heat gains, assuming the internal gains cannot be reduced further due to the nature of the spaces, solar gain is the next aspect to be considered. As shown in the Figure 4.4, it will be beneficial to allow some solar gain to reduce the space heating consumption associated with the heat loss to the surroundings as well as a.

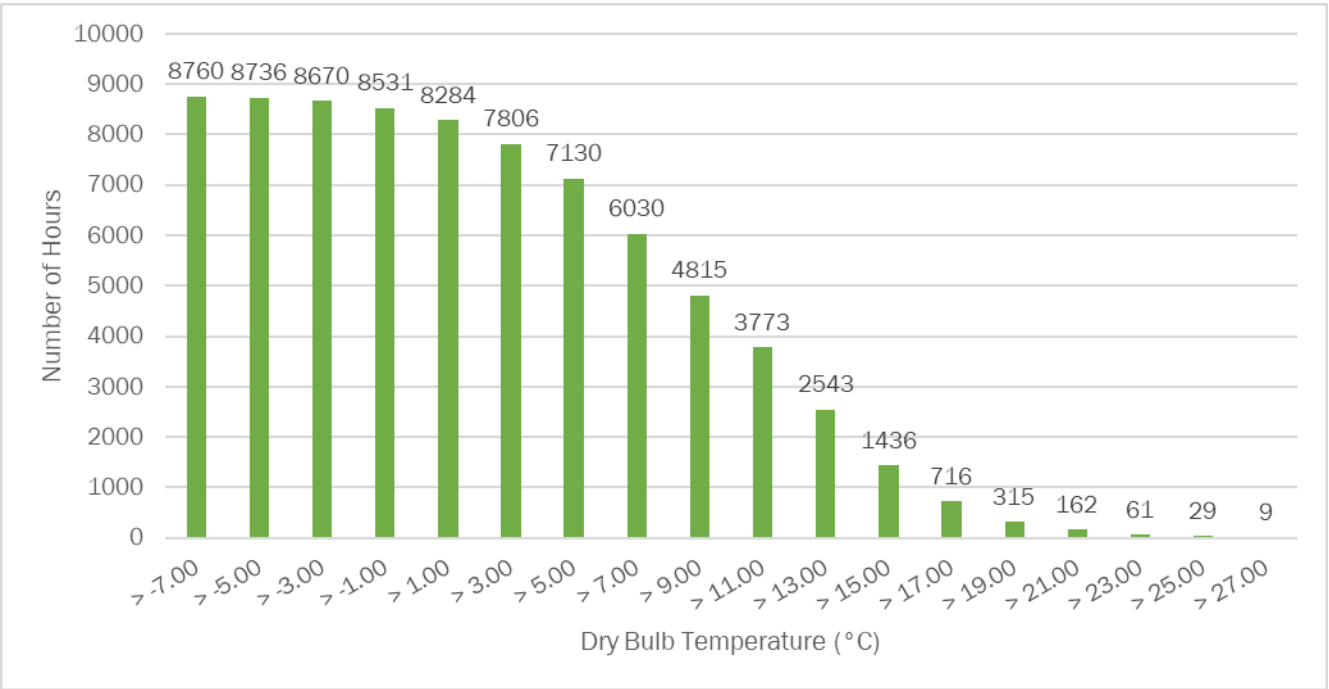


Figure 4.3 Manchester TRY dry bulb temperature distribution

4.2.4 Solar Gains & Daylight

The cooling load of a building is determined by a number of factors including the solar gain, occupancy, lighting, and equipment gains. These all contribute towards the overall cooling requirements throughout the building.

It is important that the opportunities to exploit the solar gains in relation to the local climate are explored at this early stage, rather than simply trying to decrease them as far as possible.

The below graph captures the average solar gain across a year for each of the four main orientations (north, east, south and west) for three different weather files; Glasgow_TRY, London_TRY and the weather file used in this analysis (Manchester_TRY). In the north of the UK (represented by Glasgow), higher glazing percentages offer the better balance between heating and cooling loads while the south of the UK (represented by London), lower glazing percentages offer better space conditioning balance.

The region where the Victoria Point development is located is shown to have solar gain levels sitting between London and Glasgow files for the north, east and west orientations but exceeds them on the south orientation. This analysis is interesting as it offers opportunities bespoke to the location that would differ in either Glasgow or London in terms of applying glazing percentages on different facing facades.

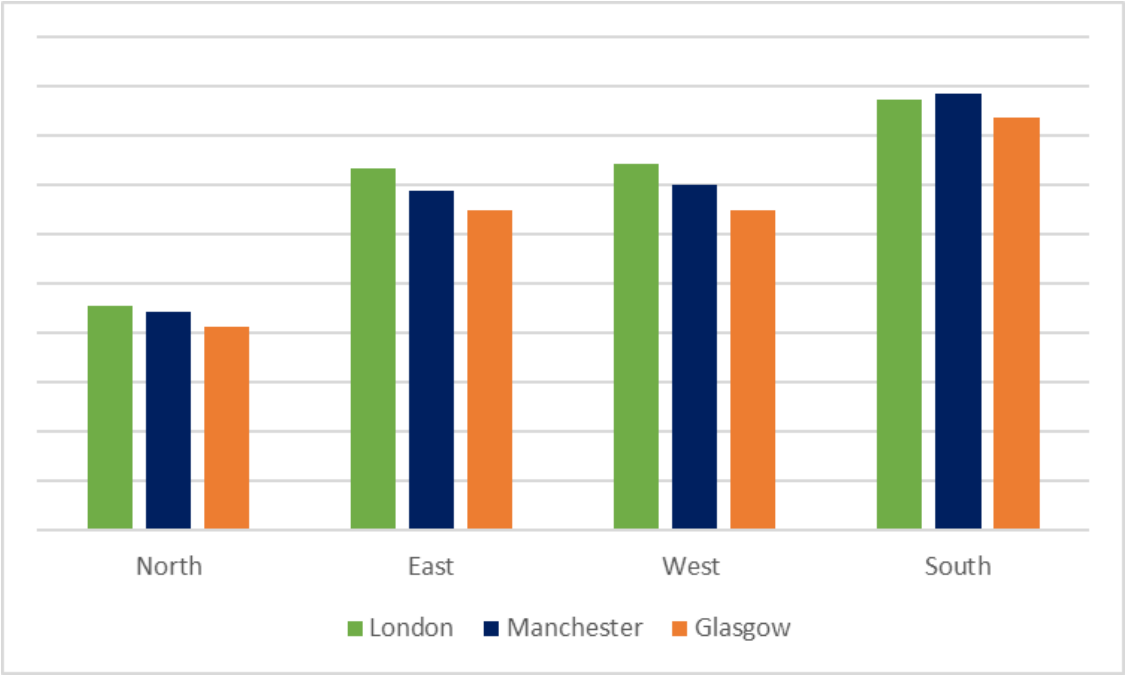


Figure 4.4 Relative solar gain across different locations

The average glazing percentage recommended from a heat loss perspective will be covered in the next section, but based on the solar gain analysis leads to the view that a higher proportion of this glazing could be potentially located on the north elevations while a lower proportion on the south orientation and around the average recommended on the east and west elevations.

In addition to solar gain, glass also has a significant input to daylight experienced in the space. Daylight is an important requirement for human health and wellbeing as it allows synchronization with the human circadian rhythm, the natural physical, mental and behavioural changes that follow a 24-hour cycle. Furthermore, daylight provision in buildings reduces energy consumptions associated with artificial lighting.

Glazing fenestration and specification are therefore important passive design aspects to be considered in the Victoria Point development.

4.3 Building Analysis

4.3.1 Glazing Fenestration

Looking at the existing massing of a typical block, these are typically L shaped structures containing central core spaces, with the large majority of apartments being single aspect dwellings with glazing either on the East or West elevation.

To get a high-level analysis of the effects of different glazing percentages, three simulations have been run with glazing percentages starting initially with the base case of 18% which is currently the typical existing window to wall ratio and then further iterations looking at increasing this to 25% & 35%. The breakdown of energy for heating, cooling, auxiliary are presented for each iteration.

As shown in Table 4.5, the total energy increases with each incremental increase of glazing percentage. From a purely heat loss standpoint, it would be better to design with no glazing, but for understandable health and wellbeing reasons, access to daylight is as important as air quality or temperature. The key then, is to reduce as far as possible the extra energy associated with higher glazing percentages in a meaningful way.

The results highlight that retaining the existing glazing ratio will be the most beneficial in terms of energy consumption. This will also provide benefits in terms of utilising the existing structural configuration making the refurbishment process simpler on the existing blocks.

Table 4.5 Glazing area energy analysis

Glazing Area	Heating Energy (kWh/m ²)	Cooling Energy (kWh/m ²)	Auxiliary Energy (kWh/m ²)	Total Energy (kWh/m ²)
18%	37.28	0	0.91	47.15
25%	38.55	0	0.91	48.44
35%	41.53	0	0.91	51.39

4.3.2 Fabric Performance

Having optimised certain passive design principles as far as reasonably possible, building fabric thermal performances are the next aspect of design that need to be considered.

As discussed in the microclimate section of this report, building fabric thermal performances have been driven through building regulation requirements. Several energy modelling iterations have been undertaken to refine the U-values, g-values and building airtightness that achieve compliance against the CO₂ emission criteria of both Part L 2021 and Ene01.

The following building fabric elements have been looked at in terms of their potential of reducing energy consumption through their specified requirements:

Glazing Thermal Performance

A 2.20 W/m²K glazing U-value (including frame) has been selected to represent an approximation of the glazing currently installed on the existing elements of the blocks. The 1.60 U-value represents a glazing that meets the limiting value set by Part L 2021. Finally, a U-value of 1.20 W/m²K is represents the best performing double glazing units. The results of these iterations are found below in Table 4.7.

Table 4.6 Glazing U-value energy analysis

Glazing U-Value (inc. frame)	Heating Energy (kWh/m ²)	Cooling Energy (kWh/m ²)	Auxiliary Energy (kWh/m ²)	Total Energy (kWh/m ²)
2.20	37.28	0	0.91	47.15
1.60	34.04	0	0.91	43.91
1.20	33.03	0	0.91	42.93

Solid Wall U-Value

With a relatively low window to wall ratio throughout the blocks the solid wall u-value will have a significant impact on the thermal performance of the structures. The iterations are based on an initial assumption of the existing u-value and then incremental improvements from this to assess the impact on energy consumption.

Table 4.7 Solid wall U-value energy analysis

Solid Wall U-Value	Heating Energy (kWh/m ²)	Cooling Energy (kWh/m ²)	Auxiliary Energy (kWh/m ²)	Total Energy (kWh/m ²)
0.27 W/m ² -K	37.28	0	0.91	47.15
0.20 W/m ² -K	35.50	0	0.91	45.37
0.13 W/m ² -K	33.71	0	0.91	43.58

Air Permeability

Air tightness can be an influential parameter on energy consumption as it directly affects the infiltration rate of external air into the spaces within a building. Industry standards have reduced significantly since regulations were introduced to limit the air permeability value of buildings. The iterations from this analysis again looked at; a base assumption of the current value (which is set at the initial regulation limiting value from 2002), improving this to the current limiting value and finally improving this further to be in line with what is achievable through modern construction practices.

Table 4.8 Air permeability energy analysis

Air Permeability (m³/(h.m²) @50Pa	Heating Energy (kWh/m²)	Cooling Energy (kWh/m²)	Auxiliary Energy (kWh/m²)	Total Energy (kWh/m²)
10	37.28	0	0.91	47.15
8	36.06	0	0.91	45.93
3	33.00	0	0.91	42.87

Thermal Mass

There is likely to be some opportunities within the existing structures to expose thermal mass due to the nature of their blockwork construction. With a high number of partitions throughout the spaces as well as the favourable window to wall ratio there is ample opportunity to expose some internal surface areas to help increase the thermal capacity of the buildings.

Ventilation Strategy

A mechanical ventilation strategy with comfort cooling has been proposed. This could be supplemented with natural ventilation to reduce daytime cooling loads and also provide night cooling.

The ventilation strategy for the building is a balanced mechanical supply and extract system incorporating heat recovery. This method of ventilation has been proposed to ensure high levels of acoustic comfort and air quality can be achieved across all accommodation units. A purely natural ventilation strategy would not provide the same level of control and therefore, occupant comfort as well as not utilising the energy recovery opportunity afforded by MVHR.

Thermal modelling of similar student residential developments has confirmed that the thermal comfort levels recommended in CIBSE Guide A (Environmental Design) and CIBSE TM59 (Design Methodology for the assessment of overheating risk in homes) can be achieved using this strategy. This modelling exercise has been detailed in a separate report to demonstrate that the specific service strategy for the development maintains thermal comfort for occupants.

Table 4.9 Ventilation energy analysis

Air Permeability (m³/(h.m²) @50Pa	Heating Energy (kWh/m²)	Cooling Energy (kWh/m²)	Auxiliary Energy (kWh/m²)	Total Energy (kWh/m²)
Extract Ventilation	37.28	0	0.91	47.15
Natural Ventilation	37.28	0	0.24	46.48
Mechanical Ventilation with Heat Recovery	16.71	0	2.56	28.23

4.4 Passive Design Conclusions

This passive design section has been prepared to inform the project design team on the passive design measures and technologies that will enhance the energy performance of the Victoria Point development and minimise its operational emissions.

By following an energy hierarchy process, passive design strategies and options have been assessed and quantified through energy modelling. The results from the passive review confirm that the highlighted thermal envelope properties will have a large effect on heating loads and therefore compliance with Part L 2021.

The recommendations derived from this study have been fed into the design process and incorporated into the energy strategy for the blocks, which is covered in more detail in the next section. The outputs from the compliance energy modelling will ultimately demonstrate that these measures have contributed to help the development achieve its sustainability targets.

As the RIBA stages progress, daylighting, overheating, energy studies will continue to provide a holistic view of how the design can provide the best outcome across all aspects of sustainability.

5 Energy Strategy

The development aims to achieve compliance with Part L 2021, BREEAM Excellent and adherence to Manchester's Adopted Local Plan. Following Manchester's Local Development Plan (under Policy EN 6 of the Core Strategy), the development will achieve a betterment equivalent to 15% over Part L 2010.

Following Manchester's Local Development Plan, the proposed development aims to minimise CO₂ emissions to the atmosphere arising from the operations of and within the building. The following energy hierarchy (by Policy EN 6 of the Core Strategy) has been applied to the design strategy of the development to minimise CO₂ emissions:

1. Minimising energy consumption through passive design measures
2. Supplying energy efficiently through active systems
3. Maximising energy generation from on-site Low and Zero Carbon Generation Technologies (LZCT) energy sources

The three principles outlined above have been applied sequentially and systematically in developing the proposal. These are illustrated in the following sections.

5.1 Passive Design Measures

As highlighted in the previous section, the energy-efficient building design of the proposed development will minimise the need for energy in operation while maximising the comfort of users during the lifetime of the building. Integrating passive design principles will enable the building to be less reliant on HVAC systems and minimise dependence on artificial lighting, taking advantage of natural energy flows to maintain visual and thermal comfort.

Several measures have been implemented to limit heat losses across the building envelope. These include highly efficient built form and high levels of insulation and airtightness. Daylight into the building has been maximised through the specification of glazing with a high visible light transmittance. The performances go significantly beyond building regulations compliance and have applied the latest innovative insulation and glazing products to reduce the building heat demand.

5.2 Energy Efficient Systems

Services that exceed compliance with Part L 2021 have been specified. Services will include energy-efficient lighting systems, controls, and efficient HVAC and DHW plant and equipment.

Details of the systems applied are provided in Table 5.1, which includes the performance of ASHP for Domestic Hot Water, heat recovery ventilation, lighting, and controls. The latest innovative technologies have been applied within the energy model to reduce energy consumption and CO₂ emissions to ensure the building uses energy as efficiently and cleanly as possible.

5.3 Low Carbon Technologies

We have examined the opportunities to install LZCGT and present the results from this feasibility study in below. Water source heat pumps and hydroelectricity have been excluded from the assessment as no large body of water is close to the site. We have also excluded fuel cells from the assessment due to the infancy of this technology, which would result in a significant technical, commercial, and economic risk to the project. The outcomes conclude that air source heat pumps and photovoltaic panels are the most appropriate for the proposed development.

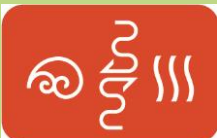
Table 5.1 Energy strategy applied in dynamic simulation modelling

Element or System	
Fabric Thermal Performance	
External Wall U-Value	0.13 W/m²K
Floor U-Value	0.25 W/m²K (Existing elements) 0.12 W/m²K (New elements)
Roof U-Value	0.25 W/m²K (Existing elements) 0.12 W/m²K (New elements)
Glazing U-value (incl. frame)	1.2 W/m².K
Building Air Permeability	3 m³/m².h
Glazing Performance	
Glazing g-value	0.4
Glazing Light Transmittance	71%
HVAC	
Studio Spaces	- Electric Panel Heaters and MVHR - UK NCM type = Other local room heater - unfanned - SCoP = 1 - SFP = 0.8 W/l-s - Heat Recovery Efficiency = 79%
Cluster Spaces	- Electric Panel Heaters and MVHR - UK NCM type = Other local room heater - unfanned - SCoP = 1 - SFP = 1.1 W/l-s - Heat Recovery Efficiency = 90%
Amenity Spaces	- VRF air conditioning and MVHR ventilation - UK NCM type = Variable Refrigerant Flow - SCoP = 3.6, SEER = 5 - UK NCM air supply mechanism = Centralised balanced A/C or mech vent system - SFP = 1.6 W/l/s, HR = 82%
Plant Spaces	- Elec Panel Frost protection for externally located rooms - SCoP = 1.0 - UK NCM air supply mechanism = Centralised balanced A/C or mech vent system - SFP = 1.8 W/l-s, HR = 79%
Domestic Hot Water	
Domestic Hot Water	- Indirect ASHP system serving floorplate HIU's. - SCoP = 3.5
Lighting	
Luminaire efficacy	Average = 120 lm/cw
Lighting controls	- Manual switches to all studios. - Additional absence or presence detection to all other communal spaces.
LZCGT Technologies	
PV	Area = 1094m² (across all blocks), Eff= 22.6%, Inclination = 12 ° , Orientation = 186 ° (from North)
ASHP (for DHW)	Efficiency as above

6 Low & Zero Carbon Technology Appraisal

This section of the report presents the results from a low carbon and renewable technology feasibility study for the Victoria Point development. Water-source heat pumps, and hydroelectricity have been excluded from the assessment as no suitable body of water is nearby. Fuel cells have also been excluded from the assessment due to the infancy of this technology which would result in a significant technical, commercial and economic risk to the project. Table 6.1 below presents the results for all other eligible technologies.

Table 6.1 Low & zero carbon renewable technology feasibility study

Technology	Description	Feasibility	Suitability
 Photovoltaic Panels	Building mounted solar photovoltaic panels to generate renewable electricity	- PV panels provide clean green energy. - m² of active PV meets all Part L, local planning and BREEAM Outstanding requirements - Operating and maintenance costs for PV panels are considered to be low compared to other renewable energy systems. - Roof access will be required as photovoltaics require maintenance and cleaning. - Simple and cost-effective technology to reduce CO₂ emissions. - Approximately 1094m² of PV panels to be installed across all blocks in the development.	
 Solar Thermal Heating	Building mounted solar collectors to generate domestic hot water for use in each building	- The outputs from solar thermal systems installed in the north of England tend to be low. Capital cost of the system result in a poor pay pack. - Development has a relatively low domestic hot water demand that limits the opportunity for this system. - The full roof area reserved for HVAC plant and equipment and green roof space, thus no space for solar thermal systems. - Technology not recommended due to the above.	
 Wind Turbines	Free standing mast mounted micro wind turbine to generate renewable electricity	- Roof mounted wind turbine will require significant structural support and present maintenance issues. - Wind turbines are also contentious planning issues. - Due to the unstable wind patterns in urban areas, the energy generation and resulting CO₂ emission reductions are minimal. - Technology not recommended due to the above.	
 Biomass	Use of wood biomass or biofuel to generate hot water for space heating and DHW.	- The design aims to avoid energy generation through combustion - The project aims to be all-electric, therefore combustion technology does not align with this target - There is also minimal space within the constraints of the site to install the biomass plant, boiler flue and associated fuel stores. - Biofuels are not readily available and would cause commercial and economic risk to the project - Technology not recommended due to the above.	
 CHP	Combined generation of heat and power from a single fuel source	- The design aims to avoid energy generation through combustion - To be economically viable, CHP requires at least 4,500 hours of high and constant heat demand - Dumping of excess heat is not an efficient operation of the system in terms of cost, energy and CO₂ emission savings. - CHP is contentious to class as renewable generation - Technology not recommended due to the above.	
 Ground Source Heat Pumps	Use of the thermodynamic refrigeration cycle to generate hot water from a ground heat sink	- Ground area is restricted to the building footprint, resulting in a limited heat sink. - As a result, deep geothermal boreholes are the only option resulting in high risk, cost and implication on programme. - Technology not recommended due to the above.	
 Air Source Heat Pump	Use of the thermodynamic refrigeration cycle to generate hot water using air as a heat sink	- ASHP chiller technology can provide heating and cooling simultaneously with high efficiencies achieved. - Technology can be combined with cooling systems - Technology can provide domestic hot water - Performance of technology subject to external ambient air temperatures - Acoustic attenuation often required due to noise from ASHPs - Technology to provide Domestic Hot Water across each block in the development.	
 Geothermal	Use of the thermodynamic refrigeration cycle to generate hot water using deep geothermal boreholes	- Ground area is restricted to the building footprint, resulting in a limited heat sink. - As a result, deep geothermal boreholes are the only option resulting in high risk, cost and implication on programme. - Technology not recommended due to the above.	

7 Energy Analysis

Compliance calculations have been undertaken to identify the energy performances and technologies required to achieve an 'A' rated EPC, ≥15% betterment over Part L 2010, compliance with Part L 2021 and the Ene 01 BREEAM Excellent prerequisite.

7.1 Energy Modelling

As of limitation a.ii (see below), only the extension of the proposed development will be subject to complying with Part L 2021 (Conservation of Fuel & Power). Part L of the building regulations requires all new non-domestic buildings to achieve minimum performances in respect to CO₂ emissions from heating, cooling, ventilation and lighting energy consumptions. With each revision of Part L, the government has implemented more stringent CO₂ emission targets which are approaching similar requirements for LETI standards.

“ii. extensions to non-domestic buildings where the extension will have an area which is both greater than 100 square metres and greater than 25% of the area of the existing building...”

Atelier Ten have completed compliance models for each block in the proposed development, to identify the fabric and energy performances required to comply with Part L (as outlined in Table 5.1). This involves calculating the Building Emission Rate (BER) and Target Emission Rate (TER), where compliance is achieved provided the BER is less than or equal to the TER (The BER and TER values are the kgCO₂/m² emissions for the actual building and a building regulation compliant building respectively).

The compliance model was created using IESVE 2023 dynamic simulation software as illustrated in Figure 7.1.

