



Addendum Energy Statement

Hondo Pope's Road

AG Hondo Popes Road BV

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1.0 EXECUTIVE SUMMARY



EXECUTIVE SUMMARY

On behalf of AG Hondo Popes Road BV, HDR has undertaken this addendum energy strategy assessment to the HDR energy strategy submitted in March 2020 for the proposed Hondo Pope's Road development, located within the London Borough of Lambeth. It details the approach taken to energy and regulated CO₂ emissions in line with the current GLA London Plan 2021, adopting the GLA Energy Assessment Guidance April 2020, including the GLA carbon emission reporting spreadsheet version 1.2, SAP 10 carbon factors, and Lambeth's Local Plan 2015, Policy EN4 and the adopted Lambeth Local Plan 2020. This energy strategy has been provided to ensure that the submitted scheme is in line with the latest planning policies and exceed the 15% carbon reduction at the 'Be Lean' Stage and 35% carbon overall. To ensure this the efficiency of the MEP system have been improved and Photovoltaic system included in the design.

The regulated CO₂ savings target for this proposed development in accordance with the GLA and London Borough of Lambeth policy is to achieve net zero carbon with at least 35% CO₂ savings onsite over Part L 2013 and 15% CO₂ savings for 'Be Lean' stage of the energy hierarchy.

Development description:

The proposed development comprises the demolition of the existing building and erection of a combined building with a ground + 19 storey tower, and ground + 8 storey tower comprising flexible A1/A3/B1/D1/D2 uses at basement, ground and first floor, with restaurant (A3) use on floor 8, B1 accommodation on floors 2 to 19, plant enclosures at roof level, associated cycle parking, servicing, and all necessary enabling works.

This Energy Statement addresses the retail and office areas.

Key results:

Through analysis of the proposed development's design following the energy hierarchy of 'Be Lean', 'Be Clean', and 'Be Green' measures contained herein, the proposed development is predicted to exceed the intent of policy by targeting and

delivering a minimum of 15% carbon dioxide at the 'Be Lean' stage and delivering a minimum on-site carbon dioxide emission reduction of over 35% beyond the baseline Part L2A 2013 building.

In summary:

- **Part L2A:** Predicted **39.3 %** regulated CO₂ savings
- **Part L2A:** All items are understood to meet or better the minimum requirements of Criterion 2
- **Part L2A:** PASS Criterion 3 Solar gains assessment
- **CIBSE TM52:** PASS achieved

For more details on the overheating assessment, please refer to Overheating Statement, HDR, March 2020 for further details.

Related sustainability indicators:

- **BREEAM Excellent:** A pre-assessment review shows a proposed path to achieving certification

Figure 1 below shows the carbon savings for each step of the energy hierarchy. The site wide regulated CO₂ savings are predicted as 39.3%.

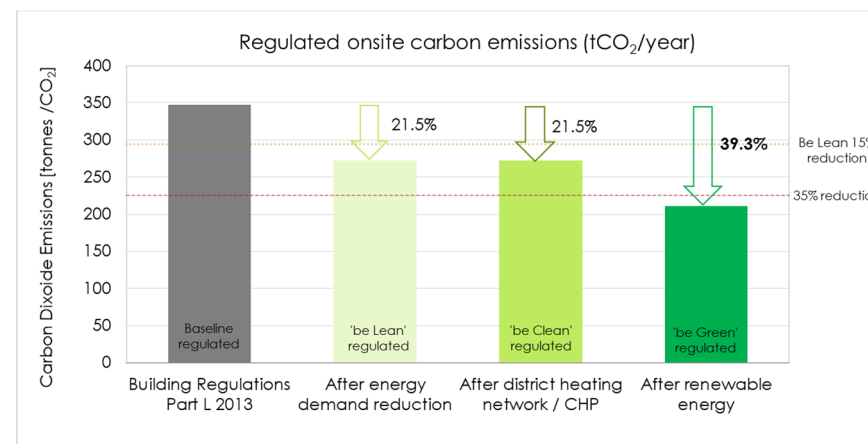


Figure 1: Regulated load carbon emission reduction according to the energy hierarchy

Savings from:	Regulated carbon dioxide savings	
	Tonnes CO ₂ per annum	(%)
Be lean: Savings from energy demand reduction	74.7	21.5%
Be clean: Savings from heat network	0.0	0.0%
Be green: Savings from renewable energy	61.7	17.8%
Total cumulative savings	136.4	39.3%
(Tonnes CO ₂)		
Cumulative savings from off-set payment	6,314	
Cash in-lieu contribution (£95 per tonne for 30 years)	£599,838	

Table 1: Summary of carbon dioxide emissions for each stage of the hierarchy SITE WIDE

Whilst these are the performance levels currently targeted, their achievability will be reviewed through each design stage to ensure the overall CO₂ reduction targets are maintained, and to consider any design, procurement and construction changes.

The calculations in this Energy Statement are based on the drawings issued by Adjaye Associates (September 2020) and HDR MEP RIBA Stage 2 information.

2.0 INTRODUCTION



INTRODUCTION

On behalf of, and in conjunction with AG Hondo Popes Road BV, HDR have developed the energy strategy which results in this Energy Statement for the proposed Hondo Pope's Road development, located within London the Borough of Lambeth.

This Statement details the assessment process and estimated carbon savings achieved through the integration of passive design, energy efficiency measures and Low and Zero Carbon (LZC) technologies. It also sets out how the Greater London Authority (GLA) London Plan and London Borough of Lambeth policies for energy and CO₂ emissions have been addressed.

The approach taken for the energy assessment is in line with GLA London Plan 2021 planning policies for energy, as follows:

- Calculate baseline CO₂ emissions.
- 'Be Lean' - integrate of measures to reduce energy demand and ensure efficient use of energy.
- 'Be Clean' - Connect to a heat distribution network where possible
- 'Be Green' Integrate renewable energy technology; and
- Calculate total CO₂ savings and final development CO₂ emissions.

Key sustainability indicators also include:

- **BREEAM Excellent:**

'BREEAM 'Excellent rating' – The current carbon savings prediction supports a 'BREEAM 'Excellent' in relation to credit 'Ene 01'.

Please refer to BREEAM Pre Assessment, HDR, December 2019 for further details.

2.1 Project Background

The proposed development comprises the demolition of the existing building and erection of a part G + 19, part G + 8 storey building comprising flexible A1/A3/B1/D1/D2 uses at basement, ground and first floor, restaurant (A3) use on floor 8, B1 accommodation on floors 2 to 19, plant enclosures at roof level, associated cycle parking, servicing, and all necessary enabling works.

This Energy Statement addresses the retail and office areas.