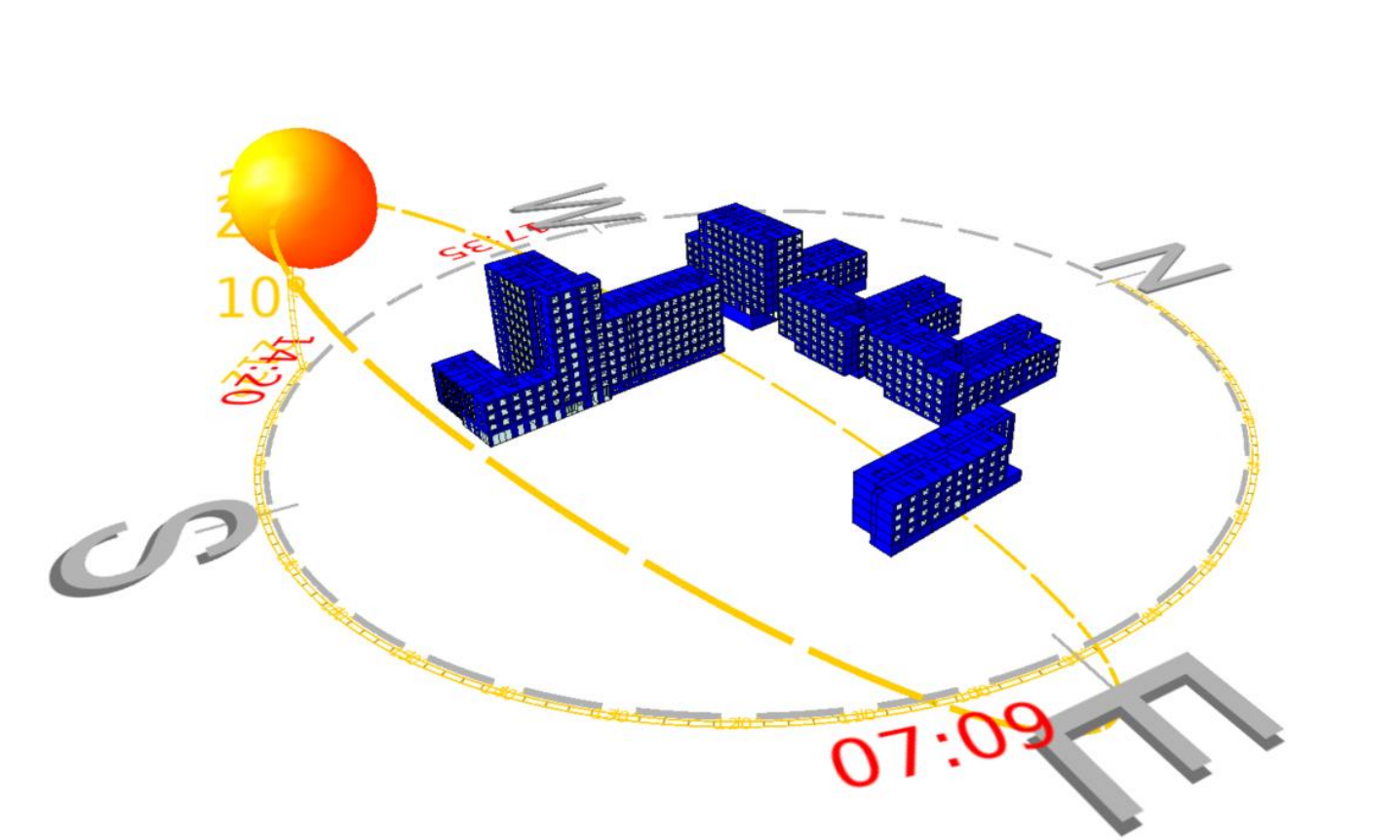


Figure 7.1 IESVE dynamic thermal simulation model

7.2 Compliance

The compliance results are presented in Table 7.2. The BER/TER and BPER/TPER results illustrate that compliance with Part L 2021 is achieved (i.e. the BER < TER and BPER < TPER). As Part L 2021 introduced average reductions of 31% for domestic and 27% for non-domestic over Part L 2013, it is demonstrated that achieving compliance with Part L 2021 satisfies the requirement of Policy EN 6 regarding the 15% increase over Part L 2010 standards.

Table 7.2 Energy modelling results

	Results				
	Block 1	Block 2	Block 3	Block 4	Block 5+
HVAC System	Electric Panels and MVHR to accommodation spaces VRF to Amenity areas				
Renewables (proportional to new build area)	PV Area = 5.0m ²	PV Area = 90.5m ²	PV Area = 88.0m ²	PV Area = 217.1m ²	PV Area = 244m ²
BER kg.CO ₂ /m ²	0.24	2.4	2.48	2.16	2.53
TER kg.CO ₂ /m ²	3.02	2.42	2.52	2.18	2.58
% BER/TER Betterment over Part L 2021	92.1%	0.8%	1.6%	0.9%	1.9%
BPER kWh/m ²	1.89	24.56	25.4	22.35	26.11
TPER kWh/m ²	32.75	25.08	26.06	22.84	27.04
% BPER/TPER Betterment over Part L 2021	94.2%	2.1%	2.5%	2.1%	3.4%
BREEAM Ene01 Credits achieved	7	7	7	6	7
Part L 2021 Compliance Achieved	PASS	PASS	PASS	PASS	PASS
15% pass over Part L 2010 (Policy EN 6)	PASS	PASS	PASS	PASS	PASS
EPC Rating	A	A	A	A	A
Prerequisite for BREEAM Excellent Achieved (min. 4 credits)	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED

Completed copies of the Part L (2021) compliance BRUKL reports for each block can be found within Appendix A. and potential voluntary EPC certificates within Appendix B.

8 Compliance Summary

We have prepared this report to address the aims and objectives of the new Part L 2021, BREEAM and local planning policies. The Vicotria Point development aims to achieve compliance with Part L 2021, BREEAM Excellent, EPC 'A' rating and adherence to the Manchester Local Development Plan (current July 2012 when writing this report).

We have completed energy modelling to investigate the energy performance parameters required to achieve all energy aspirations.

The proposed energy strategy for the development consists of:

- U-values beyond those required for compliance
- Reasonable glazing ratios and solar control glazing
- Air permeability of 3 m³/h.m² @ 50Pa
- High-efficiency MVHR to the accommodation units.
- SFPs of 0.8/l/s for supply & extract systems
- High lighting efficacy and controls
- DHW via ASHP across each block
- PV arrays totalling circa 1094 m² total panel area across all of the blocks.

The project also targets BREEAM certification under BREEAM UK New Construction 2018 to address the wider sustainability issues.

The project achieves 6 credits under Ene 01, exceeding the minimum requirement for Excellent.

Appendices

Appendix A Part L (2021) BRUKL Reports

- A.1 Block 1
- A.2 Block 2
- A.3 Block 3
- A.4 Block 4
- A.5 Block 5+

Appendix B Part L (2021) Voluntary 'As designed' EPC Reports

- B.1 Block 1
- B.2 Block 2
- B.3 Block 3
- B.4 Block 4
- B.5 Block 5+

Appendix A Part L (2021) BRUKL Reports

A.1 Block 1

Project name

60042_VP_BLOCK_1_NEW_BUILD_PART
L 2021 Rev1

As designed

Date: Thu Feb 15 10:21:51 2024

Administrative information

Building Details

Address: 0814 Victoria Point, 44 Hathersage Road,
Manchester, M13 0FT

Certifier details

Name: Atelier Ten

Telephone number: 0141 333 0499

Address: 226 West George Street, Glasgow, G2 2PQ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.24

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.24

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

Foundation area [m²]: 1The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	3.02
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	0.24
Target primary energy rate (TPER), kWh _{PE} /m ² annum	32.75
Building primary energy rate (BPER), kWh _{PE} /m ² annum	1.89
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

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

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.13	0.13	B10001E5:Surf[1]
Floors	0.18	0.12	0.12	B10001E5:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	B10000CE:Surf[0]
Windows** and roof windows	1.6	1.2	1.2	B100020C:Surf[1]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	-	-	No personnel doors in building
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

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

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

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

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

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

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

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

"No HVAC systems in project"

"No HWS in project, or hot water is provided by HVAC system"

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

General lighting and display lighting		Display light source	
Zone name	General luminaire Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
Standard value	95	80	0.3
B1 L00 CUPBOARD	120	-	-
B1 L00 STAIR 12	120	-	-
B1 L01 CUPBOARD	120	-	-
B1 L01 STAIR 12	120	-	-
B1 L02 CUPBOARD	120	-	-
B1 L02 STAIR 12	120	-	-
B1 L03 CUPBOARD	120	-	-
B1 L03 STAIR 12	120	-	-

The spaces in the building should have appropriate passive control measures to limit the effects of solar gains in summer

There are no zones in the building where the solar gain check is applicable.

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	78.7	78.7
External area [m ²]	178.4	178.4
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	31.66	81.17
Average U-value [W/m ² K]	0.18	0.45
Alpha value* [%]	25	10

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

Building Use

% Area Building Type

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	0	0
Cooling	0	0
Auxiliary	0	9.53
Lighting	5.08	4.58
Hot water	4.47	8.45
Equipment*	7.01	7.01
TOTAL **	9.55	22.56

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	8.35	0.4
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>8.35</i>	<i>0.4</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	0	0
Primary energy [kWh _{PE} /m ²]	1.89	32.75
Total emissions [kg/m ²]	0.24	3.02

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] No Heating or Cooling										
	Actual	0	0	0	0	0	0	0	0	0
	Notional	0	0	0	0	0	0	----	----	----

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

A.2 Block 2

BRUKL Output Document



Compliance with England Building Regulations Part L 2021

Project name

**60042_VP_BLOCK_2_NEW_BUILD_PART
L 2021 Rev0**

As designed

Date: Wed Feb 14 19:02:15 2024

Administrative information

Building Details

Address: 0814 Victoria Point, 44 Hathersage Road,
Manchester, M13 0FT

Certifier details

Name: Atelier Ten

Telephone number: 0141 333 0499

Address: 226 West George Street, Glasgow, G2 2PQ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.24

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.24

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

Foundation area [m²]: 254.16

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

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.42
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	2.4
Target primary energy rate (TPER), kWh _{PE} /m ² annum	25.08
Building primary energy rate (BPER), kWh _{PE} /m ² annum	24.56
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

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

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.13	0.13	B2000221:Surf[1]
Floors	0.18	0.18	0.25	B2000280:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	B2000230:Surf[1]
Windows** and roof windows	1.6	1.2	1.2	B2000338:Surf[2]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	-	-	No personnel doors in building
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

U_{a-Limit} = Limiting area-weighted average U-values [W/(m²K)]

U_{i-Calc} = Calculated maximum individual element U-values [W/(m²K)]

U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]

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

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

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

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

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

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- ELEC PANEL + MVHR (CLUSTER)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	0.9
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- ELEC PANEL + MVHR (STUDIO)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	0.79
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

3- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.6	5	0	1.6	0.82
Standard value	2.5*	N/A	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

1- ASHP DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3.5	-
Standard value	2*	N/A

* Standard shown is for all types except absorption and gas engine heat pumps.

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
B2 L01 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-		-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B2 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L00 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L00 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L00 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L00 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L00_LIVING/KITCHEN (Kitchenette)_(2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L01_LIVING/KITCHEN (Kitchenette)_(2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B2 L01 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L01 KITCHEN ??????? (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02_LIVING/KITCHEN (Kitchenette)_ (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L02 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B2 L02 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L02 KITCHEN ??????? (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 LIVING/KITCHEN ??????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03_LIVING/KITCHEN (Kitchenette)_ (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L03 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L03_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B2 L04 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L04 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L04_LIVING/KITCHEN (Kitchenette)_ (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B2 L04_STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L04_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05_STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05_STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B2 L05_STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
B2 L05 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A	
B2 L05_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B2 L01 BED (2Bb1)		120	-	-
B2 L01 CIRC 18		120	-	-
B2 L01 CORRIDOR b		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 ENSUITE (2B)		120	-	-
B2 L01 ENSUITE (2B)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L00 BED (2Ba2)		120	-	-
B2 L00 BED (2Ba1)		120	-	-
B2 L00 CUPBOARD (2B)		120	-	-
B2 L00 CUPBOARD (2B)		120	-	-
B2 L00 CUPBOARD (STUDIO)		120	-	-
B2 L00 CUPBOARD (STUDIO)		120	-	-
B2 L00 CUPBOARD (STUDIO)		120	-	-
B2 L00 CUPBOARD (STUDIO)		120	-	-
B2 L00 ENSUITE (2B)		120	-	-
B2 L00 ENSUITE (2B)		120	-	-
B2 L00 ENSUITE (STUDIO)		120	-	-
B2 L00 ENSUITE (STUDIO)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B2 L00 ENSUITE (STUDIO)		120	-	-
B2 L00 ENSUITE (STUDIO)		120	-	-
B2 L00 STAIR 22		120	-	-
B2 L00 CORRIDOR b		120	-	-
B2 L00 REFUSE STORE		120	-	-
B2 L00 MEETING ROOM		120	-	-
B2 L00 CORRIDOR 23		120	-	-
B2 L00 CIRC 24		120	-	-
B2 L04 CIRC 29		120	-	-
B2 L00_STUDIO (Kitchenette)_i		120	-	-
B2 L00 STUDIO i		120	-	-
B2 L00_STUDIO (Kitchenette)_h		120	-	-
B2 L00 STUDIO h		120	-	-
B2 L00_STUDIO (Kitchenette)_g		120	-	-
B2 L00 STUDIO g		120	-	-
B2 L00 STUDIO f		120	-	-
B2 L00_STUDIO (Kitchenette)_f		120	-	-
B2 L00 LIVING/KITCHEN ?????? (2Ba)		120	-	-
B2 L00_LIVING/KITCHEN (Kitchenette)_(2Ba)		120	-	-
B2 L01 BED (2Ba2)		120	-	-
B2 L01 BED (2Ba1)		120	-	-
B2 L01 CUPBOARD (2B)		120	-	-
B2 L01 CUPBOARD (2B)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 CUPBOARD (STUDIO)		120	-	-
B2 L01 ENSUITE (2B)		120	-	-
B2 L01 ENSUITE (2B)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 ENSUITE (STUDIO)		120	-	-
B2 L01 STAIR 22		120	-	-
B2 L01 CORRIDOR b		120	-	-
B2 L01_STUDIO (Kitchenette)_i		120	-	-
B2 L01 STUDIO i		120	-	-
B2 L01_STUDIO (Kitchenette)_h		120	-	-
B2 L01 STUDIO h		120	-	-
B2 L01_STUDIO (Kitchenette)_g		120	-	-
B2 L01 STUDIO g		120	-	-
B2 L01 STUDIO f		120	-	-
B2 L01_STUDIO (Kitchenette)_f		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95		80	0.3
B2 L01 LIVING/KITCHEN ?????? (2Ba)		120		-	-
B2 L01_LIVING/KITCHEN (Kitchenette)_ (2Ba)		120		-	-
B2 L01 STUDIO e		120		-	-
B2 L01_STUDIO (Kitchenette)_e		120		-	-
B2 L01_STUDIO (Kitchenette)_d		120		-	-
B2 L01 STUDIO d		120		-	-
B2 L01_STUDIO (Kitchenette)_a		120		-	-
B2 L01 STUDIO a		120		-	-
B2 L01 STUDIO b		120		-	-
B2 L01_STUDIO (Kitchenette)_b		120		-	-
B2 L01 STUDIO c		120		-	-
B2 L01_STUDIO (Kitchenette)_c		120		-	-
B2 L01 KITCHEN ??????? (2Bb)		120		-	-
B2 L02 BED (2Bb1)		120		-	-
B2 L02 CIRC 18		120		-	-
B2 L02 CORRIDOR b		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 ENSUITE (2B)		120		-	-
B2 L02 ENSUITE (2B)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 BED (2Ba2)		120		-	-
B2 L02 BED (2Ba1)		120		-	-
B2 L02 CUPBOARD (2B)		120		-	-
B2 L02 CUPBOARD (2B)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 CUPBOARD (STUDIO)		120		-	-
B2 L02 ENSUITE (2B)		120		-	-
B2 L02 ENSUITE (2B)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 ENSUITE (STUDIO)		120		-	-
B2 L02 STAIR 22		120		-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B2 L02 CORRIDOR b		120	-	-
B2 L02_STUDIO (Kitchenette)_i		120	-	-
B2 L02 STUDIO i		120	-	-
B2 L02_STUDIO (Kitchenette)_h		120	-	-
B2 L02 STUDIO h		120	-	-
B2 L02_STUDIO (Kitchenette)_g		120	-	-
B2 L02 STUDIO g		120	-	-
B2 L02 STUDIO f		120	-	-
B2 L02_STUDIO (Kitchenette)_f		120	-	-
B2 L02 LIVING/KITCHEN ?????? (2Ba)		120	-	-
B2 L02_LIVING/KITCHEN (Kitchenette)_(2Ba)		120	-	-
B2 L02 STUDIO e		120	-	-
B2 L02_STUDIO (Kitchenette)_e		120	-	-
B2 L02_STUDIO (Kitchenette)_d		120	-	-
B2 L02 STUDIO d		120	-	-
B2 L02_STUDIO (Kitchenette)_a		120	-	-
B2 L02 STUDIO a		120	-	-
B2 L02 STUDIO b		120	-	-
B2 L02_STUDIO (Kitchenette)_b		120	-	-
B2 L02 STUDIO c		120	-	-
B2 L02_STUDIO (Kitchenette)_c		120	-	-
B2 L02 KITCHEN ??????? (2Bb)		120	-	-
B2 L03 CIRC 18		120	-	-
B2 L03 CORRIDOR b		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 BED (2Ba2)		120	-	-
B2 L03 BED (2Ba1)		120	-	-
B2 L03 CUPBOARD (2B)		120	-	-
B2 L03 CUPBOARD (2B)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 CUPBOARD (STUDIO)		120	-	-
B2 L03 ENSUITE (2B)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B2 L03 ENSUITE (2B)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 ENSUITE (STUDIO)		120	-	-
B2 L03 STAIR 22		120	-	-
B2 L03 CORRIDOR b		120	-	-
B2 L03_STUDIO (Kitchenette)_i		120	-	-
B2 L03 STUDIO i		120	-	-
B2 L03_STUDIO (Kitchenette)_h		120	-	-
B2 L03 STUDIO h		120	-	-
B2 L03_STUDIO (Kitchenette)_g		120	-	-
B2 L03 STUDIO g		120	-	-
B2 L03 STUDIO f		120	-	-
B2 L03_STUDIO (Kitchenette)_f		120	-	-
B2 L03 LIVING/KITCHEN ?????? (2Ba)		120	-	-
B2 L03_LIVING/KITCHEN (Kitchenette)_(2Ba)		120	-	-
B2 L03 STUDIO e		120	-	-
B2 L03_STUDIO (Kitchenette)_e		120	-	-
B2 L03_STUDIO (Kitchenette)_d		120	-	-
B2 L03 STUDIO d		120	-	-
B2 L03_STUDIO (Kitchenette)_a		120	-	-
B2 L03 STUDIO a		120	-	-
B2 L03 STUDIO b		120	-	-
B2 L03_STUDIO (Kitchenette)_b		120	-	-
B2 L03 STUDIO c		120	-	-
B2 L03_STUDIO (Kitchenette)_c		120	-	-
B2 L04 CORRIDOR b		120	-	-
B2 L04 CUPBOARD (STUDIO)		120	-	-
B2 L04 CUPBOARD (STUDIO)		120	-	-
B2 L04 CUPBOARD (STUDIO)		120	-	-
B2 L04 CUPBOARD (STUDIO)		120	-	-
B2 L04 CUPBOARD (STUDIO)		120	-	-
B2 L04 ENSUITE (STUDIO)		120	-	-
B2 L04 ENSUITE (STUDIO)		120	-	-
B2 L04 ENSUITE (STUDIO)		120	-	-
B2 L04 ENSUITE (STUDIO)		120	-	-
B2 L04 ENSUITE (STUDIO)		120	-	-
B2 L04 BED (2Ba2)		120	-	-
B2 L04 BED (2Ba1)		120	-	-
B2 L04 CUPBOARD (2B)		120	-	-
B2 L04 CUPBOARD (2B)		120	-	-
B2 L04 CUPBOARD (STUDIO)		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m²]
	Standard value	95		80	0.3
B2 L04 CUPBOARD (STUDIO)		120		-	-
B2 L04 CUPBOARD (STUDIO)		120		-	-
B2 L04 CUPBOARD (STUDIO)		120		-	-
B2 L04 ENSUITE (2B)		120		-	-
B2 L04 ENSUITE (2B)		120		-	-
B2 L04 ENSUITE (STUDIO)		120		-	-
B2 L04 ENSUITE (STUDIO)		120		-	-
B2 L04 ENSUITE (STUDIO)		120		-	-
B2 L04 ENSUITE (STUDIO)		120		-	-
B2 L04 STAIR 22		120		-	-
B2 L04 CORRIDOR b		120		-	-
B2 L04_STUDIO (Kitchenette)_i		120		-	-
B2 L04 STUDIO i		120		-	-
B2 L04_STUDIO (Kitchenette)_h		120		-	-
B2 L04 STUDIO h		120		-	-
B2 L04_STUDIO (Kitchenette)_g		120		-	-
B2 L04 STUDIO g		120		-	-
B2 L04 STUDIO f		120		-	-
B2 L04_STUDIO (Kitchenette)_f		120		-	-
B2 L04 LIVING/KITCHEN ?????? (2Ba)		120		-	-
B2 L04_LIVING/KITCHEN (Kitchenette)_(2Ba)		120		-	-
B2 L04 STUDIO e		120		-	-
B2 L04_STUDIO (Kitchenette)_e		120		-	-
B2 L04_STUDIO (Kitchenette)_d		120		-	-
B2 L04 STUDIO d		120		-	-
B2 L04_STUDIO (Kitchenette)_a		120		-	-
B2 L04 STUDIO a		120		-	-
B2 L04 STUDIO b		120		-	-
B2 L04_STUDIO (Kitchenette)_b		120		-	-
B2 L04 STUDIO c		120		-	-
B2 L04_STUDIO (Kitchenette)_c		120		-	-
B2 L01 CORRIDOR a		120		-	-
B2 L02 CORRIDOR a		120		-	-
B2 L05 CIRC 29		120		-	-
B2 L05 CORRIDOR b		120		-	-
B2 L05 CUPBOARD (STUDIO)		120		-	-
B2 L05 CUPBOARD (STUDIO)		120		-	-
B2 L05 CUPBOARD (STUDIO)		120		-	-
B2 L05 CUPBOARD (STUDIO)		120		-	-
B2 L05 CUPBOARD (STUDIO)		120		-	-
B2 L05 ENSUITE (STUDIO)		120		-	-
B2 L05 ENSUITE (STUDIO)		120		-	-
B2 L05 ENSUITE (STUDIO)		120		-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B2 L05 ENSUITE (STUDIO)		120	-	-
B2 L05 ENSUITE (STUDIO)		120	-	-
B2 L05 CUPBOARD (STUDIO)		120	-	-
B2 L05 CUPBOARD (STUDIO)		120	-	-
B2 L05 CUPBOARD (STUDIO)		120	-	-
B2 L05 CUPBOARD (STUDIO)		120	-	-
B2 L05 ENSUITE (STUDIO)		120	-	-
B2 L05 ENSUITE (STUDIO)		120	-	-
B2 L05 ENSUITE (STUDIO)		120	-	-
B2 L05 ENSUITE (STUDIO)		120	-	-
B2 L05 STAIR 22		120	-	-
B2 L05 CORRIDOR b		120	-	-
B2 L05_STUDIO (Kitchenette)_i		120	-	-
B2 L05 STUDIO i		120	-	-
B2 L05_STUDIO (Kitchenette)_h		120	-	-
B2 L05 STUDIO h		120	-	-
B2 L05_STUDIO (Kitchenette)_g		120	-	-
B2 L05 STUDIO g		120	-	-
B2 L05 STUDIO f		120	-	-
B2 L05_STUDIO (Kitchenette)_f		120	-	-
B2 L05 STUDIO e		120	-	-
B2 L05_STUDIO (Kitchenette)_e		120	-	-
B2 L05_STUDIO (Kitchenette)_d		120	-	-
B2 L05 STUDIO d		120	-	-
B2 L05_STUDIO (Kitchenette)_a		120	-	-
B2 L05 STUDIO a		120	-	-
B2 L05 STUDIO b		120	-	-
B2 L05_STUDIO (Kitchenette)_b		120	-	-
B2 L05 STUDIO c		120	-	-
B2 L05_STUDIO (Kitchenette)_c		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B2 L01 BED (2Bb1)	NO (-61.3%)	NO
B2 L01 ENSUITE (2B)	N/A	N/A
B2 L01 ENSUITE (2B)	N/A	N/A
B2 L00 BED (2Ba2)	NO (-77%)	NO
B2 L00 BED (2Ba1)	NO (-60.1%)	NO
B2 L00 ENSUITE (2B)	N/A	N/A
B2 L00 ENSUITE (2B)	N/A	N/A
B2 L00 MEETING ROOM	NO (-40.5%)	NO
B2 L00 STUDIO i	NO (-63.2%)	NO
B2 L00 STUDIO h	NO (-62.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B2 L00 STUDIO g	NO (-62.9%)	NO
B2 L00 STUDIO f	NO (-82.1%)	NO
B2 L01 BED (2Ba2)	NO (-76%)	NO
B2 L01 BED (2Ba1)	NO (-58.2%)	NO
B2 L01 ENSUITE (2B)	N/A	N/A
B2 L01 ENSUITE (2B)	N/A	N/A
B2 L01 STUDIO i	NO (-60.7%)	NO
B2 L01 STUDIO h	NO (-60.4%)	NO
B2 L01 STUDIO g	NO (-60.6%)	NO
B2 L01 STUDIO f	NO (-61.1%)	NO
B2 L01 STUDIO e	NO (-61.2%)	NO
B2 L01 STUDIO d	NO (-80.9%)	NO
B2 L01 STUDIO a	NO (-87.6%)	NO
B2 L01 STUDIO b	NO (-75.2%)	NO
B2 L01 STUDIO c	NO (-76.9%)	NO
B2 L01 KITCHEN ??????? (2Bb)	N/A	N/A
B2 L02 BED (2Bb1)	NO (-60.1%)	NO
B2 L02 ENSUITE (2B)	N/A	N/A
B2 L02 ENSUITE (2B)	N/A	N/A
B2 L02 BED (2Ba2)	NO (-74.5%)	NO
B2 L02 BED (2Ba1)	NO (-56.2%)	NO
B2 L02 ENSUITE (2B)	N/A	N/A
B2 L02 ENSUITE (2B)	N/A	N/A
B2 L02 STUDIO i	NO (-58.8%)	NO
B2 L02 STUDIO h	NO (-58.8%)	NO
B2 L02 STUDIO g	NO (-59.4%)	NO
B2 L02 STUDIO f	NO (-59.8%)	NO
B2 L02 STUDIO e	NO (-59.7%)	NO
B2 L02 STUDIO d	NO (-80.6%)	NO
B2 L02 STUDIO a	NO (-86.6%)	NO
B2 L02 STUDIO b	NO (-72.5%)	NO
B2 L02 STUDIO c	NO (-73.8%)	NO
B2 L02 KITCHEN ??????? (2Bb)	N/A	N/A
B2 L03 BED (2Ba2)	NO (-74.2%)	NO
B2 L03 BED (2Ba1)	NO (-55.6%)	NO
B2 L03 ENSUITE (2B)	N/A	N/A
B2 L03 ENSUITE (2B)	N/A	N/A
B2 L03 STUDIO i	NO (-58.7%)	NO
B2 L03 STUDIO h	NO (-58.7%)	NO
B2 L03 STUDIO g	NO (-59%)	NO
B2 L03 STUDIO f	NO (-59%)	NO
B2 L03 STUDIO e	NO (-59%)	NO
B2 L03 STUDIO d	NO (-79.9%)	NO
B2 L03 STUDIO a	NO (-86.2%)	NO
B2 L03 STUDIO b	NO (-71.9%)	NO
B2 L03 STUDIO c	NO (-71.6%)	NO
B2 L04 BED (2Ba2)	NO (-74.2%)	NO
B2 L04 BED (2Ba1)	NO (-55.6%)	NO
B2 L04 ENSUITE (2B)	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B2 L04 ENSUITE (2B)	N/A	N/A
B2 L04 STUDIO i	NO (-58.7%)	NO
B2 L04 STUDIO h	NO (-58.7%)	NO
B2 L04 STUDIO g	NO (-59%)	NO
B2 L04 STUDIO f	NO (-59%)	NO
B2 L04 STUDIO e	NO (-59%)	NO
B2 L04 STUDIO d	NO (-79.9%)	NO
B2 L04 STUDIO a	NO (-86.1%)	NO
B2 L04 STUDIO b	NO (-71.7%)	NO
B2 L04 STUDIO c	NO (-71.5%)	NO
B2 L05 STUDIO i	NO (-81.7%)	NO
B2 L05 STUDIO h	NO (-58.7%)	NO
B2 L05 STUDIO g	NO (-59%)	NO
B2 L05 STUDIO f	NO (-59%)	NO
B2 L05 STUDIO e	NO (-59%)	NO
B2 L05 STUDIO d	NO (-79.9%)	NO
B2 L05 STUDIO a	NO (-86.1%)	NO
B2 L05 STUDIO b	NO (-71.7%)	NO
B2 L05 STUDIO c	NO (-71.5%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	2216.3	2216.3
External area [m ²]	2753.2	2915.8
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	641.42	1103.67
Average U-value [W/m ² K]	0.23	0.38
Alpha value* [%]	25.1	10