Figure 2: CGI image of the proposed scheme

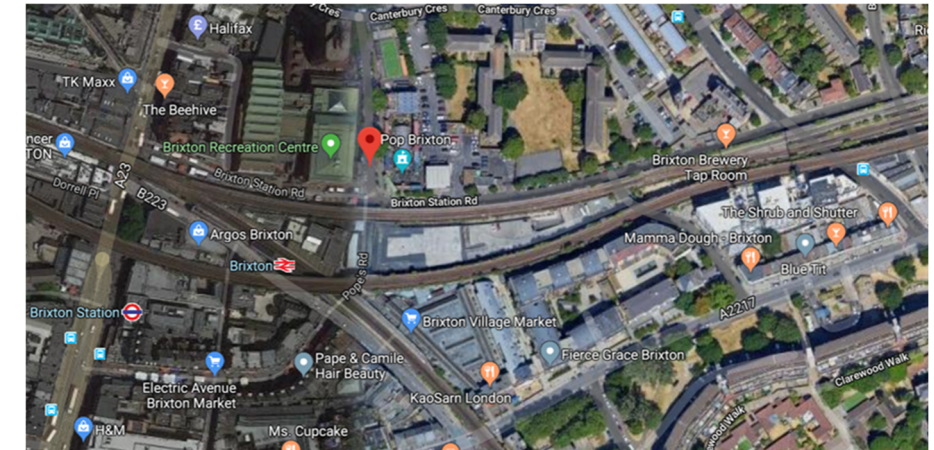


Figure 3: Development Site Location

3.0 BUILDING REGULATIONS AND PLANNING POLICY



BUILDING REGULATIONS AND PLANNING POLICY

The development has been designed to meet sustainability and energy targets which are driven through:

1. Climate Change Act 2008 (2050 Target Amendment)
2. Energy Act 2011
3. UK Building Regulations Part L2A 2013 – Conservation of fuel and power in new buildings other than dwellings
4. National Planning Policy Framework (NPPF), England
5. Greater London Authority (GLA): London Plan (March 2021) (Policy SI2), GLA Energy Assessment Guidance (April 2020); and
6. Lambeth Local Plan 2020–2035 (Adopted September 2021)

3.1 Climate Change Act 2008 (2050 Target Amendment)

The Climate Change Act sets legally binding greenhouse gas emission reductions targets of 100% by 2050 (with an interim target of 26% by 2020) against a 1990 baseline, which are to be achieved through action taken in the UK and abroad. It contains provisions to enable the Government to require public bodies and statutory undertakers to carry out their own risk assessment and make plans to address the risk of climate change.

In May 2019, the Climate Change Committee recommended a new emissions target for the UK: net-zero greenhouse gases by 2050 to respond to the Paris Agreement commitments. The recommendation has been adopted by the government and the targets have been amended accordingly in June 2019.

3.2 Energy Act 2011

The Act includes provisions for the establishment of the Green Deal, which is a new financing framework to fund improvements to the energy efficiency of domestic and non-domestic properties. This will be paid back through a charge on the energy bill so that there is no upfront cost for consumers. The scheme was cancelled on July 2015.

The Act provides powers to ensure that from April 2018, it will be unlawful to rent out a residential or business property that does not

reach a minimum energy efficiency standard (the current limit for this is for an EPC rating 'E').

3.3 Building Regulation Part L Summary

The development will comply with current Building Regulation Part L 2013 (Conservation of fuel and power in buildings).

Part L2A – Conservation of fuel and power in new buildings other than dwellings:

- **Criterion 1 – Achieving the TER**

Criterion 1 of L2A 2013 requires the calculated CO₂ Building Emission Rate (BER) to not exceed the Target CO₂ Emission Rate (TER) of the notional building, which is determined by Part L and NCM guidelines.

- **Criterion 2 – Limits on Design Flexibility**

The performance of the individual fabric elements and fixed building services of the building should achieve reasonable overall standards of efficiency as per the requirements of Part L.

- **Criterion 3 – Limiting the Effects of Solar Gains in Summer**

The purpose of Criterion 3 is to demonstrate the building has appropriate control measures to limit solar gain so as to reduce the need for, or capacity of, installed air conditioning systems.

- **Criterion 4 - Building performance consistent with the BER**

This criterion is the responsibility of the Contractor

- **Criterion 5 - Provisions for energy efficient operation of the building**

This criterion is the responsibility of the Contractor

3.4 National Planning Policy Framework (NPPF), England

In February 2019, the Ministry of Housing, Communities and Local Government revised the issue of National Planning Policy Framework (NPPF), which sets out the Government's planning policies for England and how development should happen in the country.

This framework aims to achieve sustainable development according to the three pillars: economic, social and environmental for both plans making and decision-making. Local planning authorities must incorporate the visions of this framework within their local development plans. Therefore, by complying with the requirements of the Local Plan and Core Strategies, a development is also compliant with the NPPF. The term sustainable development is defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs".

The new revision of NPPF (February 2019) contains a revised structure and chapters, which provide a clear overview of the planning framework and the relevance of different policies. The chapters reflect the new priorities of the Government and have a strong focus on housing delivery and affordability.

Chapter 14: "Meeting the challenge of climate change, flooding and coastal change" is NPPF's relevant section to this energy statement. That chapter provides a framework for local authorities to address the following issues as regards planning applications: (Only relevant clauses)

The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

New development should be planned for in ways that:

- a) Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b) Can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards. To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- c) Provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
 - d) Consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development;
 - e) 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.
 - f) Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.
 - g) In determining planning applications, local planning authorities should expect new development to:
 - I. Comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
 - II. Take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
- The Local Planning Policies are based on this framework and adapted to account for regionally specific requirements. The concept design of the Proposed Development takes into account the NPPF guidelines and comply with all the above-listed ethos.

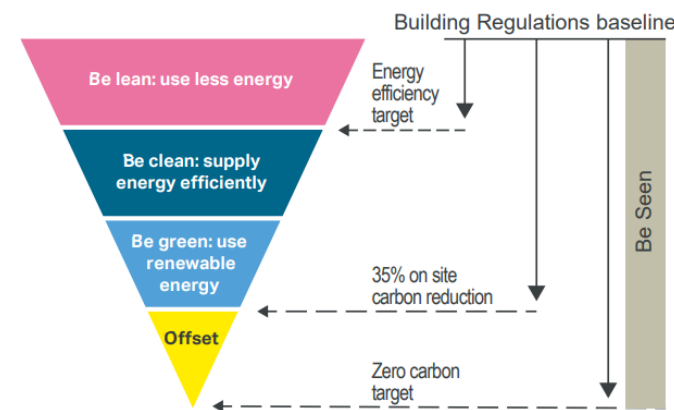
3.5 Greater London Authority (GLA) London Plan 2021

The Greater London Authority (GLA) has set out guidance relating to sustainable design within the London Plan (Spatial Development Strategy for Greater London). The current adopted London Plan is dated March 2021.

3.5.1 Policy SI 2 Minimising greenhouse gas emissions

A. Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:

- Be lean: use less energy
- Be clean: supply energy efficiently
- Be green: use renewable energy



Source: Greater London Authority

Figure 4: The energy hierarchy and associated targets

B. Major development proposals should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations.

C. A minimum on-site reduction of at least 35 per cent regulated carbon emissions beyond Building Regulations is required for major development. Residential development should achieve 10 per cent, and non-residential development should achieve 15 per cent through energy efficiency measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided, in agreement with the borough, either:

- 1) through a cash in lieu contribution to the borough's carbon offset fund, or
- 2) off-site provided that an alternative proposal is identified and delivery is certain.

- D. Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver carbon reductions. The operation of offset funds should be monitored and reported on annually.
- E. Major development proposals should calculate and minimise carbon emissions from any other part of the development, including plant or equipment, that are not covered by Building Regulations, i.e. unregulated emissions.

3.5.2 Policy SI 4 Managing heat risk

- A. Development proposals should minimise adverse impacts on the urban heat island through design, layout, orientation, materials and the incorporation of green infrastructure.
- B. Major development proposals should reduce potential overheating and reliance on air conditioning systems and demonstrate this in accordance with the following cooling hierarchy:
 - i. reduce the amount of heat entering a building through orientation, shading, high albedo materials, fenestration, insulation and the provision of green infrastructure
 - ii. minimise internal heat generation through energy efficient design
 - iii. manage the heat within the building through exposed internal thermal mass and high ceilings
 - iv. provide passive ventilation
 - v. provide mechanical ventilation
 - vi. Active cooling systems (ensuring they are the lowest carbon options).

3.6 Lambeth Local Plan 2020–2035

The London Borough of Lambeth sets the strategic policies to be adopted by developments seeking planning permission in the London Borough of Lambeth. Policies relating to energy are summarised below.