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

Building Use

% Area Building Type

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	9.71	8.44
Cooling	0.02	0.03
Auxiliary	3.29	1.7
Lighting	5.69	6.16
Hot water	2.92	3.88
Equipment*	16.81	16.81
TOTAL **	21.63	20.22

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	5.42	3.61
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>5.42</i>	<i>3.61</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	35.42	43.5
Primary energy [kWh _{PE} /m ²]	24.56	25.08
Total emissions [kg/m ²]	2.4	2.42

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	30.7	0	8.5	0	6.2	1	0	1	0	
Notional	49.3	0	9.7	0	1.8	1.41	0	----	----	
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	23.5	18.6	1.8	1.5	3.8	3.72	3.47	3.6	5	
Notional	17.4	39.9	1.7	2.4	5.2	2.78	4.63	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	58.8	0	16.3	0	4.3	1	0	1	0	
Notional	68.1	0	13.4	0	1.8	1.41	0	----	----	
[ST] No Heating or Cooling										
Actual	0	0	0	0	0	0	0	0	0	
Notional	0	0	0	0	0	0	0	----	----	

Key to terms

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

A.3 Block 3

Project name

**60042_VP_BLOCK_3_NEW_BUILD_PART
L 2021 Rev0**

As designed

Date: Wed Feb 14 19:30:25 2024

Administrative information

Building Details

Address: 0814 Victoria Point, 44 Hathersage Road,
Manchester, M13 0FT

Certifier details

Name: Atelier Ten

Telephone number: 0141 333 0499

Address: 226 West George Street, Glasgow, G2 2PQ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.24

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.24

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

Foundation area [m²]: 254.16The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.52
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	2.48
Target primary energy rate (TPER), kWh _{PE} /m ² annum	26.06
Building primary energy rate (BPER), kWh _{PE} /m ² annum	25.4
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

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

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.13	0.13	B2000175:Surf[1]
Floors	0.18	0.18	0.25	B200018C:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	B200017B:Surf[1]
Windows** and roof windows	1.6	1.2	1.2	B20001DF:Surf[2]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	-	-	No personnel doors in building
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

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

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

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

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

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

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

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- ELEC PANEL + MVHR (CLUSTER)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	0.9
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- ELEC PANEL + MVHR (STUDIO)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.2	-	0.79
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

3- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.6	5	0	1.6	0.82
Standard value	2.5*	N/A	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.

^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

1- ASHP DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3.5	-
Standard value	2*	N/A

* Standard shown is for all types except absorption and gas engine heat pumps.

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter

NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1			
B3 L01 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-		-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B3 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L00 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L00 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L00 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L00 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L00_LIVING/KITCHEN (Kitchenette)_(2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L01_LIVING/KITCHEN (Kitchenette)_(2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B3 L01 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L01 KITCHEN ??????? (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02_LIVING/KITCHEN (Kitchenette)_ (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L02 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B3 L02 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L02 KITCHEN ??????? (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03_LIVING/KITCHEN (Kitchenette)_ (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L03 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L03_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B3 L04 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L04 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04 LIVING/KITCHEN ?????? (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L04_LIVING/KITCHEN (Kitchenette)_ (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B3 L04_STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L04_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05_STUDIO (Kitchenette)_i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05_STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05_STUDIO (Kitchenette)_h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05_STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05_STUDIO (Kitchenette)_g	-	-	-	0.8	-	-	-	-	-	-	N/A
B3 L05_STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
B3 L05 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05_STUDIO (Kitchenette)_f	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05_STUDIO (Kitchenette)_e	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05_STUDIO (Kitchenette)_d	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05_STUDIO (Kitchenette)_a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05_STUDIO (Kitchenette)_b	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A	
B3 L05_STUDIO (Kitchenette)_c	-	-	-	0.8	-	-	-	-	-	-	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B3 L01 BED (2Bb1)		120	-	-
B3 L01 CIRC 18		120	-	-
B3 L01 CORRIDOR b		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 ENSUITE (2B)		120	-	-
B3 L01 ENSUITE (2B)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L00 BED (2Ba2)		120	-	-
B3 L00 BED (2Ba1)		120	-	-
B3 L00 CUPBOARD (2B)		120	-	-
B3 L00 CUPBOARD (2B)		120	-	-
B3 L00 CUPBOARD (STUDIO)		120	-	-
B3 L00 CUPBOARD (STUDIO)		120	-	-
B3 L00 CUPBOARD (STUDIO)		120	-	-
B3 L00 CUPBOARD (STUDIO)		120	-	-
B3 L00 ENSUITE (2B)		120	-	-
B3 L00 ENSUITE (2B)		120	-	-
B3 L00 ENSUITE (STUDIO)		120	-	-
B3 L00 ENSUITE (STUDIO)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B3 L00 ENSUITE (STUDIO)		120	-	-
B3 L00 ENSUITE (STUDIO)		120	-	-
B3 L00 STAIR 22		120	-	-
B3 L00 CORRIDOR b		120	-	-
B3 L00 REFUSE STORE		120	-	-
B3 L00 MEETING ROOM		120	-	-
B3 L00 CORRIDOR 23		120	-	-
B3 L00 CIRC 24		120	-	-
B3 L04 CIRC 29		120	-	-
B3 L00_STUDIO (Kitchenette)_i		120	-	-
B3 L00 STUDIO i		120	-	-
B3 L00_STUDIO (Kitchenette)_h		120	-	-
B3 L00 STUDIO h		120	-	-
B3 L00_STUDIO (Kitchenette)_g		120	-	-
B3 L00 STUDIO g		120	-	-
B3 L00 STUDIO f		120	-	-
B3 L00_STUDIO (Kitchenette)_f		120	-	-
B3 L00 LIVING/KITCHEN ?????? (2Ba)		120	-	-
B3 L00_LIVING/KITCHEN (Kitchenette)_(2Ba)		120	-	-
B3 L01 BED (2Ba2)		120	-	-
B3 L01 BED (2Ba1)		120	-	-
B3 L01 CUPBOARD (2B)		120	-	-
B3 L01 CUPBOARD (2B)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 CUPBOARD (STUDIO)		120	-	-
B3 L01 ENSUITE (2B)		120	-	-
B3 L01 ENSUITE (2B)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 ENSUITE (STUDIO)		120	-	-
B3 L01 STAIR 22		120	-	-
B3 L01 CORRIDOR b		120	-	-
B3 L01_STUDIO (Kitchenette)_i		120	-	-
B3 L01 STUDIO i		120	-	-
B3 L01_STUDIO (Kitchenette)_h		120	-	-
B3 L01 STUDIO h		120	-	-
B3 L01_STUDIO (Kitchenette)_g		120	-	-
B3 L01 STUDIO g		120	-	-
B3 L01 STUDIO f		120	-	-
B3 L01_STUDIO (Kitchenette)_f		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m²]
	Standard value	95		80	0.3
B3 L01 LIVING/KITCHEN ?????? (2Ba)		120		-	-
B3 L01_LIVING/KITCHEN (Kitchenette)_ (2Ba)		120		-	-
B3 L01 STUDIO e		120		-	-
B3 L01_STUDIO (Kitchenette)_e		120		-	-
B3 L01_STUDIO (Kitchenette)_d		120		-	-
B3 L01 STUDIO d		120		-	-
B3 L01_STUDIO (Kitchenette)_a		120		-	-
B3 L01 STUDIO a		120		-	-
B3 L01 STUDIO b		120		-	-
B3 L01_STUDIO (Kitchenette)_b		120		-	-
B3 L01 STUDIO c		120		-	-
B3 L01_STUDIO (Kitchenette)_c		120		-	-
B3 L01 KITCHEN ?????? (2Bb)		120		-	-
B3 L02 BED (2Bb1)		120		-	-
B3 L02 CIRC 18		120		-	-
B3 L02 CORRIDOR b		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 ENSUITE (2B)		120		-	-
B3 L02 ENSUITE (2B)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 BED (2Ba2)		120		-	-
B3 L02 BED (2Ba1)		120		-	-
B3 L02 CUPBOARD (2B)		120		-	-
B3 L02 CUPBOARD (2B)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 CUPBOARD (STUDIO)		120		-	-
B3 L02 ENSUITE (2B)		120		-	-
B3 L02 ENSUITE (2B)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 ENSUITE (STUDIO)		120		-	-
B3 L02 STAIR 22		120		-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B3 L02 CORRIDOR b		120	-	-
B3 L02_STUDIO (Kitchenette)_i		120	-	-
B3 L02 STUDIO i		120	-	-
B3 L02_STUDIO (Kitchenette)_h		120	-	-
B3 L02 STUDIO h		120	-	-
B3 L02_STUDIO (Kitchenette)_g		120	-	-
B3 L02 STUDIO g		120	-	-
B3 L02 STUDIO f		120	-	-
B3 L02_STUDIO (Kitchenette)_f		120	-	-
B3 L02 LIVING/KITCHEN ?????? (2Ba)		120	-	-
B3 L02_LIVING/KITCHEN (Kitchenette)_(2Ba)		120	-	-
B3 L02 STUDIO e		120	-	-
B3 L02_STUDIO (Kitchenette)_e		120	-	-
B3 L02_STUDIO (Kitchenette)_d		120	-	-
B3 L02 STUDIO d		120	-	-
B3 L02_STUDIO (Kitchenette)_a		120	-	-
B3 L02 STUDIO a		120	-	-
B3 L02 STUDIO b		120	-	-
B3 L02_STUDIO (Kitchenette)_b		120	-	-
B3 L02 STUDIO c		120	-	-
B3 L02_STUDIO (Kitchenette)_c		120	-	-
B3 L02 KITCHEN ??????? (2Bb)		120	-	-
B3 L03 CIRC 18		120	-	-
B3 L03 CORRIDOR b		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 BED (2Ba2)		120	-	-
B3 L03 BED (2Ba1)		120	-	-
B3 L03 CUPBOARD (2B)		120	-	-
B3 L03 CUPBOARD (2B)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 CUPBOARD (STUDIO)		120	-	-
B3 L03 ENSUITE (2B)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B3 L03 ENSUITE (2B)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 ENSUITE (STUDIO)		120	-	-
B3 L03 STAIR 22		120	-	-
B3 L03 CORRIDOR b		120	-	-
B3 L03_STUDIO (Kitchenette)_i		120	-	-
B3 L03 STUDIO i		120	-	-
B3 L03_STUDIO (Kitchenette)_h		120	-	-
B3 L03 STUDIO h		120	-	-
B3 L03_STUDIO (Kitchenette)_g		120	-	-
B3 L03 STUDIO g		120	-	-
B3 L03 STUDIO f		120	-	-
B3 L03_STUDIO (Kitchenette)_f		120	-	-
B3 L03 LIVING/KITCHEN ?????? (2Ba)		120	-	-
B3 L03_LIVING/KITCHEN (Kitchenette)_(2Ba)		120	-	-
B3 L03 STUDIO e		120	-	-
B3 L03_STUDIO (Kitchenette)_e		120	-	-
B3 L03_STUDIO (Kitchenette)_d		120	-	-
B3 L03 STUDIO d		120	-	-
B3 L03_STUDIO (Kitchenette)_a		120	-	-
B3 L03 STUDIO a		120	-	-
B3 L03 STUDIO b		120	-	-
B3 L03_STUDIO (Kitchenette)_b		120	-	-
B3 L03 STUDIO c		120	-	-
B3 L03_STUDIO (Kitchenette)_c		120	-	-
B3 L04 CORRIDOR b		120	-	-
B3 L04 CUPBOARD (STUDIO)		120	-	-
B3 L04 CUPBOARD (STUDIO)		120	-	-
B3 L04 CUPBOARD (STUDIO)		120	-	-
B3 L04 CUPBOARD (STUDIO)		120	-	-
B3 L04 CUPBOARD (STUDIO)		120	-	-
B3 L04 ENSUITE (STUDIO)		120	-	-
B3 L04 ENSUITE (STUDIO)		120	-	-
B3 L04 ENSUITE (STUDIO)		120	-	-
B3 L04 ENSUITE (STUDIO)		120	-	-
B3 L04 ENSUITE (STUDIO)		120	-	-
B3 L04 BED (2Ba2)		120	-	-
B3 L04 BED (2Ba1)		120	-	-
B3 L04 CUPBOARD (2B)		120	-	-
B3 L04 CUPBOARD (2B)		120	-	-
B3 L04 CUPBOARD (STUDIO)		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m²]
	Standard value	95		80	0.3
B3 L04 CUPBOARD (STUDIO)		120		-	-
B3 L04 CUPBOARD (STUDIO)		120		-	-
B3 L04 CUPBOARD (STUDIO)		120		-	-
B3 L04 ENSUITE (2B)		120		-	-
B3 L04 ENSUITE (2B)		120		-	-
B3 L04 ENSUITE (STUDIO)		120		-	-
B3 L04 ENSUITE (STUDIO)		120		-	-
B3 L04 ENSUITE (STUDIO)		120		-	-
B3 L04 ENSUITE (STUDIO)		120		-	-
B3 L04 STAIR 22		120		-	-
B3 L04 CORRIDOR b		120		-	-
B3 L04_STUDIO (Kitchenette)_i		120		-	-
B3 L04 STUDIO i		120		-	-
B3 L04_STUDIO (Kitchenette)_h		120		-	-
B3 L04 STUDIO h		120		-	-
B3 L04_STUDIO (Kitchenette)_g		120		-	-
B3 L04 STUDIO g		120		-	-
B3 L04 STUDIO f		120		-	-
B3 L04_STUDIO (Kitchenette)_f		120		-	-
B3 L04 LIVING/KITCHEN ?????? (2Ba)		120		-	-
B3 L04_LIVING/KITCHEN (Kitchenette)_(2Ba)		120		-	-
B3 L04 STUDIO e		120		-	-
B3 L04_STUDIO (Kitchenette)_e		120		-	-
B3 L04_STUDIO (Kitchenette)_d		120		-	-
B3 L04 STUDIO d		120		-	-
B3 L04_STUDIO (Kitchenette)_a		120		-	-
B3 L04 STUDIO a		120		-	-
B3 L04 STUDIO b		120		-	-
B3 L04_STUDIO (Kitchenette)_b		120		-	-
B3 L04 STUDIO c		120		-	-
B3 L04_STUDIO (Kitchenette)_c		120		-	-
B3 L01 CORRIDOR a		120		-	-
B3 L02 CORRIDOR a		120		-	-
B3 L05 CIRC 29		120		-	-
B3 L05 CORRIDOR b		120		-	-
B3 L05 CUPBOARD (STUDIO)		120		-	-
B3 L05 CUPBOARD (STUDIO)		120		-	-
B3 L05 CUPBOARD (STUDIO)		120		-	-
B3 L05 CUPBOARD (STUDIO)		120		-	-
B3 L05 CUPBOARD (STUDIO)		120		-	-
B3 L05 ENSUITE (STUDIO)		120		-	-
B3 L05 ENSUITE (STUDIO)		120		-	-
B3 L05 ENSUITE (STUDIO)		120		-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B3 L05 ENSUITE (STUDIO)		120	-	-
B3 L05 ENSUITE (STUDIO)		120	-	-
B3 L05 CUPBOARD (STUDIO)		120	-	-
B3 L05 CUPBOARD (STUDIO)		120	-	-
B3 L05 CUPBOARD (STUDIO)		120	-	-
B3 L05 CUPBOARD (STUDIO)		120	-	-
B3 L05 ENSUITE (STUDIO)		120	-	-
B3 L05 ENSUITE (STUDIO)		120	-	-
B3 L05 ENSUITE (STUDIO)		120	-	-
B3 L05 ENSUITE (STUDIO)		120	-	-
B3 L05 STAIR 22		120	-	-
B3 L05 CORRIDOR b		120	-	-
B3 L05_STUDIO (Kitchenette)_i		120	-	-
B3 L05 STUDIO i		120	-	-
B3 L05_STUDIO (Kitchenette)_h		120	-	-
B3 L05 STUDIO h		120	-	-
B3 L05_STUDIO (Kitchenette)_g		120	-	-
B3 L05 STUDIO g		120	-	-
B3 L05 STUDIO f		120	-	-
B3 L05_STUDIO (Kitchenette)_f		120	-	-
B3 L05 STUDIO e		120	-	-
B3 L05_STUDIO (Kitchenette)_e		120	-	-
B3 L05_STUDIO (Kitchenette)_d		120	-	-
B3 L05 STUDIO d		120	-	-
B3 L05_STUDIO (Kitchenette)_a		120	-	-
B3 L05 STUDIO a		120	-	-
B3 L05 STUDIO b		120	-	-
B3 L05_STUDIO (Kitchenette)_b		120	-	-
B3 L05 STUDIO c		120	-	-
B3 L05_STUDIO (Kitchenette)_c		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B3 L01 BED (2Bb1)	NO (-80.4%)	NO
B3 L01 ENSUITE (2B)	N/A	N/A
B3 L01 ENSUITE (2B)	N/A	N/A
B3 L00 BED (2Ba2)	NO (-76.8%)	NO
B3 L00 BED (2Ba1)	NO (-59.9%)	NO
B3 L00 ENSUITE (2B)	N/A	N/A
B3 L00 ENSUITE (2B)	N/A	N/A
B3 L00 MEETING ROOM	NO (-69.8%)	NO
B3 L00 STUDIO i	NO (-62.7%)	NO
B3 L00 STUDIO h	NO (-63%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B3 L00 STUDIO g	NO (-63.4%)	NO
B3 L00 STUDIO f	NO (-82.6%)	NO
B3 L01 BED (2Ba2)	NO (-75.8%)	NO
B3 L01 BED (2Ba1)	NO (-58.7%)	NO
B3 L01 ENSUITE (2B)	N/A	N/A
B3 L01 ENSUITE (2B)	N/A	N/A
B3 L01 STUDIO i	NO (-61.8%)	NO
B3 L01 STUDIO h	NO (-62.7%)	NO
B3 L01 STUDIO g	NO (-62.6%)	NO
B3 L01 STUDIO f	NO (-63.3%)	NO
B3 L01 STUDIO e	NO (-63.6%)	NO
B3 L01 STUDIO d	NO (-82.6%)	NO
B3 L01 STUDIO a	NO (-88.8%)	NO
B3 L01 STUDIO b	NO (-77.2%)	NO
B3 L01 STUDIO c	NO (-78.4%)	NO
B3 L01 KITCHEN ??????? (2Bb)	N/A	N/A
B3 L02 BED (2Bb1)	NO (-78.3%)	NO
B3 L02 ENSUITE (2B)	N/A	N/A
B3 L02 ENSUITE (2B)	N/A	N/A
B3 L02 BED (2Ba2)	NO (-75.1%)	NO
B3 L02 BED (2Ba1)	NO (-57.2%)	NO
B3 L02 ENSUITE (2B)	N/A	N/A
B3 L02 ENSUITE (2B)	N/A	N/A
B3 L02 STUDIO i	NO (-60.3%)	NO
B3 L02 STUDIO h	NO (-60.9%)	NO
B3 L02 STUDIO g	NO (-61.1%)	NO
B3 L02 STUDIO f	NO (-61.3%)	NO
B3 L02 STUDIO e	NO (-62.4%)	NO
B3 L02 STUDIO d	NO (-81.8%)	NO
B3 L02 STUDIO a	NO (-87.9%)	NO
B3 L02 STUDIO b	NO (-75.1%)	NO
B3 L02 STUDIO c	NO (-76.3%)	NO
B3 L02 KITCHEN ??????? (2Bb)	N/A	N/A
B3 L03 BED (2Ba2)	NO (-74.2%)	NO
B3 L03 BED (2Ba1)	NO (-55.6%)	NO
B3 L03 ENSUITE (2B)	N/A	N/A
B3 L03 ENSUITE (2B)	N/A	N/A
B3 L03 STUDIO i	NO (-58.7%)	NO
B3 L03 STUDIO h	NO (-59.2%)	NO
B3 L03 STUDIO g	NO (-59.2%)	NO
B3 L03 STUDIO f	NO (-59.9%)	NO
B3 L03 STUDIO e	NO (-60.4%)	NO
B3 L03 STUDIO d	NO (-80.9%)	NO
B3 L03 STUDIO a	NO (-87.1%)	NO
B3 L03 STUDIO b	NO (-73.3%)	NO
B3 L03 STUDIO c	NO (-72.7%)	NO
B3 L04 BED (2Ba2)	NO (-74.2%)	NO
B3 L04 BED (2Ba1)	NO (-55.6%)	NO
B3 L04 ENSUITE (2B)	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B3 L04 ENSUITE (2B)	N/A	N/A
B3 L04 STUDIO i	NO (-58.7%)	NO
B3 L04 STUDIO h	NO (-58.7%)	NO
B3 L04 STUDIO g	NO (-59%)	NO
B3 L04 STUDIO f	NO (-59%)	NO
B3 L04 STUDIO e	NO (-59%)	NO
B3 L04 STUDIO d	NO (-79.9%)	NO
B3 L04 STUDIO a	NO (-86.8%)	NO
B3 L04 STUDIO b	NO (-72.4%)	NO
B3 L04 STUDIO c	NO (-71.9%)	NO
B3 L05 STUDIO i	NO (-81.7%)	NO
B3 L05 STUDIO h	NO (-58.7%)	NO
B3 L05 STUDIO g	NO (-59%)	NO
B3 L05 STUDIO f	NO (-59%)	NO
B3 L05 STUDIO e	NO (-59%)	NO
B3 L05 STUDIO d	NO (-79.9%)	NO
B3 L05 STUDIO a	NO (-86.5%)	NO
B3 L05 STUDIO b	NO (-71.9%)	NO
B3 L05 STUDIO c	NO (-71.6%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	2216.3	2216.3
External area [m ²]	2713.3	2875.9
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	636.23	1096.46
Average U-value [W/m ² K]	0.23	0.38
Alpha value* [%]	25.1	10