3.6.1 Policy EN3 Decentralised Energy

All major developments will be expected to connect to, and where appropriate extend, existing decentralised heating, networks in the vicinity of the site, unless a feasibility assessment demonstrates that connection is not reasonably possible. Minor new-build developments should be designed to be able to connect wherever reasonably possible. Where networks do not currently exist, developments should make provision to connect to any planned future decentralised energy network in the vicinity of the site, having regard to opportunities identified in Heat Network Priority Areas of the London Heat Map and area specific energy plans. Major development proposals that cannot immediately connect to an existing heating network should follow the heating and cooling hierarchies set out in London Plan policies SI3 (D) and SI4 (B).

3.6.2 Policy EN4 : Sustainable Design and Construction

- A. Lambeth will follow the approach set out in London Plan policies SI1 Improving air quality, SI2 Minimising greenhouse gas emissions, SI4 Managing heat risk, SI5 C and E Water infrastructure.
- B. All development, including construction of the public realm, highways and other physical infrastructure, will be required to meet high standards of sustainable design and construction feasible, relating to the scale, nature and form of the proposal.
- C. In addition to the requirements for zero-carbon in major new developments in London Plan policy SI2:
 - i. All new non-residential development and non-self-contained residential accommodation, must meet at least BREEAM 'Excellent'.
 - ii. All major non-residential refurbishment of existing buildings and conversions over 500m² floorspace (gross) must meet at least BREEAM Non-Domestic Refurbishment 'Excellent'.
 - iii. Minor new-build residential developments of between one and nine units, including proposals that involve extensions or change of use to provide dwellings, must achieve a minimum on-site reduction in regulated carbon emissions of at least 19 per cent beyond Part L of the Building

Regulations, unless it can be demonstrated that such provision is not feasible.

- D. Proposals should demonstrate in a supporting statement that sustainable design standards are integral to the design, construction and operation of the development. New build residential development are encouraged to use the Home Quality Mark and Passivhaus design standards. Planning applications for non-residential developments should be accompanied by a pre-assessment, demonstrating how the BREEAM standards, or any future replacement standards, will be met.
- E. Development will be required to be resilient to climate change by including appropriate climate change adaptation measures.
- F. Adequate remedial treatment of any contaminated land will be required before development can commence

4.0 ENERGY HIERARCHY AND OVERHEATING



ENERGY HIERARCHY AND OVERHEATING

4.1 Carbon emission factors

The carbon emission factors are based upon the GLA April 2020 Energy Assessment Guidance which references SAP10 carbon factors:

Gas	0.210	kgCO ₂ /kWh
Grid Supplied Electricity	0.233	kgCO ₂ /kWh
Grid Displaced Electricity	0.233	kgCO ₂ /kWh

Table 3: Carbon Emissions Factors

4.2 Establishing CO₂ Emissions

Dynamic thermal models using IES VE software have been created to represent the design team's proposed design.

4.2.1 Energy Models

IES calculates regulated energy consumption; energy uses considered under Part L 2013 like heating, cooling, domestic hot water (DHW), and electricity for lighting, pumps and fans. Unregulated energy consumption includes all energy not considered under Part L 2013, for example, gas for catering, small power, lifts and external lighting. An IES model was created for all spaces to dynamically simulate these areas and estimate the energy consumption and associated carbon emissions using NCM (National Calculation Methodology) templates.

An estimation of energy consumption and associated CO₂ emissions has been calculated using the results from IES to provide a predicted site-wide carbon footprint.