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

Building Use

% Area Building Type

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	10.12	9.09
Cooling	0.01	0.03
Auxiliary	3.29	1.7
Lighting	5.69	6.16
Hot water	2.92	3.88
Equipment*	16.81	16.81
TOTAL **	22.04	20.86

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	5.27	3.61
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>5.27</i>	<i>3.61</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	36.81	46.78
Primary energy [kWh _{PE} /m ²]	25.4	26.06
Total emissions [kg/m ²]	2.48	2.52

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	32.8	0	9.1	0	6.2	1	0	1	0	
Notional	52.4	0	10.3	0	1.8	1.41	0	----	----	
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	25	10.8	1.9	0.9	3.8	3.72	3.47	3.6	5	
Notional	18	37.7	1.8	2.3	5	2.78	4.63	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	61	0	17	0	4.3	1	0	1	0	
Notional	73.6	0	14.5	0	1.8	1.41	0	----	----	
[ST] No Heating or Cooling										
Actual	0	0	0	0	0	0	0	0	0	
Notional	0	0	0	0	0	0	0	----	----	

Key to terms

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

A.4 Block 4

Project name

60042_VP_BLOCK_4_NEW_BUILD_PART
L 2021 Rev0

As designed

Date: Wed Feb 14 20:20:17 2024

Administrative information

Building Details

Address: 0814 Victoria Point, 44 Hathersage Road,
Manchester, M13 0FT

Certifier details

Name: Atelier Ten

Telephone number: 0141 333 0499

Address: 226 West George Street, Glasgow, G2 2PQ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.24

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.24

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

Foundation area [m²]: 492.5The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.18
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	2.16
Target primary energy rate (TPER), kWh _{PE} /m ² annum	22.84
Building primary energy rate (BPER), kWh _{PE} /m ² annum	22.35
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

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

Fabric element	U _{a-Limit}	U _{a-Calc}	U _{i-Calc}	First surface with maximum value
Walls*	0.26	0.13	0.13	B400026D:Surf[1]
Floors	0.18	0.12	0.12	B40002AF:Surf[1]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	B4000078:Surf[0]
Windows** and roof windows	1.6	1.2	1.2	B400026D:Surf[0]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	-	-	No personnel doors in building
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building

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

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

** Display windows and similar glazing are excluded from the U-value check.

*** Values for rooflights refer to the horizontal position.

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

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

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

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- ELEC PANEL + MVHR (CLUSTER)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.9
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

2- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.6	5	0	1.6	0.82
Standard value	2.5*	N/A	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					
^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.					

3- ELEC PANEL + MVHR (STUDIO)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.79
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

4- ELEC PANEL + NAT VENT

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.18	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

5- DX Comms

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	0	-	0.85
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- ASHP DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3.5	-
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		Zone	Standard
B4 L00 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L00 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B4 L00 LIVING/KITCHEN (2Ba)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L00 SHOWER	-	-	0.3	-	-	-	-	-	-	-	-	N/A
B4 L00 WC	-	-	0.3	-	-	-	-	-	-	-	-	N/A
B4 L00 WC	-	-	0.3	-	-	-	-	-	-	-	-	N/A
B4 L01 BATH ??????? (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BATH ??????? (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BATH ??????? (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (2Bc1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (2Bc2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B4 L01 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	-	N/A

[illegible]

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B4 L02 KITCHEN (3Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L02 KITCHEN ??????? (2Bc)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L02 LIVING/KITCHEN (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L02 LIVING/KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L02 LIVING/KITCHEN ??????? (3Bc)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BATH ??????? (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BATH ??????? (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BATH ??????? (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (2Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (2Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (2Bc1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (2Bc2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (3Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (3Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED (3Bb3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED ??????? (3Bc1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED ??????? (3Bc2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 BED ??????? (3Bc3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B4 L05 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 LIVING/KITCHEN (2Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L05 LIVING/KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L06 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L06 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 LIVING/KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L07 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L07 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 LIVING/KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L08 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L08 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 LIVING/KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B4 L00 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L00 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B4 L01 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L01 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L02 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
B4 L02 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L02 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A	

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B4 L03 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L03 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L04 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B4 L05 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO e	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO f	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L05 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B4 L06 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L06 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L07 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO a	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO b	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO c	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO d	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B4 L08 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
B4 L08 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO r	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO q	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L03 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L04 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L04 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L05 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L05 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L06 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L06 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L06 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L07 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L07 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	
B4 L08 STUDIO I	-	-	-	0.8	-	-	-	-	-	-	N/A	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B4 L00 BED (2Ba1)		120	-	-
B4 L00 BED (2Ba2)		120	-	-
B4 L00 CIRC		120	-	-
B4 L00 CIRC		120	-	-
B4 L00 CIRC		120	-	-
B4 L00 CIRC		120	-	-
B4 L00 CORRIDOR a		120	-	-
B4 L00 CORRIDOR a		120	-	-
B4 L00 CORRIDOR a		120	-	-
B4 L00 CORRIDOR a		120	-	-
B4 L00 CUPBOARD		120	-	-
B4 L00 CUPBOARD (2B)		120	-	-
B4 L00 CUPBOARD (2B)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CUPBOARD (STUDIO)		120	-	-
B4 L00 CYCLE STORE		120	-	-
B4 L00 DINING		120	-	-
B4 L00 ENSUITE (2B)		120	-	-
B4 L00 ENSUITE (2B)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 ENSUITE (STUDIO)		120	-	-
B4 L00 GYM		120	-	-
B4 L00 LAUNDRY		120	-	-
B4 L00 LIVING/KITCHEN (2Ba)		120	-	-
B4 L00 LOUNGE		120	-	-
B4 L00 RECEPTION		120	80	1.688
B4 L00 RECEPTION		120	80	1.688
B4 L00 SHOWER		120	-	-
B4 L00 STAIR		120	-	-
B4 L00 STAIR		120	-	-
B4 L00 STAIR		120	-	-
B4 L00 WC		120	-	-
B4 L00 WC		120	-	-
B4 L01 BATH ??????? (3B)		120	-	-
B4 L01 BATH ??????? (3B)		120	-	-
B4 L01 BATH ??????? (3B)		120	-	-
B4 L01 BED (2Ba1)		120	-	-
B4 L01 BED (2Ba2)		120	-	-
B4 L01 BED (2Bb1)		120	-	-
B4 L01 BED (2Bb2)		120	-	-
B4 L01 BED (2Bc1)		120	-	-
B4 L01 BED (2Bc2)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L-1 PLANT		120	-	-
B4 L-1 STAIR		120	-	-
B4 L-1 STAIR		120	-	-
B4 L02 BATH ??????? (3B)		120	-	-
B4 L02 BATH ??????? (3B)		120	-	-
B4 L02 BATH ??????? (3B)		120	-	-
B4 L02 BED (2Ba1)		120	-	-
B4 L02 BED (2Ba2)		120	-	-
B4 L02 BED (2Bb1)		120	-	-
B4 L02 BED (2Bb2)		120	-	-
B4 L02 BED (2Bc1)		120	-	-
B4 L02 BED (2Bc2)		120	-	-
B4 L02 BED (3Ba1)		120	-	-
B4 L02 BED (3Ba2)		120	-	-
B4 L02 BED (3Ba3)		120	-	-
B4 L02 BED (3Bb1)		120	-	-
B4 L02 BED (3Bb2)		120	-	-
B4 L02 BED (3Bb3)		120	-	-
B4 L02 BED ??????? (3Bc1)		120	-	-
B4 L02 BED ??????? (3Bc2)		120	-	-
B4 L02 BED ??????? (3Bc3)		120	-	-
B4 L02 CIRC		120	-	-
B4 L02 CIRC (2B)		120	-	-
B4 L02 CIRC (3B)		120	-	-
B4 L02 CIRC (3B)		120	-	-
B4 L02 CIRC (3B)		120	-	-
B4 L02 CORRIDOR a		120	-	-
B4 L02 CORRIDOR b		120	-	-
B4 L02 CUPBOARD		120	-	-
B4 L02 CUPBOARD		120	-	-
B4 L02 CUPBOARD (2B)		120	-	-
B4 L02 CUPBOARD (2B)		120	-	-
B4 L02 CUPBOARD (2B)		120	-	-
B4 L02 CUPBOARD (2B)		120	-	-
B4 L02 CUPBOARD (2B)		120	-	-
B4 L02 CUPBOARD (3B)		120	-	-
B4 L02 CUPBOARD (3B)		120	-	-
B4 L02 CUPBOARD (3B)		120	-	-
B4 L02 CUPBOARD (STUDIO)		120	-	-
B4 L02 CUPBOARD (STUDIO)		120	-	-
B4 L02 CUPBOARD (STUDIO)		120	-	-
B4 L02 CUPBOARD (STUDIO)		120	-	-
B4 L02 CUPBOARD (STUDIO)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L02 STAIR		120	-	-
B4 L03 BATH ??????? (3B)		120	-	-
B4 L03 BATH ??????? (3B)		120	-	-
B4 L03 BATH ??????? (3B)		120	-	-
B4 L03 BED (2Ba1)		120	-	-
B4 L03 BED (2Ba2)		120	-	-
B4 L03 BED (2Bb1)		120	-	-
B4 L03 BED (2Bb2)		120	-	-
B4 L03 BED (2Bc1)		120	-	-
B4 L03 BED (2Bc2)		120	-	-
B4 L03 BED (3Ba1)		120	-	-
B4 L03 BED (3Ba2)		120	-	-
B4 L03 BED (3Ba3)		120	-	-
B4 L03 BED (3Bb1)		120	-	-
B4 L03 BED (3Bb2)		120	-	-
B4 L03 BED (3Bb3)		120	-	-
B4 L03 BED ??????? (3Bc1)		120	-	-
B4 L03 BED ??????? (3Bc2)		120	-	-
B4 L03 BED ??????? (3Bc3)		120	-	-
B4 L03 CIRC		120	-	-
B4 L03 CIRC (2B)		120	-	-
B4 L03 CIRC (3B)		120	-	-
B4 L03 CIRC (3B)		120	-	-
B4 L03 CIRC (3B)		120	-	-
B4 L03 CORRIDOR a		120	-	-
B4 L03 CORRIDOR b		120	-	-
B4 L03 CUPBOARD		120	-	-
B4 L03 CUPBOARD		120	-	-
B4 L03 CUPBOARD (2B)		120	-	-
B4 L03 CUPBOARD (2B)		120	-	-
B4 L03 CUPBOARD (2B)		120	-	-
B4 L03 CUPBOARD (2B)		120	-	-
B4 L03 CUPBOARD (2B)		120	-	-
B4 L03 CUPBOARD (3B)		120	-	-
B4 L03 CUPBOARD (3B)		120	-	-
B4 L03 CUPBOARD (3B)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-
B4 L03 CUPBOARD (STUDIO)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L00 STUDIO d		120	-	-
B4 L01 STUDIO e		120	-	-
B4 L01 STUDIO e		120	-	-
B4 L01 STUDIO f		120	-	-
B4 L01 STUDIO f		120	-	-
B4 L01 STUDIO g		120	-	-
B4 L01 STUDIO g		120	-	-
B4 L01 STUDIO h		120	-	-
B4 L01 STUDIO h		120	-	-
B4 L01 STUDIO i		120	-	-
B4 L01 STUDIO i		120	-	-
B4 L01 STUDIO j		120	-	-
B4 L01 STUDIO j		120	-	-
B4 L01 STUDIO k		120	-	-
B4 L01 STUDIO k		120	-	-
B4 L01 STUDIO a		120	-	-
B4 L01 STUDIO a		120	-	-
B4 L01 STUDIO b		120	-	-
B4 L01 STUDIO b		120	-	-
B4 L01 STUDIO c		120	-	-
B4 L01 STUDIO c		120	-	-
B4 L01 STUDIO d		120	-	-
B4 L01 STUDIO d		120	-	-
B4 L01 STUDIO m		120	-	-
B4 L01 STUDIO m		120	-	-
B4 L01 STUDIO n		120	-	-
B4 L01 STUDIO n		120	-	-
B4 L01 STUDIO o		120	-	-
B4 L01 STUDIO o		120	-	-
B4 L01 STUDIO p		120	-	-
B4 L01 STUDIO p		120	-	-
B4 L01 STUDIO q		120	-	-
B4 L01 STUDIO q		120	-	-
B4 L01 STUDIO r		120	-	-
B4 L01 STUDIO r		120	-	-
B4 L02 STUDIO e		120	-	-
B4 L02 STUDIO e		120	-	-
B4 L02 STUDIO f		120	-	-
B4 L02 STUDIO f		120	-	-
B4 L02 STUDIO g		120	-	-
B4 L02 STUDIO g		120	-	-
B4 L02 STUDIO h		120	-	-
B4 L02 STUDIO h		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B4 L02 STUDIO i		120	-	-
B4 L02 STUDIO i		120	-	-
B4 L02 STUDIO j		120	-	-
B4 L02 STUDIO j		120	-	-
B4 L02 STUDIO k		120	-	-
B4 L02 STUDIO k		120	-	-
B4 L02 ENSUITE (STUDIO)		120	-	-
B4 L02 STUDIO l		120	-	-
B4 L02 STUDIO l		120	-	-
B4 L02 STUDIO a		120	-	-
B4 L02 STUDIO a		120	-	-
B4 L02 STUDIO b		120	-	-
B4 L02 STUDIO b		120	-	-
B4 L02 STUDIO c		120	-	-
B4 L02 STUDIO c		120	-	-
B4 L02 STUDIO d		120	-	-
B4 L02 STUDIO d		120	-	-
B4 L02 STUDIO m		120	-	-
B4 L02 STUDIO m		120	-	-
B4 L02 STUDIO n		120	-	-
B4 L02 STUDIO n		120	-	-
B4 L02 STUDIO o		120	-	-
B4 L02 STUDIO o		120	-	-
B4 L02 STUDIO p		120	-	-
B4 L02 STUDIO p		120	-	-
B4 L02 STUDIO q		120	-	-
B4 L02 STUDIO q		120	-	-
B4 L02 STUDIO r		120	-	-
B4 L02 STUDIO r		120	-	-
B4 L03 STUDIO e		120	-	-
B4 L03 STUDIO e		120	-	-
B4 L03 STUDIO f		120	-	-
B4 L03 STUDIO f		120	-	-
B4 L03 STUDIO g		120	-	-
B4 L03 STUDIO g		120	-	-
B4 L03 STUDIO h		120	-	-
B4 L03 STUDIO h		120	-	-
B4 L03 STUDIO i		120	-	-
B4 L03 STUDIO i		120	-	-
B4 L03 STUDIO j		120	-	-
B4 L03 STUDIO j		120	-	-
B4 L03 STUDIO k		120	-	-
B4 L03 STUDIO k		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L03 STUDIO a		120	-	-
B4 L03 STUDIO a		120	-	-
B4 L03 STUDIO b		120	-	-
B4 L03 STUDIO b		120	-	-
B4 L03 STUDIO c		120	-	-
B4 L03 STUDIO c		120	-	-
B4 L03 STUDIO d		120	-	-
B4 L03 STUDIO d		120	-	-
B4 L03 STUDIO m		120	-	-
B4 L03 STUDIO m		120	-	-
B4 L03 STUDIO n		120	-	-
B4 L03 STUDIO n		120	-	-
B4 L03 STUDIO o		120	-	-
B4 L03 STUDIO o		120	-	-
B4 L03 STUDIO p		120	-	-
B4 L03 STUDIO p		120	-	-
B4 L03 STUDIO q		120	-	-
B4 L03 STUDIO q		120	-	-
B4 L03 STUDIO r		120	-	-
B4 L03 STUDIO r		120	-	-
B4 L04 STUDIO e		120	-	-
B4 L04 STUDIO e		120	-	-
B4 L04 STUDIO f		120	-	-
B4 L04 STUDIO f		120	-	-
B4 L04 STUDIO g		120	-	-
B4 L04 STUDIO g		120	-	-
B4 L04 STUDIO h		120	-	-
B4 L04 STUDIO h		120	-	-
B4 L04 STUDIO i		120	-	-
B4 L04 STUDIO i		120	-	-
B4 L04 STUDIO j		120	-	-
B4 L04 STUDIO j		120	-	-
B4 L04 STUDIO k		120	-	-
B4 L04 STUDIO k		120	-	-
B4 L04 STUDIO a		120	-	-
B4 L04 STUDIO a		120	-	-
B4 L04 STUDIO b		120	-	-
B4 L04 STUDIO b		120	-	-
B4 L04 STUDIO c		120	-	-
B4 L04 STUDIO c		120	-	-
B4 L04 STUDIO d		120	-	-
B4 L04 STUDIO d		120	-	-
B4 L04 STUDIO q		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L04 STUDIO q		120	-	-
B4 L04 STUDIO r		120	-	-
B4 L04 STUDIO r		120	-	-
B4 L05 STUDIO e		120	-	-
B4 L05 STUDIO e		120	-	-
B4 L05 STUDIO f		120	-	-
B4 L05 STUDIO f		120	-	-
B4 L05 STUDIO g		120	-	-
B4 L05 STUDIO g		120	-	-
B4 L05 STUDIO h		120	-	-
B4 L05 STUDIO h		120	-	-
B4 L05 STUDIO i		120	-	-
B4 L05 STUDIO i		120	-	-
B4 L05 STUDIO j		120	-	-
B4 L05 STUDIO j		120	-	-
B4 L05 STUDIO k		120	-	-
B4 L05 STUDIO k		120	-	-
B4 L05 STUDIO a		120	-	-
B4 L05 STUDIO a		120	-	-
B4 L05 STUDIO b		120	-	-
B4 L05 STUDIO b		120	-	-
B4 L05 STUDIO c		120	-	-
B4 L05 STUDIO c		120	-	-
B4 L05 STUDIO d		120	-	-
B4 L05 STUDIO d		120	-	-
B4 L05 STUDIO q		120	-	-
B4 L05 STUDIO q		120	-	-
B4 L05 STUDIO r		120	-	-
B4 L05 STUDIO r		120	-	-
B4 L06 STUDIO g		120	-	-
B4 L06 STUDIO g		120	-	-
B4 L06 STUDIO h		120	-	-
B4 L06 STUDIO h		120	-	-
B4 L06 STUDIO i		120	-	-
B4 L06 STUDIO i		120	-	-
B4 L06 STUDIO j		120	-	-
B4 L06 STUDIO j		120	-	-
B4 L06 STUDIO k		120	-	-
B4 L06 STUDIO k		120	-	-
B4 L06 STUDIO a		120	-	-
B4 L06 STUDIO a		120	-	-
B4 L06 STUDIO b		120	-	-
B4 L06 STUDIO b		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L06 STUDIO c		120	-	-
B4 L06 STUDIO c		120	-	-
B4 L06 STUDIO d		120	-	-
B4 L06 STUDIO d		120	-	-
B4 L06 STUDIO q		120	-	-
B4 L06 STUDIO q		120	-	-
B4 L06 STUDIO r		120	-	-
B4 L06 STUDIO r		120	-	-
B4 L07 STUDIO a		120	-	-
B4 L07 STUDIO a		120	-	-
B4 L07 STUDIO b		120	-	-
B4 L07 STUDIO b		120	-	-
B4 L07 STUDIO c		120	-	-
B4 L07 STUDIO c		120	-	-
B4 L07 STUDIO d		120	-	-
B4 L07 STUDIO d		120	-	-
B4 L07 STUDIO q		120	-	-
B4 L07 STUDIO q		120	-	-
B4 L07 STUDIO r		120	-	-
B4 L07 STUDIO r		120	-	-
B4 L07 STUDIO g		120	-	-
B4 L07 STUDIO g		120	-	-
B4 L07 STUDIO h		120	-	-
B4 L07 STUDIO h		120	-	-
B4 L07 STUDIO i		120	-	-
B4 L07 STUDIO i		120	-	-
B4 L07 STUDIO j		120	-	-
B4 L07 STUDIO j		120	-	-
B4 L07 STUDIO k		120	-	-
B4 L07 STUDIO k		120	-	-
B4 L08 STUDIO a		120	-	-
B4 L08 STUDIO a		120	-	-
B4 L08 STUDIO b		120	-	-
B4 L08 STUDIO b		120	-	-
B4 L08 STUDIO c		120	-	-
B4 L08 STUDIO c		120	-	-
B4 L08 STUDIO d		120	-	-
B4 L08 STUDIO d		120	-	-
B4 L08 STUDIO g		120	-	-
B4 L08 STUDIO g		120	-	-
B4 L08 STUDIO h		120	-	-
B4 L08 STUDIO h		120	-	-
B4 L08 STUDIO i		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B4 L08 STUDIO i		120	-	-
B4 L08 STUDIO j		120	-	-
B4 L08 STUDIO j		120	-	-
B4 L08 STUDIO k		120	-	-
B4 L08 STUDIO k		120	-	-
B4 L08 STUDIO r		120	-	-
B4 L08 STUDIO r		120	-	-
B4 L08 STUDIO q		120	-	-
B4 L08 STUDIO q		120	-	-
B4 L03 ENSUITE (STUDIO)		120	-	-
B4 L03 STUDIO I		120	-	-
B4 L03 STUDIO I		120	-	-
B4 L04 ENSUITE (STUDIO)		120	-	-
B4 L04 STUDIO I		120	-	-
B4 L04 STUDIO I		120	-	-
B4 L05 ENSUITE (STUDIO)		120	-	-
B4 L05 STUDIO I		120	-	-
B4 L05 STUDIO I		120	-	-
B4 L06 ENSUITE (STUDIO)		120	-	-
B4 L06 STUDIO I		120	-	-
B4 L06 STUDIO I		120	-	-
B4 L07 ENSUITE (STUDIO)		120	-	-
B4 L07 STUDIO I		120	-	-
B4 L07 STUDIO I		120	-	-
B4 L08 ENSUITE (STUDIO)		120	-	-
B4 L08 STUDIO I		120	-	-
B4 L08 STUDIO I		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L00 BED (2Ba1)	NO (-79.3%)	NO
B4 L00 BED (2Ba2)	NO (-66.1%)	NO
B4 L00 DINING	NO (-41.5%)	NO
B4 L00 GYM	NO (-10.7%)	NO
B4 L00 LOUNGE	NO (-59.3%)	NO
B4 L00 RECEPTION	N/A	N/A
B4 L00 RECEPTION	NO (-74.5%)	NO
B4 L01 BED (2Ba1)	NO (-79.2%)	NO
B4 L01 BED (2Ba2)	NO (-65.9%)	NO
B4 L01 BED (2Bb1)	NO (-59.8%)	NO
B4 L01 BED (2Bb2)	NO (-76.8%)	NO
B4 L01 BED (2Bc1)	NO (-71.6%)	NO
B4 L01 BED (2Bc2)	NO (-77.6%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L01 BED (3Ba1)	NO (-63.7%)	NO
B4 L01 BED (3Ba2)	NO (-58.7%)	NO
B4 L01 BED (3Ba3)	NO (-47.2%)	NO
B4 L01 BED (3Bb1)	NO (-48.9%)	NO
B4 L01 BED (3Bb2)	NO (-57.4%)	NO
B4 L01 BED (3Bb3)	NO (-62.4%)	NO
B4 L01 BED ??????? (3Bc1)	NO (-68.8%)	NO
B4 L01 BED ??????? (3Bc2)	NO (-68.9%)	NO
B4 L01 BED ??????? (3Bc3)	NO (-67.1%)	NO
B4 L-1 COMMS	NO (-94.8%)	NO
B4 L02 BED (2Ba1)	NO (-79.1%)	NO
B4 L02 BED (2Ba2)	NO (-65.8%)	NO
B4 L02 BED (2Bb1)	NO (-56.5%)	NO
B4 L02 BED (2Bb2)	NO (-75.1%)	NO
B4 L02 BED (2Bc1)	NO (-68.4%)	NO
B4 L02 BED (2Bc2)	NO (-74.7%)	NO
B4 L02 BED (3Ba1)	NO (-62.8%)	NO
B4 L02 BED (3Ba2)	NO (-58.3%)	NO
B4 L02 BED (3Ba3)	NO (-46.9%)	NO
B4 L02 BED (3Bb1)	NO (-48.7%)	NO
B4 L02 BED (3Bb2)	NO (-57.2%)	NO
B4 L02 BED (3Bb3)	NO (-62%)	NO
B4 L02 BED ??????? (3Bc1)	NO (-68.4%)	NO
B4 L02 BED ??????? (3Bc2)	NO (-65.9%)	NO
B4 L02 BED ??????? (3Bc3)	NO (-64.1%)	NO
B4 L03 BED (2Ba1)	NO (-79.1%)	NO
B4 L03 BED (2Ba2)	NO (-65.8%)	NO
B4 L03 BED (2Bb1)	NO (-54.5%)	NO
B4 L03 BED (2Bb2)	NO (-74%)	NO
B4 L03 BED (2Bc1)	NO (-66.4%)	NO
B4 L03 BED (2Bc2)	NO (-73%)	NO
B4 L03 BED (3Ba1)	NO (-62.2%)	NO
B4 L03 BED (3Ba2)	NO (-57.9%)	NO
B4 L03 BED (3Ba3)	NO (-46.8%)	NO
B4 L03 BED (3Bb1)	NO (-48.5%)	NO
B4 L03 BED (3Bb2)	NO (-57.1%)	NO
B4 L03 BED (3Bb3)	NO (-62%)	NO
B4 L03 BED ??????? (3Bc1)	NO (-68.4%)	NO
B4 L03 BED ??????? (3Bc2)	NO (-64.2%)	NO
B4 L03 BED ??????? (3Bc3)	NO (-61.8%)	NO
B4 L04 BED (2Ba1)	NO (-79.1%)	NO
B4 L04 BED (2Ba2)	NO (-65.7%)	NO
B4 L04 BED (2Bb1)	NO (-52.6%)	NO
B4 L04 BED (2Bb2)	NO (-72.6%)	NO
B4 L05 BED (2Ba1)	NO (-79.1%)	NO
B4 L05 BED (2Ba2)	NO (-65.7%)	NO
B4 L05 BED (2Bb1)	NO (-51.3%)	NO
B4 L05 BED (2Bb2)	NO (-72.2%)	NO
B4 L06 BED (2Bb1)	NO (-51.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L06 BED (2Bb2)	NO (-72.2%)	NO
B4 L07 BED (2Bb1)	NO (-51.3%)	NO
B4 L07 BED (2Bb2)	NO (-72.2%)	NO
B4 L08 BED (2Bb1)	NO (-51.3%)	NO
B4 L08 BED (2Bb2)	NO (-72.2%)	NO
B4 L00 STUDIO e	NO (-81%)	NO
B4 L00 STUDIO e	NO (-94.6%)	NO
B4 L00 STUDIO f	NO (-61.5%)	NO
B4 L00 STUDIO f	NO (-59.6%)	NO
B4 L00 STUDIO g	NO (-68.1%)	NO
B4 L00 STUDIO g	NO (-68.1%)	NO
B4 L00 STUDIO h	NO (-62.7%)	NO
B4 L00 STUDIO h	NO (-64.6%)	NO
B4 L00 STUDIO i	NO (-62.2%)	NO
B4 L00 STUDIO i	NO (-59.6%)	NO
B4 L00 STUDIO j	NO (-73.9%)	NO
B4 L00 STUDIO j	NO (-77%)	NO
B4 L00 STUDIO a	NO (-69.6%)	NO
B4 L00 STUDIO a	NO (-74.7%)	NO
B4 L00 STUDIO b	NO (-70%)	NO
B4 L00 STUDIO b	NO (-75.3%)	NO
B4 L00 STUDIO c	NO (-72%)	NO
B4 L00 STUDIO c	NO (-73%)	NO
B4 L00 STUDIO d	NO (-73.6%)	NO
B4 L00 STUDIO d	NO (-74.6%)	NO
B4 L01 STUDIO e	NO (-79.7%)	NO
B4 L01 STUDIO e	NO (-93.9%)	NO
B4 L01 STUDIO f	NO (-59.4%)	NO
B4 L01 STUDIO f	NO (-57.7%)	NO
B4 L01 STUDIO g	NO (-67%)	NO
B4 L01 STUDIO g	NO (-66.3%)	NO
B4 L01 STUDIO h	NO (-61.1%)	NO
B4 L01 STUDIO h	NO (-63.4%)	NO
B4 L01 STUDIO i	NO (-60.8%)	NO
B4 L01 STUDIO i	NO (-56.1%)	NO
B4 L01 STUDIO j	NO (-61.5%)	NO
B4 L01 STUDIO j	NO (-59.4%)	NO
B4 L01 STUDIO k	NO (-62.5%)	NO
B4 L01 STUDIO k	NO (-51.7%)	NO
B4 L01 STUDIO a	NO (-68.8%)	NO
B4 L01 STUDIO a	NO (-74.3%)	NO
B4 L01 STUDIO b	NO (-68.9%)	NO
B4 L01 STUDIO b	NO (-73.6%)	NO
B4 L01 STUDIO c	NO (-68.7%)	NO
B4 L01 STUDIO c	NO (-72.4%)	NO
B4 L01 STUDIO d	NO (-80.3%)	NO
B4 L01 STUDIO d	NO (-78%)	NO
B4 L01 STUDIO m	NO (-75.3%)	NO
B4 L01 STUDIO m	NO (-53.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L01 STUDIO n	NO (-68.2%)	NO
B4 L01 STUDIO n	NO (-66.8%)	NO
B4 L01 STUDIO o	NO (-67.6%)	NO
B4 L01 STUDIO o	NO (-74.1%)	NO
B4 L01 STUDIO p	NO (-70.1%)	NO
B4 L01 STUDIO p	NO (-67%)	NO
B4 L01 STUDIO q	NO (-72.3%)	NO
B4 L01 STUDIO q	NO (-73.9%)	NO
B4 L01 STUDIO r	NO (-75.4%)	NO
B4 L01 STUDIO r	NO (-72.8%)	NO
B4 L02 STUDIO e	NO (-79.2%)	NO
B4 L02 STUDIO e	NO (-93.8%)	NO
B4 L02 STUDIO f	NO (-57.5%)	NO
B4 L02 STUDIO f	NO (-55.9%)	NO
B4 L02 STUDIO g	NO (-65.6%)	NO
B4 L02 STUDIO g	NO (-65.1%)	NO
B4 L02 STUDIO h	NO (-59.1%)	NO
B4 L02 STUDIO h	NO (-61.9%)	NO
B4 L02 STUDIO i	NO (-59.5%)	NO
B4 L02 STUDIO i	NO (-53.9%)	NO
B4 L02 STUDIO j	NO (-59.7%)	NO
B4 L02 STUDIO j	NO (-57.9%)	NO
B4 L02 STUDIO k	NO (-60.4%)	NO
B4 L02 STUDIO k	NO (-47.1%)	NO
B4 L02 STUDIO l	NO (-59.9%)	NO
B4 L02 STUDIO l	NO (-63.9%)	NO
B4 L02 STUDIO a	NO (-68.8%)	NO
B4 L02 STUDIO a	NO (-74.3%)	NO
B4 L02 STUDIO b	NO (-68.9%)	NO
B4 L02 STUDIO b	NO (-73.6%)	NO
B4 L02 STUDIO c	NO (-68.7%)	NO
B4 L02 STUDIO c	NO (-72.4%)	NO
B4 L02 STUDIO d	NO (-79.3%)	NO
B4 L02 STUDIO d	NO (-76.8%)	NO
B4 L02 STUDIO m	NO (-75%)	NO
B4 L02 STUDIO m	NO (-52.9%)	NO
B4 L02 STUDIO n	NO (-63.3%)	NO
B4 L02 STUDIO n	NO (-59.1%)	NO
B4 L02 STUDIO o	NO (-63%)	NO
B4 L02 STUDIO o	NO (-70.6%)	NO
B4 L02 STUDIO p	NO (-64.8%)	NO
B4 L02 STUDIO p	NO (-59.4%)	NO
B4 L02 STUDIO q	NO (-67%)	NO
B4 L02 STUDIO q	NO (-70%)	NO
B4 L02 STUDIO r	NO (-70.8%)	NO
B4 L02 STUDIO r	NO (-67%)	NO
B4 L03 STUDIO e	NO (-78.5%)	NO
B4 L03 STUDIO e	NO (-93.5%)	NO
B4 L03 STUDIO f	NO (-56.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L03 STUDIO f	NO (-54.9%)	NO
B4 L03 STUDIO g	NO (-64.4%)	NO
B4 L03 STUDIO g	NO (-59.6%)	NO
B4 L03 STUDIO h	NO (-57.3%)	NO
B4 L03 STUDIO h	NO (-60.7%)	NO
B4 L03 STUDIO i	NO (-58.2%)	NO
B4 L03 STUDIO i	NO (-49.1%)	NO
B4 L03 STUDIO j	NO (-57.7%)	NO
B4 L03 STUDIO j	NO (-56.5%)	NO
B4 L03 STUDIO k	NO (-58.6%)	NO
B4 L03 STUDIO k	NO (-44.6%)	NO
B4 L03 STUDIO a	NO (-68.7%)	NO
B4 L03 STUDIO a	NO (-74.3%)	NO
B4 L03 STUDIO b	NO (-68.8%)	NO
B4 L03 STUDIO b	NO (-73.6%)	NO
B4 L03 STUDIO c	NO (-68.7%)	NO
B4 L03 STUDIO c	NO (-72.4%)	NO
B4 L03 STUDIO d	NO (-78.7%)	NO
B4 L03 STUDIO d	NO (-76.1%)	NO
B4 L03 STUDIO m	NO (-74.4%)	NO
B4 L03 STUDIO m	NO (-52.2%)	NO
B4 L03 STUDIO n	NO (-59.2%)	NO
B4 L03 STUDIO n	NO (-54.3%)	NO
B4 L03 STUDIO o	NO (-57.2%)	NO
B4 L03 STUDIO o	NO (-64.9%)	NO
B4 L03 STUDIO p	NO (-59.7%)	NO
B4 L03 STUDIO p	NO (-55%)	NO
B4 L03 STUDIO q	NO (-60.8%)	NO
B4 L03 STUDIO q	NO (-63.5%)	NO
B4 L03 STUDIO r	NO (-63.8%)	NO
B4 L03 STUDIO r	NO (-58.2%)	NO
B4 L04 STUDIO e	NO (-78.4%)	NO
B4 L04 STUDIO e	NO (-93.4%)	NO
B4 L04 STUDIO f	NO (-55.9%)	NO
B4 L04 STUDIO f	NO (-54.5%)	NO
B4 L04 STUDIO g	NO (-63.7%)	NO
B4 L04 STUDIO g	NO (-59.1%)	NO
B4 L04 STUDIO h	NO (-56.3%)	NO
B4 L04 STUDIO h	NO (-59.7%)	NO
B4 L04 STUDIO i	NO (-57%)	NO
B4 L04 STUDIO i	NO (-47.8%)	NO
B4 L04 STUDIO j	NO (-56.2%)	NO
B4 L04 STUDIO j	NO (-55%)	NO
B4 L04 STUDIO k	NO (-57.2%)	NO
B4 L04 STUDIO k	NO (-43%)	NO
B4 L04 STUDIO a	NO (-68.7%)	NO
B4 L04 STUDIO a	NO (-74.3%)	NO
B4 L04 STUDIO b	NO (-68.8%)	NO
B4 L04 STUDIO b	NO (-73.6%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L04 STUDIO c	NO (-68.6%)	NO
B4 L04 STUDIO c	NO (-72.4%)	NO
B4 L04 STUDIO d	NO (-78.6%)	NO
B4 L04 STUDIO d	NO (-76.1%)	NO
B4 L04 STUDIO q	NO (-77.6%)	NO
B4 L04 STUDIO q	NO (-60.7%)	NO
B4 L04 STUDIO r	NO (-59.8%)	NO
B4 L04 STUDIO r	NO (-50.8%)	NO
B4 L05 STUDIO e	NO (-78.5%)	NO
B4 L05 STUDIO e	NO (-93.3%)	NO
B4 L05 STUDIO f	NO (-55.6%)	NO
B4 L05 STUDIO f	NO (-53.1%)	NO
B4 L05 STUDIO g	NO (-63.6%)	NO
B4 L05 STUDIO g	NO (-58.2%)	NO
B4 L05 STUDIO h	NO (-55.9%)	NO
B4 L05 STUDIO h	NO (-58.7%)	NO
B4 L05 STUDIO i	NO (-56.2%)	NO
B4 L05 STUDIO i	NO (-46%)	NO
B4 L05 STUDIO j	NO (-55.6%)	NO
B4 L05 STUDIO j	NO (-53.2%)	NO
B4 L05 STUDIO k	NO (-56%)	NO
B4 L05 STUDIO k	NO (-40.2%)	NO
B4 L05 STUDIO a	NO (-68.7%)	NO
B4 L05 STUDIO a	NO (-73.7%)	NO
B4 L05 STUDIO b	NO (-68.8%)	NO
B4 L05 STUDIO b	NO (-73%)	NO
B4 L05 STUDIO c	NO (-68.7%)	NO
B4 L05 STUDIO c	NO (-71.6%)	NO
B4 L05 STUDIO d	NO (-78.7%)	NO
B4 L05 STUDIO d	NO (-75.2%)	NO
B4 L05 STUDIO q	NO (-77%)	NO
B4 L05 STUDIO q	NO (-59.1%)	NO
B4 L05 STUDIO r	NO (-58.6%)	NO
B4 L05 STUDIO r	NO (-44.3%)	NO
B4 L06 STUDIO g	NO (-63.6%)	NO
B4 L06 STUDIO g	NO (-59%)	NO
B4 L06 STUDIO h	NO (-55.9%)	NO
B4 L06 STUDIO h	NO (-59.4%)	NO
B4 L06 STUDIO i	NO (-56.2%)	NO
B4 L06 STUDIO i	NO (-46.9%)	NO
B4 L06 STUDIO j	NO (-55.5%)	NO
B4 L06 STUDIO j	NO (-54.2%)	NO
B4 L06 STUDIO k	NO (-56%)	NO
B4 L06 STUDIO k	NO (-41.5%)	NO
B4 L06 STUDIO a	NO (-85.4%)	NO
B4 L06 STUDIO a	NO (-96.2%)	NO
B4 L06 STUDIO b	NO (-68.8%)	NO
B4 L06 STUDIO b	NO (-73.6%)	NO
B4 L06 STUDIO c	NO (-68.6%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L06 STUDIO c	NO (-72.4%)	NO
B4 L06 STUDIO d	NO (-78.6%)	NO
B4 L06 STUDIO d	NO (-76.1%)	NO
B4 L06 STUDIO q	NO (-76.9%)	NO
B4 L06 STUDIO q	NO (-60.1%)	NO
B4 L06 STUDIO r	NO (-58.1%)	NO
B4 L06 STUDIO r	NO (-44%)	NO
B4 L07 STUDIO a	NO (-85.4%)	NO
B4 L07 STUDIO a	NO (-96.2%)	NO
B4 L07 STUDIO b	NO (-68.8%)	NO
B4 L07 STUDIO b	NO (-73.6%)	NO
B4 L07 STUDIO c	NO (-68.6%)	NO
B4 L07 STUDIO c	NO (-72.4%)	NO
B4 L07 STUDIO d	NO (-78.6%)	NO
B4 L07 STUDIO d	NO (-76.1%)	NO
B4 L07 STUDIO q	NO (-76.9%)	NO
B4 L07 STUDIO q	NO (-60.1%)	NO
B4 L07 STUDIO r	NO (-58.1%)	NO
B4 L07 STUDIO r	NO (-44%)	NO
B4 L07 STUDIO g	NO (-63.6%)	NO
B4 L07 STUDIO g	NO (-59%)	NO
B4 L07 STUDIO h	NO (-55.9%)	NO
B4 L07 STUDIO h	NO (-59.3%)	NO
B4 L07 STUDIO i	NO (-56.2%)	NO
B4 L07 STUDIO i	NO (-46.7%)	NO
B4 L07 STUDIO j	NO (-55.5%)	NO
B4 L07 STUDIO j	NO (-54.2%)	NO
B4 L07 STUDIO k	NO (-55.9%)	NO
B4 L07 STUDIO k	NO (-41.3%)	NO
B4 L08 STUDIO a	NO (-85.4%)	NO
B4 L08 STUDIO a	NO (-96.2%)	NO
B4 L08 STUDIO b	NO (-68.8%)	NO
B4 L08 STUDIO b	NO (-73.6%)	NO
B4 L08 STUDIO c	NO (-68.6%)	NO
B4 L08 STUDIO c	NO (-72.4%)	NO
B4 L08 STUDIO d	NO (-78.6%)	NO
B4 L08 STUDIO d	NO (-76.1%)	NO
B4 L08 STUDIO g	NO (-63.6%)	NO
B4 L08 STUDIO g	NO (-59%)	NO
B4 L08 STUDIO h	NO (-55.9%)	NO
B4 L08 STUDIO h	NO (-59.4%)	NO
B4 L08 STUDIO i	NO (-56.2%)	NO
B4 L08 STUDIO i	NO (-46.9%)	NO
B4 L08 STUDIO j	NO (-55.5%)	NO
B4 L08 STUDIO j	NO (-54.3%)	NO
B4 L08 STUDIO k	NO (-56%)	NO
B4 L08 STUDIO k	NO (-41.5%)	NO
B4 L08 STUDIO r	NO (-58.1%)	NO
B4 L08 STUDIO r	NO (-44%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B4 L08 STUDIO q	NO (-76.9%)	NO
B4 L08 STUDIO q	NO (-60.1%)	NO
B4 L03 STUDIO I	NO (-58%)	NO
B4 L03 STUDIO I	NO (-62.4%)	NO
B4 L04 STUDIO I	NO (-56.6%)	NO
B4 L04 STUDIO I	NO (-61.2%)	NO
B4 L05 STUDIO I	NO (-56%)	NO
B4 L05 STUDIO I	NO (-60.4%)	NO
B4 L06 STUDIO I	NO (-55.9%)	NO
B4 L06 STUDIO I	NO (-60.6%)	NO
B4 L07 STUDIO I	NO (-55.9%)	NO
B4 L07 STUDIO I	NO (-60.6%)	NO
B4 L08 STUDIO I	NO (-55.9%)	NO
B4 L08 STUDIO I	NO (-60.6%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	6979.1	6979.1
External area [m ²]	5934.2	5934.2
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	1619.72	2522.7
Average U-value [W/m ² K]	0.27	0.43
Alpha value* [%]	25.35	10