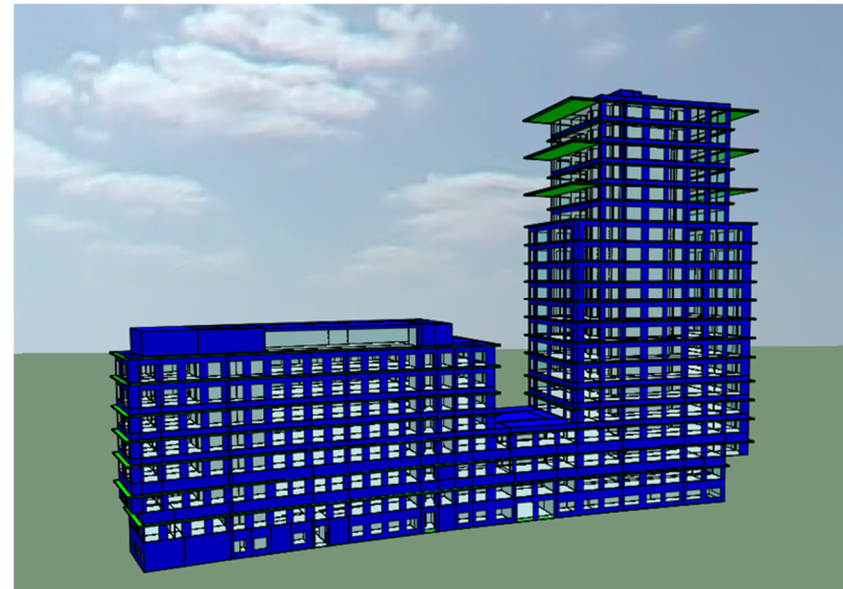


Figure 5: IES model of development

4.3 Baseline Energy Consumption and CO₂ Emissions

The table below demonstrates the predicted baseline CO₂ emissions for proposed development.

BASELINE Overall	Carbon dioxide emissions [tCO ₂ /yr]		Carbon dioxide emissions [% of total]	
	Regulated	Unregulated	Regulated	Unregulated
Baseline	346.8	287	55%	45%

Table 4: CO₂ Emissions for the Baseline Scheme

The predicted baseline CO₂ emissions are **346.8 tCO₂** (regulated energy use).

4.4 Demand Reduction (BE LEAN)

A key element of the energy strategy has been to maximise the energy efficiency of the building through passive design and efficient services. The measures included within the design are described in detail below.

4.4.1 Form and Façade

The form of the Pope's Road development was optimised to utilise the site footprint and enhance accessibility to natural ventilation and passive solar gain. The total glazing to wall ratio, and glazing types, were considered so that passive solar gain was maximised on the south-facing façade in the winter. A building form consisting of two blocks and recessed windows is proposed, creating shading and overshadowing which helps to reduce overheating risks.

4.4.2 Optimise Criteria

The design team has looked for opportunities to reduce the heating and cooling loads within the building. Examples of where this has had an impact on the design include the following:

- High-performance insulated fabric and low air permeability. Including the use of glazing with a low thermal transfer parameter (U-value)
- Optimised glazing g-value to limit unwanted excess summer solar gain summer solar).
- High glazing light transmittance to optimise the use of natural daylight, balanced with;
- High-efficacy lamps/luminaires with efficient lighting controls help to further maximise the use of natural daylight and reduce artificial lighting loads and energy use.

4.4.3 Building Fabric and Passive Design

The following table shows the targeted façade thermal performance of the proposed design for the development.

Element		Target and proposed Fabric Targets		
		Maximum Building Regulation Part L 2A 2013	Proposed Building	Percentage improvement over Building Regulations Part L
External Wall	U-value (W/m ² .k)	0.35	0.18	48%
Basement Wall	U-value (W/m ² .k)	0.35	0.18	48%
Ground Floor	U-value (W/m ² .k)	0.25	0.15	65%
Roof	U-value (W/m ² .k)	0.25	0.12	52%
Windows (including frame and losses)	U-value (W/m ² .k)	2.20	1.40	36%
	g-value	-	0.37	
Air Permeability	(m ³ /h.m ² @50Pa)	10.00	3.50	65%
Thermal Bridging allowance	-	-	10% degradation of U-value	

Table 5: Target Fabric and Glazing Specifications

4.4.4 Energy Efficient Building Services

The following energy efficiency measures within the building services design are proposed for the development:

- Lamps / luminaires to be specified with high efficacy of at least 120 lm/cW and above for office areas.
- Lighting to all other areas of the buildings will also be highly efficient and incorporate efficient lighting controls (e.g. occupancy sensors) where applicable.
- Provision of efficient air source heat pumps for heating, domestic hot water, and cooling.
- Heat recovery on mechanical ventilation and air handling plant.
- Variable speed drives and sensors on pumps and fans responding to variable building loads.