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

Building Use

% Area Building Type

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	7.21	5.82
Cooling	0.95	0.59
Auxiliary	3.26	1.59
Lighting	4.45	5.43
Hot water	3.1	3.83
Equipment*	25.14	25.14
TOTAL **	18.97	17.26

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	4.14	2.05
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>4.14</i>	<i>2.05</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	38.94	40.56
Primary energy [kWh _{PE} /m ²]	22.35	22.84
Total emissions [kg/m ²]	2.16	2.18

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	40	0	11.1	0	5.9	1	0	1	0	
Notional	53.8	0	10.6	0	1.8	1.41	0	----	----	
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	61.7	13.9	4.6	1.1	5.5	3.72	3.47	3.6	5	
Notional	52.5	18.1	5.2	1.1	6.3	2.78	4.63	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	102.3	0	28.4	0	1.6	1	0	1	0	
Notional	104.5	0	20.6	0	2	1.41	0	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	36.7	0	10.2	0	4	1	0	1	0	
Notional	37.5	0	7.4	0	1.6	1.41	0	----	----	
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	0	2204.2	0	191.6	2.5	3.73	3.2	4	4.5	
Notional	0	1931.5	0	115.8	7.2	2.78	4.63	----	----	
[ST] No Heating or Cooling										
Actual	0	0	0	0	0	0	0	0	0	
Notional	0	0	0	0	0	0	0	----	----	

Key to terms

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

A.5 Block 5+

BRUKL Output Document



Compliance with England Building Regulations Part L 2021

Project name

**60042_VP_BLOCK_5_6_NEW_BUILD_PA
RT L 2021 Rev0**

As designed

Date: Fri Feb 16 13:49:08 2024

Administrative information

Building Details

Address: 0814 Victoria Point, 44 Hathersage Road,
Manchester, M13 0FT

Certifier details

Name: Atelier Ten

Telephone number: 0141 333 0499

Address: 226 West George Street, Glasgow, G2 2PQ

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.24

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.24

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

Foundation area [m²]: 453.73

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

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	2.58
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	2.53
Target primary energy rate (TPER), kWh _{PE} /m ² annum	27.04
Building primary energy rate (BPER), kWh _{PE} /m ² annum	26.11
Do the building's emission and primary energy rates exceed the targets?	BER ≤ TER BPER ≤ TPER

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

Fabric element	U _a -Limit	U _a -Calc	U _i -Calc	First surface with maximum value
Walls*	0.26	0.13	0.13	B5000464:Surf[1]
Floors	0.18	0.25	0.25	B5000464:Surf[0]
Pitched roofs	0.16	-	-	No pitched roofs in building
Flat roofs	0.18	0.12	0.12	B500045D:Surf[8]
Windows** and roof windows	1.6	1.2	1.2	B5000149:Surf[0]
Rooflights***	2.2	-	-	No roof lights in building
Personnel doors^	1.6	1.2	1.2	B5000464:Surf[3]
Vehicle access & similar large doors	1.3	-	-	No vehicle access doors in building
High usage entrance doors	3	-	-	No high usage entrance doors in building
U _a -Limit = Limiting area-weighted average U-values [W/(m ² K)] U _a -Calc = Calculated area-weighted average U-values [W/(m ² K)] U _i -Calc = Calculated maximum individual element U-values [W/(m ² K)] * Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows. ** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position. ^ For fire doors, limiting U-value is 1.8 W/m ² K NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

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

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.6	5	0	1.6	0.82
Standard value	2.5*	N/A	N/A	2^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					
^ Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.					

2- DX Comms

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4	4.5	0	-	0.85
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

3- ELEC PANEL + NAT VENT

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0.17	-	-
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

4- ELEC PANEL + MVHR (CLUSTER)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.9
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

5- ELEC PANEL + MVHR (STUDIO)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	-	0.79
Standard value	N/A	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

1- ASHP DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	3.5	-
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

Zone-level mechanical ventilation, exhaust, and terminal units

ID	System type in the Approved Documents
A	Local supply or extract ventilation units
B	Zonal supply system where the fan is remote from the zone
C	Zonal extract system where the fan is remote from the zone
D	Zonal balanced supply and extract ventilation system
E	Local balanced supply and extract ventilation units
F	Other local ventilation units
G	Fan assisted terminal variable air volume units
H	Fan coil units
I	Kitchen extract with the fan remote from the zone and a grease filter
NB: Limiting SFP may be increased by the amounts specified in the Approved Documents if the installation includes particular components.	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		Zone	Standard
B5 L00 COMMS	-	-	-	0.3	-	-	-	-	-	-	-	N/A
B5 L00 STAFF ROOM	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L00 WC	-	-	0.3	-	-	-	-	-	-	-	-	N/A
B5 L01 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L01 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L01 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L02 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B5 L03 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L04 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L04 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (2Bc1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (2Bc2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard	
B5 L07 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B5 L07 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A	
B5 L07 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L07 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	
B5 L08 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A	

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L08 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L08 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L08 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L08 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L09 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B5 L10 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L10 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BATH (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (2Bb1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (2Bb2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (3Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (3Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (3Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (4Ba1)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (4Ba2)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (4Ba3)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 BED (4Ba4)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 CIRC (2B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 CIRC (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 CIRC (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (3B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (4B)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
B5 L11 ENSUITE (STUDIO)	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 KITCHEN (2Bb)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 LIVING/KITCHEN (3Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L11 LIVING/KITCHEN (4Ba)	-	-	-	1.1	-	-	-	-	-	-	N/A
B5 L03 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L11 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aa	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aa	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ab	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ab	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ac	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ac	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ad	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ad	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ae	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ae	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO af	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO af	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ag	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ag	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ah	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ah	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ai	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ai	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aj	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L06 STUDIO aj	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ak	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ak	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO al	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO al	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO am	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO am	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO an	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO an	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ao	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ao	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ap	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ap	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aq	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aq	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ar	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ar	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO as	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO as	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO at	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO at	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO au	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO au	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO av	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO av	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aw	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO aw	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ax	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO ax	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO am	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO am	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO al	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO al	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ak	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ak	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aj	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aj	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ai	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ai	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ah	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ah	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ag	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ag	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L05 STUDIO af	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO af	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ae	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ae	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ad	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ad	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ac	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ac	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ab	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ab	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aa	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aa	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO an	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO an	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ao	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ao	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ap	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ap	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aq	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aq	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ar	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ar	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO as	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO as	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO at	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO at	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO au	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO au	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO av	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO av	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aw	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO aw	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ax	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO ax	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L02 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L10 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO l	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO k	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO j	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO i	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO h	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO g	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L09 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L08 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L07 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L07 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L06 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L05 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L04 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L03 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L02 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
B5 L02 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO n	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO m	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO p	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A
B5 L01 STUDIO o	-	-	-	0.8	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B5 L00 AUDITORIUM		120	-	-
B5 L00 CIRC		120	-	-
B5 L00 CIRC		120	-	-
B5 L00 CIRC		120	-	-
B5 L00 CIRC		120	-	-
B5 L00 COMMERCIAL		120	80	1.875
B5 L00 COMMS		120	-	-
B5 L00 DINING		120	-	-
B5 L00 LOUNGE		120	-	-
B5 L00 PARCEL		120	-	-
B5 L00 RECEPTION		120	80	1.688
B5 L00 STAFF ROOM		120	-	-
B5 L00 STAIR		120	-	-
B5 L00 STAIR		120	-	-
B5 L00 WC		120	-	-
B5 L01 BATH (2B)		120	-	-
B5 L01 BED (2Bb1)		120	-	-
B5 L01 BED (2Bb2)		120	-	-
B5 L01 BED (3Ba1)		120	-	-
B5 L01 BED (3Ba2)		120	-	-
B5 L01 BED (3Ba3)		120	-	-
B5 L01 BED (4Ba1)		120	-	-
B5 L01 BED (4Ba2)		120	-	-
B5 L01 BED (4Ba3)		120	-	-
B5 L01 BED (4Ba4)		120	-	-
B5 L01 CIRC		120	-	-
B5 L01 CIRC (2B)		120	-	-
B5 L01 CIRC (3B)		120	-	-
B5 L01 CIRC (4B)		120	-	-
B5 L01 CORRIDOR b		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L02 BED (4Ba4)		120	-	-
B5 L02 CIRC		120	-	-
B5 L02 CIRC (2B)		120	-	-
B5 L02 CIRC (3B)		120	-	-
B5 L02 CIRC (4B)		120	-	-
B5 L02 CORRIDOR b		120	-	-
B5 L02 CORRIDOR c		120	-	-
B5 L02 CUPBOARD		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 CUPBOARD (STUDIO)		120	-	-
B5 L02 ENSUITE (3B)		120	-	-
B5 L02 ENSUITE (3B)		120	-	-
B5 L02 ENSUITE (3B)		120	-	-
B5 L02 ENSUITE (4B)		120	-	-
B5 L02 ENSUITE (4B)		120	-	-
B5 L02 ENSUITE (4B)		120	-	-
B5 L02 ENSUITE (4B)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 ENSUITE (STUDIO)		120	-	-
B5 L02 KITCHEN (2Bb)		120	-	-
B5 L02 LIVING/KITCHEN (3Ba)		120	-	-
B5 L02 LIVING/KITCHEN (4Ba)		120	-	-
B5 L02 STAIR		120	-	-
B5 L02 STAIR		120	-	-
B5 L03 BATH (2B)		120	-	-
B5 L03 BED (2Bb1)		120	-	-
B5 L03 BED (2Bb2)		120	-	-
B5 L03 BED (3Ba1)		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L03 BED (3Ba2)		120	-	-
B5 L03 BED (3Ba3)		120	-	-
B5 L03 BED (4Ba1)		120	-	-
B5 L03 BED (4Ba2)		120	-	-
B5 L03 BED (4Ba3)		120	-	-
B5 L03 BED (4Ba4)		120	-	-
B5 L03 CIRC		120	-	-
B5 L03 CIRC (2B)		120	-	-
B5 L03 CIRC (3B)		120	-	-
B5 L03 CIRC (4B)		120	-	-
B5 L03 CORRIDOR b		120	-	-
B5 L03 CORRIDOR c		120	-	-
B5 L03 CUPBOARD		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 CUPBOARD (STUDIO)		120	-	-
B5 L03 ENSUITE (3B)		120	-	-
B5 L03 ENSUITE (3B)		120	-	-
B5 L03 ENSUITE (3B)		120	-	-
B5 L03 ENSUITE (4B)		120	-	-
B5 L03 ENSUITE (4B)		120	-	-
B5 L03 ENSUITE (4B)		120	-	-
B5 L03 ENSUITE (4B)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 ENSUITE (STUDIO)		120	-	-
B5 L03 KITCHEN (2Bb)		120	-	-
B5 L03 LIVING/KITCHEN (3Ba)		120	-	-
B5 L03 LIVING/KITCHEN (4Ba)		120	-	-
B5 L03 STAIR		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L03 STAIR		120	-	-
B5 L04 BATH (2B)		120	-	-
B5 L04 BED (2Bb1)		120	-	-
B5 L04 BED (2Bb2)		120	-	-
B5 L04 BED (3Ba1)		120	-	-
B5 L04 BED (3Ba2)		120	-	-
B5 L04 BED (3Ba3)		120	-	-
B5 L04 BED (4Ba1)		120	-	-
B5 L04 BED (4Ba2)		120	-	-
B5 L04 BED (4Ba3)		120	-	-
B5 L04 BED (4Ba4)		120	-	-
B5 L04 CIRC		120	-	-
B5 L04 CIRC (2B)		120	-	-
B5 L04 CIRC (3B)		120	-	-
B5 L04 CIRC (4B)		120	-	-
B5 L04 CORRIDOR b		120	-	-
B5 L04 CORRIDOR c		120	-	-
B5 L04 CUPBOARD		120	-	-
B5 L04 CUPBOARD (STUDIO)		120	-	-
B5 L04 CUPBOARD (STUDIO)		120	-	-
B5 L04 CUPBOARD (STUDIO)		120	-	-
B5 L04 ENSUITE (3B)		120	-	-
B5 L04 ENSUITE (3B)		120	-	-
B5 L04 ENSUITE (3B)		120	-	-
B5 L04 ENSUITE (4B)		120	-	-
B5 L04 ENSUITE (4B)		120	-	-
B5 L04 ENSUITE (4B)		120	-	-
B5 L04 ENSUITE (4B)		120	-	-
B5 L04 ENSUITE (STUDIO)		120	-	-
B5 L04 ENSUITE (STUDIO)		120	-	-
B5 L04 ENSUITE (STUDIO)		120	-	-
B5 L04 ENSUITE (STUDIO)		120	-	-
B5 L04 KITCHEN (2Bb)		120	-	-
B5 L04 LIVING/KITCHEN (3Ba)		120	-	-
B5 L04 LIVING/KITCHEN (4Ba)		120	-	-
B5 L04 STAIR		120	-	-
B5 L04 STAIR		120	-	-
B5 L05 BATH (2B)		120	-	-
B5 L05 BED (2Bb1)		120	-	-
B5 L05 BED (2Bb2)		120	-	-
B5 L05 BED (2Bc1)		120	-	-
B5 L05 BED (2Bc2)		120	-	-
B5 L05 BED (3Ba1)		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95		80	0.3
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 ENSUITE (STUDIO)		120		-	-
B5 L05 KITCHEN (2Bb)		120		-	-
B5 L05 LIVING/KITCHEN (2Bc)		120		-	-
B5 L05 LIVING/KITCHEN (3Ba)		120		-	-
B5 L05 LIVING/KITCHEN (4Ba)		120		-	-
B5 L05 STAIR		120		-	-
B5 L05 STAIR		120		-	-
B5 L05 STAIR		120		-	-
B5 L05 STUDY		120		-	-
B5 L06 BATH (2B)		120		-	-
B5 L06 BED (2Bb1)		120		-	-
B5 L06 BED (2Bb2)		120		-	-
B5 L06 BED (2Bc1)		120		-	-
B5 L06 BED (2Bc2)		120		-	-
B5 L06 BED (3Ba1)		120		-	-
B5 L06 BED (3Ba2)		120		-	-
B5 L06 BED (3Ba3)		120		-	-
B5 L06 BED (4Ba1)		120		-	-
B5 L06 BED (4Ba2)		120		-	-
B5 L06 BED (4Ba3)		120		-	-
B5 L06 BED (4Ba4)		120		-	-
B5 L06 CIRC		120		-	-
B5 L06 CIRC		120		-	-
B5 L06 CIRC (2B)		120		-	-
B5 L06 CIRC (2B)		120		-	-
B5 L06 CIRC (3B)		120		-	-
B5 L06 CIRC (4B)		120		-	-
B5 L06 CLEANERS		120		-	-
B5 L06 CORRIDOR b		120		-	-
B5 L06 CORRIDOR c		120		-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]		Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95		80	0.3
B5 L06 LIVING/KITCHEN (2Bc)		120		-	-
B5 L06 LIVING/KITCHEN (3Ba)		120		-	-
B5 L06 LIVING/KITCHEN (4Ba)		120		-	-
B5 L06 STAIR		120		-	-
B5 L06 STAIR		120		-	-
B5 L06 STAIR		120		-	-
B5 L06 STUDY		120		-	-
B5 L07 BATH (2B)		120		-	-
B5 L07 BED (2Bb1)		120		-	-
B5 L07 BED (2Bb2)		120		-	-
B5 L07 BED (3Ba1)		120		-	-
B5 L07 BED (3Ba2)		120		-	-
B5 L07 BED (3Ba3)		120		-	-
B5 L07 BED (4Ba1)		120		-	-
B5 L07 BED (4Ba2)		120		-	-
B5 L07 BED (4Ba3)		120		-	-
B5 L07 BED (4Ba4)		120		-	-
B5 L07 CIRC		120		-	-
B5 L07 CIRC (2B)		120		-	-
B5 L07 CIRC (3B)		120		-	-
B5 L07 CIRC (4B)		120		-	-
B5 L07 CORRIDOR b		120		-	-
B5 L07 CUPBOARD		120		-	-
B5 L07 CUPBOARD (STUDIO)		120		-	-
B5 L07 CUPBOARD (STUDIO)		120		-	-
B5 L07 CUPBOARD (STUDIO)		120		-	-
B5 L07 ENSUITE (3B)		120		-	-
B5 L07 ENSUITE (3B)		120		-	-
B5 L07 ENSUITE (3B)		120		-	-
B5 L07 ENSUITE (4B)		120		-	-
B5 L07 ENSUITE (4B)		120		-	-
B5 L07 ENSUITE (4B)		120		-	-
B5 L07 ENSUITE (4B)		120		-	-
B5 L07 ENSUITE (STUDIO)		120		-	-
B5 L07 ENSUITE (STUDIO)		120		-	-
B5 L07 ENSUITE (STUDIO)		120		-	-
B5 L07 ENSUITE (STUDIO)		120		-	-
B5 L07 KITCHEN (2Bb)		120		-	-
B5 L07 LIVING/KITCHEN (3Ba)		120		-	-
B5 L07 LIVING/KITCHEN (4Ba)		120		-	-
B5 L07 STAIR		120		-	-
B5 L07 STAIR		120		-	-
B5 L08 BATH (2B)		120		-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L08 BED (2Bb1)		120	-	-
B5 L08 BED (2Bb2)		120	-	-
B5 L08 BED (3Ba1)		120	-	-
B5 L08 BED (3Ba2)		120	-	-
B5 L08 BED (3Ba3)		120	-	-
B5 L08 BED (4Ba1)		120	-	-
B5 L08 BED (4Ba2)		120	-	-
B5 L08 BED (4Ba3)		120	-	-
B5 L08 BED (4Ba4)		120	-	-
B5 L08 CIRC		120	-	-
B5 L08 CIRC (2B)		120	-	-
B5 L08 CIRC (3B)		120	-	-
B5 L08 CIRC (4B)		120	-	-
B5 L08 CORRIDOR b		120	-	-
B5 L08 CUPBOARD		120	-	-
B5 L08 CUPBOARD (STUDIO)		120	-	-
B5 L08 CUPBOARD (STUDIO)		120	-	-
B5 L08 CUPBOARD (STUDIO)		120	-	-
B5 L08 ENSUITE (3B)		120	-	-
B5 L08 ENSUITE (3B)		120	-	-
B5 L08 ENSUITE (3B)		120	-	-
B5 L08 ENSUITE (4B)		120	-	-
B5 L08 ENSUITE (4B)		120	-	-
B5 L08 ENSUITE (4B)		120	-	-
B5 L08 ENSUITE (4B)		120	-	-
B5 L08 ENSUITE (STUDIO)		120	-	-
B5 L08 ENSUITE (STUDIO)		120	-	-
B5 L08 ENSUITE (STUDIO)		120	-	-
B5 L08 ENSUITE (STUDIO)		120	-	-
B5 L08 KITCHEN (2Bb)		120	-	-
B5 L08 LIVING/KITCHEN (3Ba)		120	-	-
B5 L08 LIVING/KITCHEN (4Ba)		120	-	-
B5 L08 STAIR		120	-	-
B5 L08 STAIR		120	-	-
B5 L09 BATH (2B)		120	-	-
B5 L09 BED (2Bb1)		120	-	-
B5 L09 BED (2Bb2)		120	-	-
B5 L09 BED (3Ba1)		120	-	-
B5 L09 BED (3Ba2)		120	-	-
B5 L09 BED (3Ba3)		120	-	-
B5 L09 BED (4Ba1)		120	-	-
B5 L09 BED (4Ba2)		120	-	-
B5 L09 BED (4Ba3)		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80		0.3
B5 L09 BED (4Ba4)		120	-		-
B5 L09 CIRC		120	-		-
B5 L09 CIRC (2B)		120	-		-
B5 L09 CIRC (3B)		120	-		-
B5 L09 CIRC (4B)		120	-		-
B5 L09 CORRIDOR b		120	-		-
B5 L09 CUPBOARD		120	-		-
B5 L09 CUPBOARD (STUDIO)		120	-		-
B5 L09 CUPBOARD (STUDIO)		120	-		-
B5 L09 CUPBOARD (STUDIO)		120	-		-
B5 L09 ENSUITE (3B)		120	-		-
B5 L09 ENSUITE (3B)		120	-		-
B5 L09 ENSUITE (3B)		120	-		-
B5 L09 ENSUITE (4B)		120	-		-
B5 L09 ENSUITE (4B)		120	-		-
B5 L09 ENSUITE (4B)		120	-		-
B5 L09 ENSUITE (4B)		120	-		-
B5 L09 ENSUITE (4B)		120	-		-
B5 L09 ENSUITE (STUDIO)		120	-		-
B5 L09 ENSUITE (STUDIO)		120	-		-
B5 L09 ENSUITE (STUDIO)		120	-		-
B5 L09 ENSUITE (STUDIO)		120	-		-
B5 L09 KITCHEN (2Bb)		120	-		-
B5 L09 LIVING/KITCHEN (3Ba)		120	-		-
B5 L09 LIVING/KITCHEN (4Ba)		120	-		-
B5 L09 STAIR		120	-		-
B5 L09 STAIR		120	-		-
B5 L10 BATH (2B)		120	-		-
B5 L10 BED (2Bb1)		120	-		-
B5 L10 BED (2Bb2)		120	-		-
B5 L10 BED (3Ba1)		120	-		-
B5 L10 BED (3Ba2)		120	-		-
B5 L10 BED (3Ba3)		120	-		-
B5 L10 BED (4Ba1)		120	-		-
B5 L10 BED (4Ba2)		120	-		-
B5 L10 BED (4Ba3)		120	-		-
B5 L10 BED (4Ba4)		120	-		-
B5 L10 CIRC		120	-		-
B5 L10 CIRC (2B)		120	-		-
B5 L10 CIRC (3B)		120	-		-
B5 L10 CIRC (4B)		120	-		-
B5 L10 CORRIDOR b		120	-		-
B5 L10 CUPBOARD		120	-		-
B5 L10 CUPBOARD (STUDIO)		120	-		-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L10 CUPBOARD (STUDIO)		120	-	-
B5 L10 CUPBOARD (STUDIO)		120	-	-
B5 L10 ENSUITE (3B)		120	-	-
B5 L10 ENSUITE (3B)		120	-	-
B5 L10 ENSUITE (3B)		120	-	-
B5 L10 ENSUITE (4B)		120	-	-
B5 L10 ENSUITE (4B)		120	-	-
B5 L10 ENSUITE (4B)		120	-	-
B5 L10 ENSUITE (4B)		120	-	-
B5 L10 ENSUITE (STUDIO)		120	-	-
B5 L10 ENSUITE (STUDIO)		120	-	-
B5 L10 ENSUITE (STUDIO)		120	-	-
B5 L10 ENSUITE (STUDIO)		120	-	-
B5 L10 KITCHEN (2Bb)		120	-	-
B5 L10 LIVING/KITCHEN (3Ba)		120	-	-
B5 L10 LIVING/KITCHEN (4Ba)		120	-	-
B5 L10 STAIR		120	-	-
B5 L10 STAIR		120	-	-
B5 L11 BATH (2B)		120	-	-
B5 L11 BED (2Bb1)		120	-	-
B5 L11 BED (2Bb2)		120	-	-
B5 L11 BED (3Ba1)		120	-	-
B5 L11 BED (3Ba2)		120	-	-
B5 L11 BED (3Ba3)		120	-	-
B5 L11 BED (4Ba1)		120	-	-
B5 L11 BED (4Ba2)		120	-	-
B5 L11 BED (4Ba3)		120	-	-
B5 L11 BED (4Ba4)		120	-	-
B5 L11 CIRC		120	-	-
B5 L11 CIRC (2B)		120	-	-
B5 L11 CIRC (3B)		120	-	-
B5 L11 CIRC (4B)		120	-	-
B5 L11 CORRIDOR b		120	-	-
B5 L11 CUPBOARD		120	-	-
B5 L11 CUPBOARD (STUDIO)		120	-	-
B5 L11 CUPBOARD (STUDIO)		120	-	-
B5 L11 CUPBOARD (STUDIO)		120	-	-
B5 L11 ENSUITE (3B)		120	-	-
B5 L11 ENSUITE (3B)		120	-	-
B5 L11 ENSUITE (3B)		120	-	-
B5 L11 ENSUITE (4B)		120	-	-
B5 L11 ENSUITE (4B)		120	-	-
B5 L11 ENSUITE (4B)		120	-	-

General lighting and display lighting		General luminaire		Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80		0.3
B5 L11 ENSUITE (4B)		120	-		-
B5 L11 ENSUITE (STUDIO)		120	-		-
B5 L11 ENSUITE (STUDIO)		120	-		-
B5 L11 ENSUITE (STUDIO)		120	-		-
B5 L11 ENSUITE (STUDIO)		120	-		-
B5 L11 KITCHEN (2Bb)		120	-		-
B5 L11 LIVING/KITCHEN (3Ba)		120	-		-
B5 L11 LIVING/KITCHEN (4Ba)		120	-		-
B5 L11 STAIR		120	-		-
B5 L11 STAIR		120	-		-
B5 L03 STUDIO g		120	-		-
B5 L03 STUDIO g		120	-		-
B5 L03 STUDIO h		120	-		-
B5 L03 STUDIO h		120	-		-
B5 L03 STUDIO i		120	-		-
B5 L03 STUDIO i		120	-		-
B5 L03 STUDIO j		120	-		-
B5 L03 STUDIO j		120	-		-
B5 L03 STUDIO k		120	-		-
B5 L03 STUDIO k		120	-		-
B5 L03 STUDIO l		120	-		-
B5 L03 STUDIO l		120	-		-
B5 L11 STUDIO m		120	-		-
B5 L11 STUDIO m		120	-		-
B5 L11 STUDIO n		120	-		-
B5 L11 STUDIO n		120	-		-
B5 L11 STUDIO o		120	-		-
B5 L11 STUDIO o		120	-		-
B5 L11 STUDIO p		120	-		-
B5 L11 STUDIO p		120	-		-
B5 L06 STUDIO aa		120	-		-
B5 L06 STUDIO aa		120	-		-
B5 L06 STUDIO ab		120	-		-
B5 L06 STUDIO ab		120	-		-
B5 L06 STUDIO ac		120	-		-
B5 L06 STUDIO ac		120	-		-
B5 L06 STUDIO ad		120	-		-
B5 L06 STUDIO ad		120	-		-
B5 L06 STUDIO ae		120	-		-
B5 L06 STUDIO ae		120	-		-
B5 L06 STUDIO af		120	-		-
B5 L06 STUDIO af		120	-		-
B5 L06 STUDIO ag		120	-		-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L06 STUDIO ag		120	-	-
B5 L06 STUDIO ah		120	-	-
B5 L06 STUDIO ah		120	-	-
B5 L06 STUDIO ai		120	-	-
B5 L06 STUDIO ai		120	-	-
B5 L06 STUDIO aj		120	-	-
B5 L06 STUDIO aj		120	-	-
B5 L06 STUDIO ak		120	-	-
B5 L06 STUDIO ak		120	-	-
B5 L06 STUDIO al		120	-	-
B5 L06 STUDIO al		120	-	-
B5 L06 STUDIO am		120	-	-
B5 L06 STUDIO am		120	-	-
B5 L06 STUDIO an		120	-	-
B5 L06 STUDIO an		120	-	-
B5 L06 STUDIO ao		120	-	-
B5 L06 STUDIO ao		120	-	-
B5 L06 STUDIO ap		120	-	-
B5 L06 STUDIO ap		120	-	-
B5 L06 STUDIO aq		120	-	-
B5 L06 STUDIO aq		120	-	-
B5 L06 STUDIO ar		120	-	-
B5 L06 STUDIO ar		120	-	-
B5 L06 STUDIO as		120	-	-
B5 L06 STUDIO as		120	-	-
B5 L06 STUDIO at		120	-	-
B5 L06 STUDIO at		120	-	-
B5 L06 STUDIO au		120	-	-
B5 L06 STUDIO au		120	-	-
B5 L06 STUDIO av		120	-	-
B5 L06 STUDIO av		120	-	-
B5 L06 STUDIO aw		120	-	-
B5 L06 STUDIO aw		120	-	-
B5 L06 STUDIO ax		120	-	-
B5 L06 STUDIO ax		120	-	-
B5 L05 STUDIO am		120	-	-
B5 L05 STUDIO am		120	-	-
B5 L05 STUDIO al		120	-	-
B5 L05 STUDIO al		120	-	-
B5 L05 STUDIO ak		120	-	-
B5 L05 STUDIO ak		120	-	-
B5 L05 STUDIO aj		120	-	-
B5 L05 STUDIO aj		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m²]
	Standard value	95	80	0.3
B5 L05 STUDIO ai		120	-	-
B5 L05 STUDIO ai		120	-	-
B5 L05 STUDIO ah		120	-	-
B5 L05 STUDIO ah		120	-	-
B5 L05 STUDIO ag		120	-	-
B5 L05 STUDIO ag		120	-	-
B5 L05 STUDIO af		120	-	-
B5 L05 STUDIO af		120	-	-
B5 L05 STUDIO ae		120	-	-
B5 L05 STUDIO ae		120	-	-
B5 L05 STUDIO ad		120	-	-
B5 L05 STUDIO ad		120	-	-
B5 L05 STUDIO ac		120	-	-
B5 L05 STUDIO ac		120	-	-
B5 L05 STUDIO ab		120	-	-
B5 L05 STUDIO ab		120	-	-
B5 L05 STUDIO aa		120	-	-
B5 L05 STUDIO aa		120	-	-
B5 L05 STUDIO an		120	-	-
B5 L05 STUDIO an		120	-	-
B5 L05 STUDIO ao		120	-	-
B5 L05 STUDIO ao		120	-	-
B5 L05 STUDIO ap		120	-	-
B5 L05 STUDIO ap		120	-	-
B5 L05 STUDIO aq		120	-	-
B5 L05 STUDIO aq		120	-	-
B5 L05 STUDIO ar		120	-	-
B5 L05 STUDIO ar		120	-	-
B5 L05 STUDIO as		120	-	-
B5 L05 STUDIO as		120	-	-
B5 L05 STUDIO at		120	-	-
B5 L05 STUDIO at		120	-	-
B5 L05 STUDIO au		120	-	-
B5 L05 STUDIO au		120	-	-
B5 L05 STUDIO av		120	-	-
B5 L05 STUDIO av		120	-	-
B5 L05 STUDIO aw		120	-	-
B5 L05 STUDIO aw		120	-	-
B5 L05 STUDIO ax		120	-	-
B5 L05 STUDIO ax		120	-	-
B5 L10 STUDIO n		120	-	-
B5 L10 STUDIO n		120	-	-
B5 L10 STUDIO m		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L10 STUDIO m		120	-	-
B5 L02 STUDIO l		120	-	-
B5 L02 STUDIO l		120	-	-
B5 L02 STUDIO k		120	-	-
B5 L02 STUDIO k		120	-	-
B5 L02 STUDIO j		120	-	-
B5 L02 STUDIO j		120	-	-
B5 L02 STUDIO i		120	-	-
B5 L02 STUDIO i		120	-	-
B5 L02 STUDIO h		120	-	-
B5 L02 STUDIO h		120	-	-
B5 L02 STUDIO g		120	-	-
B5 L02 STUDIO g		120	-	-
B5 L10 STUDIO p		120	-	-
B5 L10 STUDIO p		120	-	-
B5 L10 STUDIO o		120	-	-
B5 L10 STUDIO o		120	-	-
B5 L09 STUDIO n		120	-	-
B5 L09 STUDIO n		120	-	-
B5 L09 STUDIO m		120	-	-
B5 L09 STUDIO m		120	-	-
B5 L01 STUDIO l		120	-	-
B5 L01 STUDIO l		120	-	-
B5 L01 STUDIO k		120	-	-
B5 L01 STUDIO k		120	-	-
B5 L01 STUDIO j		120	-	-
B5 L01 STUDIO j		120	-	-
B5 L01 STUDIO i		120	-	-
B5 L01 STUDIO i		120	-	-
B5 L01 STUDIO h		120	-	-
B5 L01 STUDIO h		120	-	-
B5 L01 STUDIO g		120	-	-
B5 L01 STUDIO g		120	-	-
B5 L09 STUDIO p		120	-	-
B5 L09 STUDIO p		120	-	-
B5 L09 STUDIO o		120	-	-
B5 L09 STUDIO o		120	-	-
B5 L08 STUDIO n		120	-	-
B5 L08 STUDIO n		120	-	-
B5 L08 STUDIO m		120	-	-
B5 L08 STUDIO m		120	-	-
B5 L08 STUDIO p		120	-	-
B5 L08 STUDIO p		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L08 STUDIO o		120	-	-
B5 L08 STUDIO o		120	-	-
B5 L07 STUDIO n		120	-	-
B5 L07 STUDIO n		120	-	-
B5 L07 STUDIO m		120	-	-
B5 L07 STUDIO m		120	-	-
B5 L07 STUDIO p		120	-	-
B5 L07 STUDIO p		120	-	-
B5 L07 STUDIO o		120	-	-
B5 L07 STUDIO o		120	-	-
B5 L06 STUDIO n		120	-	-
B5 L06 STUDIO n		120	-	-
B5 L06 STUDIO m		120	-	-
B5 L06 STUDIO m		120	-	-
B5 L06 STUDIO p		120	-	-
B5 L06 STUDIO p		120	-	-
B5 L06 STUDIO o		120	-	-
B5 L06 STUDIO o		120	-	-
B5 L05 STUDIO n		120	-	-
B5 L05 STUDIO n		120	-	-
B5 L05 STUDIO m		120	-	-
B5 L05 STUDIO m		120	-	-
B5 L05 STUDIO p		120	-	-
B5 L05 STUDIO p		120	-	-
B5 L05 STUDIO o		120	-	-
B5 L05 STUDIO o		120	-	-
B5 L04 STUDIO n		120	-	-
B5 L04 STUDIO n		120	-	-
B5 L04 STUDIO m		120	-	-
B5 L04 STUDIO m		120	-	-
B5 L04 STUDIO p		120	-	-
B5 L04 STUDIO p		120	-	-
B5 L04 STUDIO o		120	-	-
B5 L04 STUDIO o		120	-	-
B5 L03 STUDIO n		120	-	-
B5 L03 STUDIO n		120	-	-
B5 L03 STUDIO m		120	-	-
B5 L03 STUDIO m		120	-	-
B5 L03 STUDIO p		120	-	-
B5 L03 STUDIO p		120	-	-
B5 L03 STUDIO o		120	-	-
B5 L03 STUDIO o		120	-	-
B5 L02 STUDIO n		120	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m ²]
	Standard value	95	80	0.3
B5 L02 STUDIO n		120	-	-
B5 L02 STUDIO m		120	-	-
B5 L02 STUDIO m		120	-	-
B5 L02 STUDIO p		120	-	-
B5 L02 STUDIO p		120	-	-
B5 L02 STUDIO o		120	-	-
B5 L02 STUDIO o		120	-	-
B5 L01 STUDIO n		120	-	-
B5 L01 STUDIO n		120	-	-
B5 L01 STUDIO m		120	-	-
B5 L01 STUDIO m		120	-	-
B5 L01 STUDIO p		120	-	-
B5 L01 STUDIO p		120	-	-
B5 L01 STUDIO o		120	-	-
B5 L01 STUDIO o		120	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L00 AUDITORIUM	NO (-83.1%)	NO
B5 L00 COMMERCIAL	NO (-23%)	NO
B5 L00 COMMS	NO (-57.8%)	NO
B5 L00 DINING	NO (-64.9%)	NO
B5 L00 LOUNGE	NO (-68.8%)	NO
B5 L00 RECEPTION	NO (-57.2%)	NO
B5 L00 STAFF ROOM	NO (-82.1%)	NO
B5 L01 BED (2Bb1)	NO (-72.8%)	NO
B5 L01 BED (2Bb2)	NO (-82.5%)	NO
B5 L01 BED (3Ba1)	NO (-62.4%)	NO
B5 L01 BED (3Ba2)	NO (-59.3%)	NO
B5 L01 BED (3Ba3)	NO (-59.4%)	NO
B5 L01 BED (4Ba1)	NO (-52.9%)	NO
B5 L01 BED (4Ba2)	NO (-53.5%)	NO
B5 L01 BED (4Ba3)	NO (-53.2%)	NO
B5 L01 BED (4Ba4)	NO (-83.6%)	NO
B5 L02 BED (2Bb1)	NO (-67.6%)	NO
B5 L02 BED (2Bb2)	NO (-79.2%)	NO
B5 L02 BED (3Ba1)	NO (-49.4%)	NO
B5 L02 BED (3Ba2)	NO (-46%)	NO
B5 L02 BED (3Ba3)	NO (-46.8%)	NO
B5 L02 BED (4Ba1)	NO (-49.6%)	NO
B5 L02 BED (4Ba2)	NO (-50.1%)	NO
B5 L02 BED (4Ba3)	NO (-49.9%)	NO
B5 L02 BED (4Ba4)	NO (-82.5%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L03 BED (2Bb1)	NO (-59.2%)	NO
B5 L03 BED (2Bb2)	NO (-73.7%)	NO
B5 L03 BED (3Ba1)	NO (-34.9%)	NO
B5 L03 BED (3Ba2)	NO (-33.8%)	NO
B5 L03 BED (3Ba3)	NO (-36.1%)	NO
B5 L03 BED (4Ba1)	NO (-46.8%)	NO
B5 L03 BED (4Ba2)	NO (-46.2%)	NO
B5 L03 BED (4Ba3)	NO (-46.2%)	NO
B5 L03 BED (4Ba4)	NO (-81.5%)	NO
B5 L04 BED (2Bb1)	NO (-51.7%)	NO
B5 L04 BED (2Bb2)	NO (-68.9%)	NO
B5 L04 BED (3Ba1)	NO (-33.4%)	NO
B5 L04 BED (3Ba2)	NO (-33.4%)	NO
B5 L04 BED (3Ba3)	NO (-35.7%)	NO
B5 L04 BED (4Ba1)	NO (-42.6%)	NO
B5 L04 BED (4Ba2)	NO (-41.7%)	NO
B5 L04 BED (4Ba3)	NO (-41.9%)	NO
B5 L04 BED (4Ba4)	NO (-79.8%)	NO
B5 L05 BED (2Bb1)	NO (-50.4%)	NO
B5 L05 BED (2Bb2)	NO (-68.1%)	NO
B5 L05 BED (2Bc1)	NO (-38.6%)	NO
B5 L05 BED (2Bc2)	NO (-90.8%)	NO
B5 L05 BED (3Ba1)	NO (-33.4%)	NO
B5 L05 BED (3Ba2)	NO (-33.4%)	NO
B5 L05 BED (3Ba3)	NO (-35.7%)	NO
B5 L05 BED (4Ba1)	NO (-38.5%)	NO
B5 L05 BED (4Ba2)	NO (-37.7%)	NO
B5 L05 BED (4Ba3)	NO (-36.3%)	NO
B5 L05 BED (4Ba4)	NO (-77.5%)	NO
B5 L05 STUDY	NO (-47.7%)	NO
B5 L06 BED (2Bb1)	NO (-50.4%)	NO
B5 L06 BED (2Bb2)	NO (-68.1%)	NO
B5 L06 BED (2Bc1)	NO (-38.5%)	NO
B5 L06 BED (2Bc2)	NO (-90%)	NO
B5 L06 BED (3Ba1)	NO (-33.4%)	NO
B5 L06 BED (3Ba2)	NO (-33.4%)	NO
B5 L06 BED (3Ba3)	NO (-35.7%)	NO
B5 L06 BED (4Ba1)	NO (-30.9%)	NO
B5 L06 BED (4Ba2)	NO (-30.1%)	NO
B5 L06 BED (4Ba3)	NO (-29.4%)	NO
B5 L06 BED (4Ba4)	NO (-75.6%)	NO
B5 L06 STUDY	NO (-47.3%)	NO
B5 L07 BED (2Bb1)	NO (-50.4%)	NO
B5 L07 BED (2Bb2)	NO (-68.1%)	NO
B5 L07 BED (3Ba1)	NO (-33.4%)	NO
B5 L07 BED (3Ba2)	NO (-33.4%)	NO
B5 L07 BED (3Ba3)	NO (-35.7%)	NO
B5 L07 BED (4Ba1)	NO (-27.3%)	NO
B5 L07 BED (4Ba2)	NO (-27%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L07 BED (4Ba3)	NO (-26.6%)	NO
B5 L07 BED (4Ba4)	NO (-74.9%)	NO
B5 L08 BED (2Bb1)	NO (-50.4%)	NO
B5 L08 BED (2Bb2)	NO (-68.1%)	NO
B5 L08 BED (3Ba1)	NO (-33.4%)	NO
B5 L08 BED (3Ba2)	NO (-33.4%)	NO
B5 L08 BED (3Ba3)	NO (-35.7%)	NO
B5 L08 BED (4Ba1)	NO (-24.9%)	NO
B5 L08 BED (4Ba2)	NO (-24.9%)	NO
B5 L08 BED (4Ba3)	NO (-24.5%)	NO
B5 L08 BED (4Ba4)	NO (-74.2%)	NO
B5 L09 BED (2Bb1)	NO (-50.4%)	NO
B5 L09 BED (2Bb2)	NO (-68.1%)	NO
B5 L09 BED (3Ba1)	NO (-33.4%)	NO
B5 L09 BED (3Ba2)	NO (-33.4%)	NO
B5 L09 BED (3Ba3)	NO (-35.7%)	NO
B5 L09 BED (4Ba1)	NO (-24.2%)	NO
B5 L09 BED (4Ba2)	NO (-24.2%)	NO
B5 L09 BED (4Ba3)	NO (-24.2%)	NO
B5 L09 BED (4Ba4)	NO (-74.1%)	NO
B5 L10 BED (2Bb1)	NO (-50.4%)	NO
B5 L10 BED (2Bb2)	NO (-68.1%)	NO
B5 L10 BED (3Ba1)	NO (-33.4%)	NO
B5 L10 BED (3Ba2)	NO (-33.4%)	NO
B5 L10 BED (3Ba3)	NO (-35.7%)	NO
B5 L10 BED (4Ba1)	NO (-24%)	NO
B5 L10 BED (4Ba2)	NO (-24%)	NO
B5 L10 BED (4Ba3)	NO (-24%)	NO
B5 L10 BED (4Ba4)	NO (-74%)	NO
B5 L11 BED (2Bb1)	NO (-50.4%)	NO
B5 L11 BED (2Bb2)	NO (-68.1%)	NO
B5 L11 BED (3Ba1)	NO (-33.4%)	NO
B5 L11 BED (3Ba2)	NO (-33.4%)	NO
B5 L11 BED (3Ba3)	NO (-35.7%)	NO
B5 L11 BED (4Ba1)	NO (-24%)	NO
B5 L11 BED (4Ba2)	NO (-24%)	NO
B5 L11 BED (4Ba3)	NO (-24%)	NO
B5 L11 BED (4Ba4)	NO (-74%)	NO
B5 L03 STUDIO g	YES (+41.7%)	NO
B5 L03 STUDIO g	NO (-79.5%)	NO
B5 L03 STUDIO h	NO (-57.6%)	NO
B5 L03 STUDIO h	NO (-27.5%)	NO
B5 L03 STUDIO i	YES (+13.4%)	NO
B5 L03 STUDIO i	NO (-62.1%)	NO
B5 L03 STUDIO j	NO (-60.7%)	NO
B5 L03 STUDIO j	NO (-31.7%)	NO
B5 L03 STUDIO k	YES (+1.9%)	NO
B5 L03 STUDIO k	NO (-62.9%)	NO
B5 L03 STUDIO l	NO (-59.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L03 STUDIO l	NO (-44%)	NO
B5 L11 STUDIO m	YES (+41.9%)	NO
B5 L11 STUDIO m	NO (-78.9%)	NO
B5 L11 STUDIO n	NO (-67.1%)	NO
B5 L11 STUDIO n	NO (-57.1%)	NO
B5 L11 STUDIO o	NO (-51.9%)	NO
B5 L11 STUDIO o	NO (-55.8%)	NO
B5 L11 STUDIO p	NO (-67.6%)	NO
B5 L11 STUDIO p	NO (-65%)	NO
B5 L06 STUDIO aa	NO (-53.4%)	NO
B5 L06 STUDIO aa	NO (-67.8%)	NO
B5 L06 STUDIO ab	NO (-45.9%)	NO
B5 L06 STUDIO ab	NO (-49.3%)	NO
B5 L06 STUDIO ac	NO (-39.6%)	NO
B5 L06 STUDIO ac	NO (-38.4%)	NO
B5 L06 STUDIO ad	NO (-42.2%)	NO
B5 L06 STUDIO ad	NO (-22%)	NO
B5 L06 STUDIO ae	NO (-41.9%)	NO
B5 L06 STUDIO ae	NO (-36.8%)	NO
B5 L06 STUDIO af	NO (-40.3%)	NO
B5 L06 STUDIO af	NO (-41.6%)	NO
B5 L06 STUDIO ag	NO (-42.6%)	NO
B5 L06 STUDIO ag	NO (-36.9%)	NO
B5 L06 STUDIO ah	NO (-39.7%)	NO
B5 L06 STUDIO ah	NO (-35.7%)	NO
B5 L06 STUDIO ai	NO (-41.2%)	NO
B5 L06 STUDIO ai	NO (-40.9%)	NO
B5 L06 STUDIO aj	NO (-40.4%)	NO
B5 L06 STUDIO aj	NO (-44.7%)	NO
B5 L06 STUDIO ak	NO (-43.6%)	NO
B5 L06 STUDIO ak	NO (-40.3%)	NO
B5 L06 STUDIO al	NO (-39%)	NO
B5 L06 STUDIO al	NO (-41.2%)	NO
B5 L06 STUDIO am	NO (-75.2%)	NO
B5 L06 STUDIO am	NO (-30.1%)	NO
B5 L06 STUDIO an	NO (-46.2%)	NO
B5 L06 STUDIO an	NO (-64.5%)	NO
B5 L06 STUDIO ao	NO (-48.8%)	NO
B5 L06 STUDIO ao	NO (-37.2%)	NO
B5 L06 STUDIO ap	NO (-45.1%)	NO
B5 L06 STUDIO ap	NO (-66.8%)	NO
B5 L06 STUDIO aq	NO (-43.6%)	NO
B5 L06 STUDIO aq	NO (-63.5%)	NO
B5 L06 STUDIO ar	NO (-46.6%)	NO
B5 L06 STUDIO ar	NO (-64.7%)	NO
B5 L06 STUDIO as	NO (-48.7%)	NO
B5 L06 STUDIO as	NO (-38.1%)	NO
B5 L06 STUDIO at	NO (-54.7%)	NO
B5 L06 STUDIO at	NO (-48.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L06 STUDIO au	NO (-48.3%)	NO
B5 L06 STUDIO au	NO (-67.5%)	NO
B5 L06 STUDIO av	NO (-68.1%)	NO
B5 L06 STUDIO av	NO (-66.7%)	NO
B5 L06 STUDIO aw	NO (-54.9%)	NO
B5 L06 STUDIO aw	NO (-42.7%)	NO
B5 L06 STUDIO ax	NO (-61.3%)	NO
B5 L06 STUDIO ax	NO (-66.8%)	NO
B5 L05 STUDIO am	NO (-75.4%)	NO
B5 L05 STUDIO am	NO (-29.5%)	NO
B5 L05 STUDIO al	NO (-38%)	NO
B5 L05 STUDIO al	NO (-35%)	NO
B5 L05 STUDIO ak	NO (-41.8%)	NO
B5 L05 STUDIO ak	NO (-31.8%)	NO
B5 L05 STUDIO aj	NO (-37.4%)	NO
B5 L05 STUDIO aj	NO (-30.9%)	NO
B5 L05 STUDIO ai	NO (-38.7%)	NO
B5 L05 STUDIO ai	NO (-24.6%)	NO
B5 L05 STUDIO ah	NO (-37.2%)	NO
B5 L05 STUDIO ah	NO (-19.1%)	NO
B5 L05 STUDIO ag	NO (-40.9%)	NO
B5 L05 STUDIO ag	NO (-23.1%)	NO
B5 L05 STUDIO af	NO (-40.3%)	NO
B5 L05 STUDIO af	NO (-37.5%)	NO
B5 L05 STUDIO ae	NO (-40.3%)	NO
B5 L05 STUDIO ae	NO (-22.9%)	NO
B5 L05 STUDIO ad	NO (-42.8%)	NO
B5 L05 STUDIO ad	NO (-22.5%)	NO
B5 L05 STUDIO ac	NO (-39.7%)	NO
B5 L05 STUDIO ac	NO (-34.7%)	NO
B5 L05 STUDIO ab	NO (-45.8%)	NO
B5 L05 STUDIO ab	NO (-45.4%)	NO
B5 L05 STUDIO aa	NO (-68.8%)	NO
B5 L05 STUDIO aa	NO (-65.2%)	NO
B5 L05 STUDIO an	NO (-46%)	NO
B5 L05 STUDIO an	NO (-64.6%)	NO
B5 L05 STUDIO ao	NO (-47.7%)	NO
B5 L05 STUDIO ao	NO (-22.4%)	NO
B5 L05 STUDIO ap	NO (-43.7%)	NO
B5 L05 STUDIO ap	NO (-58.6%)	NO
B5 L05 STUDIO aq	NO (-42%)	NO
B5 L05 STUDIO aq	NO (-54.1%)	NO
B5 L05 STUDIO ar	NO (-45.6%)	NO
B5 L05 STUDIO ar	NO (-58.1%)	NO
B5 L05 STUDIO as	NO (-47.2%)	NO
B5 L05 STUDIO as	NO (-18.1%)	NO
B5 L05 STUDIO at	NO (-53.3%)	NO
B5 L05 STUDIO at	NO (-36.9%)	NO
B5 L05 STUDIO au	NO (-47.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L05 STUDIO au	NO (-61.4%)	NO
B5 L05 STUDIO av	NO (-67%)	NO
B5 L05 STUDIO av	NO (-54.6%)	NO
B5 L05 STUDIO aw	NO (-54.8%)	NO
B5 L05 STUDIO aw	NO (-41.6%)	NO
B5 L05 STUDIO ax	NO (-60.8%)	NO
B5 L05 STUDIO ax	NO (-64.2%)	NO
B5 L10 STUDIO n	NO (-68%)	NO
B5 L10 STUDIO n	NO (-69.6%)	NO
B5 L10 STUDIO m	NO (-72.5%)	NO
B5 L10 STUDIO m	NO (-85.6%)	NO
B5 L02 STUDIO l	NO (-70%)	NO
B5 L02 STUDIO l	NO (-57.3%)	NO
B5 L02 STUDIO k	NO (-69.5%)	NO
B5 L02 STUDIO k	NO (-73%)	NO
B5 L02 STUDIO j	NO (-70.2%)	NO
B5 L02 STUDIO j	NO (-50.5%)	NO
B5 L02 STUDIO i	NO (-67.8%)	NO
B5 L02 STUDIO i	NO (-76.5%)	NO
B5 L02 STUDIO h	NO (-67%)	NO
B5 L02 STUDIO h	NO (-50.9%)	NO
B5 L02 STUDIO g	NO (-74.9%)	NO
B5 L02 STUDIO g	NO (-87.4%)	NO
B5 L10 STUDIO p	NO (-69%)	NO
B5 L10 STUDIO p	NO (-75.5%)	NO
B5 L10 STUDIO o	NO (-54.4%)	NO
B5 L10 STUDIO o	NO (-66.9%)	NO
B5 L09 STUDIO n	NO (-68%)	NO
B5 L09 STUDIO n	NO (-70.5%)	NO
B5 L09 STUDIO m	NO (-73%)	NO
B5 L09 STUDIO m	NO (-84.8%)	NO
B5 L01 STUDIO l	NO (-73.6%)	NO
B5 L01 STUDIO l	NO (-75.1%)	NO
B5 L01 STUDIO k	NO (-73.6%)	NO
B5 L01 STUDIO k	NO (-77.7%)	NO
B5 L01 STUDIO j	NO (-73.1%)	NO
B5 L01 STUDIO j	NO (-66.8%)	NO
B5 L01 STUDIO i	NO (-71.4%)	NO
B5 L01 STUDIO i	NO (-76.1%)	NO
B5 L01 STUDIO h	NO (-68.5%)	NO
B5 L01 STUDIO h	NO (-56%)	NO
B5 L01 STUDIO g	NO (-76.3%)	NO
B5 L01 STUDIO g	NO (-87.2%)	NO
B5 L09 STUDIO p	NO (-68.8%)	NO
B5 L09 STUDIO p	NO (-72.5%)	NO
B5 L09 STUDIO o	NO (-54.2%)	NO
B5 L09 STUDIO o	NO (-53.1%)	NO
B5 L08 STUDIO n	NO (-68.3%)	NO
B5 L08 STUDIO n	NO (-68.7%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L08 STUDIO m	NO (-71.1%)	NO
B5 L08 STUDIO m	NO (-86.5%)	NO
B5 L08 STUDIO p	NO (-68.9%)	NO
B5 L08 STUDIO p	NO (-73.3%)	NO
B5 L08 STUDIO o	NO (-54.2%)	NO
B5 L08 STUDIO o	NO (-53.1%)	NO
B5 L07 STUDIO n	NO (-68.6%)	NO
B5 L07 STUDIO n	NO (-70.7%)	NO
B5 L07 STUDIO m	NO (-70.6%)	NO
B5 L07 STUDIO m	NO (-87.4%)	NO
B5 L07 STUDIO p	NO (-69.3%)	NO
B5 L07 STUDIO p	NO (-76.7%)	NO
B5 L07 STUDIO o	NO (-52.8%)	NO
B5 L07 STUDIO o	NO (-64.1%)	NO
B5 L06 STUDIO n	NO (-68.1%)	NO
B5 L06 STUDIO n	NO (-68.5%)	NO
B5 L06 STUDIO m	NO (-71.8%)	NO
B5 L06 STUDIO m	NO (-86.1%)	NO
B5 L06 STUDIO p	NO (-62.7%)	NO
B5 L06 STUDIO p	NO (-77.8%)	NO
B5 L06 STUDIO o	NO (-54.2%)	NO
B5 L06 STUDIO o	NO (-63.1%)	NO
B5 L05 STUDIO n	NO (-68.8%)	NO
B5 L05 STUDIO n	NO (-70.8%)	NO
B5 L05 STUDIO m	NO (-70%)	NO
B5 L05 STUDIO m	NO (-87.5%)	NO
B5 L05 STUDIO p	NO (-66.6%)	NO
B5 L05 STUDIO p	NO (-80.2%)	NO
B5 L05 STUDIO o	NO (-48.4%)	NO
B5 L05 STUDIO o	N/A	N/A
B5 L04 STUDIO n	NO (-65.7%)	NO
B5 L04 STUDIO n	N/A	N/A
B5 L04 STUDIO m	NO (-74.5%)	NO
B5 L04 STUDIO m	NO (-81.5%)	NO
B5 L04 STUDIO p	NO (-65.1%)	NO
B5 L04 STUDIO p	N/A	N/A
B5 L04 STUDIO o	NO (-53.8%)	NO
B5 L04 STUDIO o	NO (-65%)	NO
B5 L03 STUDIO n	NO (-73.2%)	NO
B5 L03 STUDIO n	NO (-71%)	NO
B5 L03 STUDIO m	NO (-63.7%)	NO
B5 L03 STUDIO m	NO (-74.2%)	NO
B5 L03 STUDIO p	NO (-69.5%)	NO
B5 L03 STUDIO p	NO (-82%)	NO
B5 L03 STUDIO o	NO (-53.5%)	NO
B5 L03 STUDIO o	NO (-64.8%)	NO
B5 L02 STUDIO n	NO (-79.5%)	NO
B5 L02 STUDIO n	NO (-79.3%)	NO
B5 L02 STUDIO m	NO (-71.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
B5 L02 STUDIO m	NO (-76.7%)	NO
B5 L02 STUDIO p	NO (-69.7%)	NO
B5 L02 STUDIO p	NO (-79.6%)	NO
B5 L02 STUDIO o	NO (-60.6%)	NO
B5 L02 STUDIO o	NO (-71.7%)	NO
B5 L01 STUDIO n	NO (-82.5%)	NO
B5 L01 STUDIO n	NO (-80.4%)	NO
B5 L01 STUDIO m	NO (-75.6%)	NO
B5 L01 STUDIO m	NO (-79.8%)	NO
B5 L01 STUDIO p	NO (-70.1%)	NO
B5 L01 STUDIO p	NO (-80.2%)	NO
B5 L01 STUDIO o	NO (-69.3%)	NO
B5 L01 STUDIO o	NO (-75%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Floor area [m ²]	6940.2	6940.2
External area [m ²]	5882.3	5882.3
Weather	MAN	MAN
Infiltration [m ³ /hm ² @ 50Pa]	3	3
Average conductance [W/K]	1935.97	2794.02
Average U-value [W/m ² K]	0.33	0.47
Alpha value* [%]	25.32	10