4.4.5 Be Lean Energy Consumption and CO₂ Emissions

The IES Dynamic Thermal Models (DTM) have been simulated to calculate the predicted energy consumption and CO₂ emissions considering the passive design and energy efficiency measures detailed within the previous section.

Comparing against the baseline scheme, the resulting CO₂ savings for the predicted energy efficient 'Be Lean' scheme are detailed in the table below:

'Be LEAN'	Carbon Dioxide Emissions (tCO ₂ /yr)		
	Regulated	Unregulated	Total
Emissions after demand reduction (tCO ₂ /yr)	272.1	287	558.8
Savings (tCO ₂ /yr)	74.7	0	74.7
Savings (%)	21.5%	0.0%	11.8%

Table 6 CO₂ savings for Be Lean for the proposed development

The above table shows a predicted **21.5%** reduction in regulated CO₂ emissions over the Part L 2013 notional building at the 'Be Lean' stage which **exceeds the 15% minimum requirement** at the lean stage. This equates to a 11.8% reduction when unregulated emissions are included.

4.5 Cooling Hierarchy and Overheating

The cooling hierarchy for the proposed development is reviewed below.

Cooling Hierarchy and cooling demand

Minimising internal heat generation through energy efficient design:	Lighting will be designed to be highly efficient and reduce internal heat generation.
Reducing the amount of heat entering the building in summer	Optimising fabric efficiency will reduce the unwanted summer solar load entering the building. Windows will target a low g-value to reduce solar gains.
Use of thermal mass and high ceilings to manage the heat within the building:	The main office spaces utilise high ceilings which will allow heat to rise and the occupied space to remain cooler during the summer months.
Passive Ventilation	It is understood at this present time that windows are not operable.
Mechanical Ventilation	Efficient localised Air Handling Units (AHUs) at basement and roof levels and Mechanical Ventilation with Heat Recovery (MVHR) are proposed to provide fresh air to all commercial and Office Space spaces.

Table 7 Reporting template for cooling demand

The table below shows that the cooling demand has been improved when compared to the Part L2A Notional Building.

	Area weighted average non-domestic cooling demand (MJ/m ²)	Total area weighted non-domestic cooling demand (MJ/year)
Actual	1,121.60	31,561,263.20
Notional	1,123.30	31,609,212.68

Table 8 Cooling Demand

Part L 2013 – Criterion 2 – Limits on design flexibility

It is currently understood that the performance of the individual fabric elements and fixed building services of the building achieve the minimum overall standards of efficiency as per the requirements of Part L.

Part L 2013 – Criterion 3 – Limiting the effects of heat gains in summer

All spaces **PASS** the Criterion 3 Solar gains assessment as shown in Appendix B.

CIBSE TM52 Risk of Overheating Assessment

An industry best practice 'CIBSE TM52 The limits of thermal comfort' assessment has been undertaken to provide an enhanced industry recognised assessment of overheating risk on the scheme. Such an assessment is generally an expectation of the GLA regarding Policy SI 4 Managing heat risk as stated in GLA's London Plan document dated March 2021.

The CIBSE TM52 overheating assessment also used CIBSE TM49 Weather files to understand the risk due to future predicted climate change.