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

Building Use

% Area Building Type

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

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	9.65	7.82
Cooling	0.12	0.16
Auxiliary	3.95	1.94
Lighting	5.42	6.19
Hot water	2.82	3.54
Equipment*	14.12	14.12
TOTAL **	21.95	19.65

* Energy used by equipment does not count towards the total for consumption or calculating emissions.

** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	4.68	1.68
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
<i>Displaced electricity</i>	<i>4.68</i>	<i>1.68</i>

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	41.78	44.3
Primary energy [kWh _{PE} /m ²]	26.11	27.04
Total emissions [kg/m ²]	2.53	2.58

HVAC Systems Performance										
System Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	40.1	0	11.1	0	5.8	1	0	1	0	
Notional	53.9	0	10.6	0	1.7	1.41	0	----	----	
[ST] Variable refrigerant flow, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	101.4	9.5	7.6	0.8	8	3.72	3.47	3.6	5	
Notional	53	17.3	5.3	1	8.1	2.78	4.63	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	231.5	0	64.3	0	0.3	1	0	1	0	
Notional	199.7	0	39.3	0	0.3	1.41	0	----	----	
[ST] Other local room heater - unfanned, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity										
Actual	47.5	0	13.2	0	3.8	1	0	1	0	
Notional	48.9	0	9.6	0	1.6	1.41	0	----	----	
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
Actual	28.3	428.6	2.1	37.3	2.5	3.73	3.2	4	4.5	
Notional	0	804.1	0	48.2	7.2	2.78	4.63	----	----	
[ST] No Heating or Cooling										
Actual	0	0	0	0	0	0	0	0	0	
Notional	0	0	0	0	0	0	0	----	----	

Key to terms

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

Appendix B Part L (2021) Voluntary 'As designed' EPC Reports

B.1 Block 1

Energy Performance Certificate

Non-Domestic Building



0814 Victoria Point, 44 Hathersage Road

Address 3

Address 4

Manchester

M13 0FT

Certificate Reference Number:

6144-5236-8228-1370-9428

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

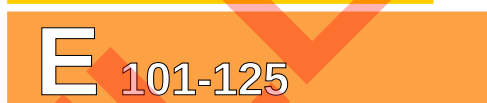
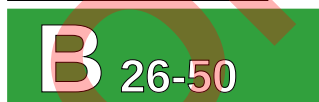
More energy efficient



Net zero CO₂ emissions



This is how energy efficient the building is.



Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m ²):	3289.725
Building complexity:	Level 5
Building emission rate (kgCO ₂ /m ² per year):	2.3
Primary energy use (kWh _{PE} /m ² per year):	23.48

Benchmarks

Buildings similar to this one could have ratings as follows:

7 If newly built

27 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software: Virtual Environment v7.0.24 using calculation engine ApacheSim v7.0.24

Property Reference: UPRN-000000000000

Assessor Name: Atelier Ten

Assessor Number: ABCD123456

Accreditation Scheme: Information not available

Assessor Qualifications: NOS5

Employer/Trading Name: Trading Name

Employer/Trading Address: Trading Address

Issue Date: 16 Feb 2024

Valid Until: 15 Feb 2034 (unless superseded by a later certificate)

Related Party Disclosure: Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 8494-7116-3551-8039-2452

About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by Information not available. You can obtain contact details of the Accreditation Scheme at Information not available.

A copy of this certificate has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The certificate (including the building address) and other data about the building collected during the energy assessment but not shown on the certificate, for instance heating system data, will be made publicly available at www.opendatacommunities.org.

This certificate and other data about the building may be shared with other bodies (including government departments and enforcement agencies) for research, statistical and enforcement purposes. For further information about how data about the property are used, please visit www.ndepcregister.com. To opt out of having information about your building made publicly available, please visit www.ndepcregister.com/optout.

There is more information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government website at: www.gov.uk/government/collections/energy-performance-certificates. It explains the content and use of this document and advises on how to identify the authenticity of a certificate and how to make a complaint.

Opportunity to benefit from a Green Deal on this property

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B.2 Block 2

Energy Performance Certificate

Non-Domestic Building



0814 Victoria Point, 44 Hathersage Road

Address 3

Address 4

Manchester

M13 0FT

Certificate Reference Number:

0494-4565-1468-7262-1348

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

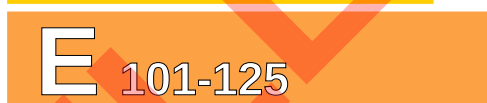
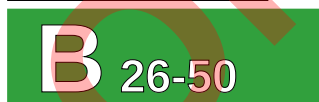
More energy efficient



Net zero CO₂ emissions



This is how energy efficient the building is.



Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m ²):	4763.500
Building complexity:	Level 5
Building emission rate (kgCO ₂ /m ² per year):	2.17
Primary energy use (kWh _{PE} /m ² per year):	22.32

Benchmarks

Buildings similar to this one could have ratings as follows:

7 If newly built

30 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software: Virtual Environment v7.0.24 using calculation engine ApacheSim v7.0.24

Property Reference: UPRN-000000000000

Assessor Name: Atelier Ten

Assessor Number: ABCD123456

Accreditation Scheme: Information not available

Assessor Qualifications: NOS5

Employer/Trading Name: Trading Name

Employer/Trading Address: Trading Address

Issue Date: 15 Feb 2024

Valid Until: 14 Feb 2034 (unless superseded by a later certificate)

Related Party Disclosure: Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 9336-1112-4265-5360-8261

About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by Information not available. You can obtain contact details of the Accreditation Scheme at Information not available.

A copy of this certificate has been lodged on a national register as a requirement under the Energy Performance of Buildings Regulations 2012 as amended. It will be made available via the online search function at www.ndepcregister.com. The certificate (including the building address) and other data about the building collected during the energy assessment but not shown on the certificate, for instance heating system data, will be made publicly available at www.opendatacommunities.org.

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Opportunity to benefit from a Green Deal on this property

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B.3 Block 3

Energy Performance Certificate

Non-Domestic Building



0814 Victoria Point, 44 Hathersage Road

Address 3

Address 4

Manchester

M13 0FT

Certificate Reference Number:

3860-1850-7776-4720-8077

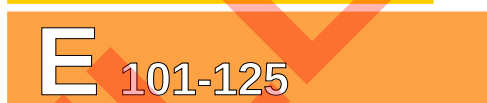
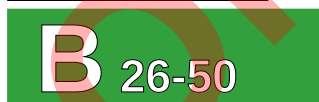
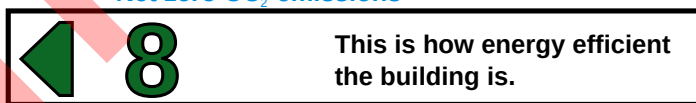
This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient



Net zero CO₂ emissions



Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m ²):	4763.500
Building complexity:	Level 5
Building emission rate (kgCO ₂ /m ² per year):	2.25
Primary energy use (kWh _{PE} /m ² per year):	23.2

Benchmarks

Buildings similar to this one could have ratings as follows:

7 If newly built

30 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software: Virtual Environment v7.0.24 using calculation engine ApacheSim v7.0.24

Property Reference: UPRN-000000000000

Assessor Name: Atelier Ten

Assessor Number: ABCD123456

Accreditation Scheme: Information not available

Assessor Qualifications: NOS5

Employer/Trading Name: Trading Name

Employer/Trading Address: Trading Address

Issue Date: 15 Feb 2024

Valid Until: 14 Feb 2034 (unless superseded by a later certificate)

Related Party Disclosure: Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 8502-1436-5996-1983-1647

About this document and the data in it

This document has been produced following an energy assessment undertaken by a qualified Energy Assessor, accredited by Information not available. You can obtain contact details of the Accreditation Scheme at Information not available.

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B.4 Block 4

Energy Performance Certificate

Non-Domestic Building



0814 Victoria Point, 44 Hathersage Road

Address 3

Address 4

Manchester

M13 0FT

Certificate Reference Number:

6040-7939-3311-6901-6095

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

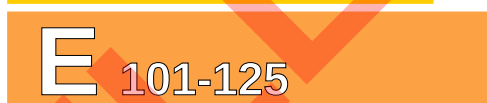
More energy efficient



Net zero CO₂ emissions



This is how energy efficient the building is.



Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m ²):	6979.070
Building complexity:	Level 5
Building emission rate (kgCO ₂ /m ² per year):	2.17
Primary energy use (kWh _{PE} /m ² per year):	22.46

Benchmarks

Buildings similar to this one could have ratings as follows:

9 If newly built

35 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software:	Virtual Environment v7.0.24 using calculation engine ApacheSim v7.0.24
Property Reference:	UPRN-000000000000
Assessor Name:	Atelier Ten
Assessor Number:	ABCD123456
Accreditation Scheme:	Information not available
Assessor Qualifications:	NOS5
Employer/Trading Name:	Trading Name
Employer/Trading Address:	Trading Address
Issue Date:	15 Feb 2024
Valid Until:	14 Feb 2034 (unless superseded by a later certificate)
Related Party Disclosure:	Not related to the owner
Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 8774-1697-2484-9177-3942	

About this document and the data in it

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B.5 Block 5+

Energy Performance Certificate

Non-Domestic Building



0814 Victoria Point, 44 Hathersage Road

Address 3

Address 4

Manchester

M13 0FT

Certificate Reference Number:

8749-2659-6441-8972-5262

This certificate shows the energy rating of this building. It indicates the energy efficiency of the building fabric and the heating, ventilation, cooling and lighting systems. The rating is compared to two benchmarks for this type of building: one appropriate for new buildings and one appropriate for existing buildings. There is more advice on how to interpret this information in the guidance document *Energy Performance Certificates for the construction, sale and let of non-dwellings* available on the Government's website at www.gov.uk/government/collections/energy-performance-certificates.

Energy Performance Asset Rating

More energy efficient

A+

Net zero CO₂ emissions

A 0-25

9

This is how energy efficient the building is.

B 26-50

C 51-75

D 76-100

E 101-125

F 126-150

G Over 150

Less energy efficient

Technical information

Main heating fuel:	Grid Supplied Electricity
Building environment:	Heating and Mechanical Ventilation
Total useful floor area (m ²):	11774.510
Building complexity:	Level 5
Building emission rate (kgCO ₂ /m ² per year):	2.58
Primary energy use (kWh _{PE} /m ² per year):	26.67

Benchmarks

Buildings similar to this one could have ratings as follows:

9 If newly built

37 If typical of the existing stock

Administrative information

This is an Energy Performance Certificate as defined in the Energy Performance of Buildings Regulations 2012 as amended.

Assessment Software: Virtual Environment v7.0.24 using calculation engine ApacheSim v7.0.24

Property Reference: UPRN-000000000000

Assessor Name: Atelier Ten

Assessor Number: ABCD123456

Accreditation Scheme: Information not available

Assessor Qualifications: NOS5

Employer/Trading Name: Trading Name

Employer/Trading Address: Trading Address

Issue Date: 16 Feb 2024

Valid Until: 15 Feb 2034 (unless superseded by a later certificate)

Related Party Disclosure: Not related to the owner

Recommendations for improving the energy performance of the building are contained in the associated Recommendation Report: 1180-1001-0280-0357-1555

About this document and the data in it

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