The TM52 assessment has been undertaken for the occupied areas within this development. **ALL** assessed spaces are currently predicted to **PASS** the requirements of CIBSE TM52 for conditioned spaces when using TM49 future weather files (DSY1-2020-H-50, DSY1-2050-M-50, DSY1-2080-M-50, and the equivalent DSY 2 and DSY 3 weather files).

A full overheating assessment report detailing the modelling and results is submitted separately. Please refer to 'Overheating Statement', HDR, March 2020.

4.6 'Be Clean' Energy Consumption and CO₂ Emissions

The proposed design has no savings associated with the 'Be Clean' step of the energy hierarchy as that it does not include CHP or connection to district heating, although a provision for future connection is to be installed and is discussed in the Section 4.6.1.

4.6.1 Connection to an area wide heat network

The feasibility of connecting the proposed development to a district heating (DH) network has been assessed, with reference to the London Heat Map (refer to www.londonheatmap.org.uk).

Figure 6 is an extract from the London Heat Map website.

The nearest district heating network is approximately 1km away, in a straight line. Due to this significant distance and limited heat demand on-site, it is not currently considered viable to connect to this network. Therefore, connection to a district heat network has not been included in the final proposals.

Figure 6 below shows the current London heat map, with the site location and nearest existing district heat network identified.

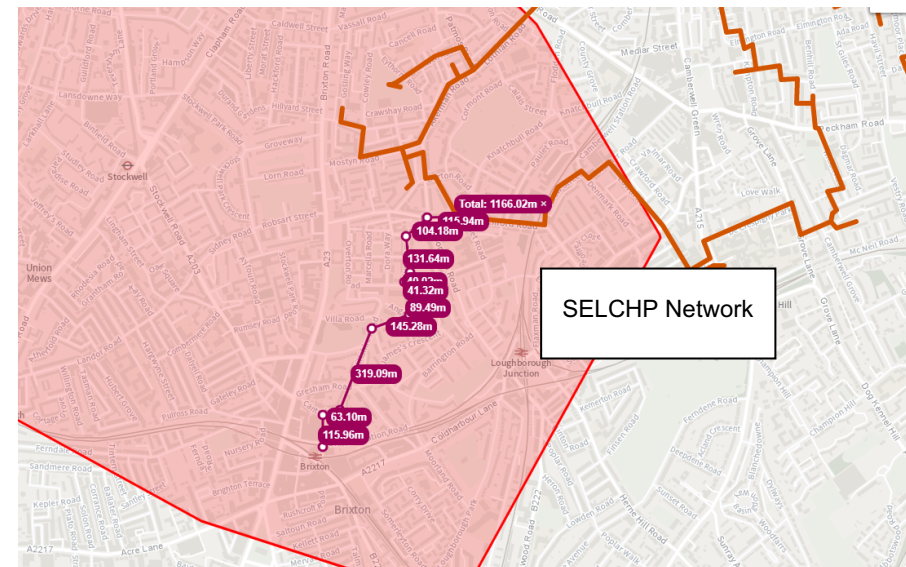


Figure 6: Heat Network Map

In addition, with the decarbonisation of the National Grid, gas fired CHP/CCHP district energy centre technologies are no longer favoured when comparing the equivalent DHN carbon factor performance against the latest SAP10 carbon factors, and future consideration of further decarbonisation of the National Grid targets e.g. 0.100 kgCO₂/kWh by 2030.

HDR have contacted Veolia, who is managing the SELCHP network, to confirm if the proposed district heating network will be extended to serve the proposed development. Veolia has confirmed that the proposed connection is not viable as a standalone connection and the design team should seek an alternative energy source. (Appendix E)

4.6.2 Communal Heating System

With minimal heating requirements on site, as previously explained within section 4.6.1, a traditional communal heating system is not proposed for this development.

4.6.3 Individual Heating System

The development is proposing to use electric VRF Heat Pumps for heating and cooling in the office and retail spaces. This takes

advantage of the lower carbon emissions of the electric grid as well as the efficiency of the heat pump's Coefficient of Performance (COP).

4.7 Renewable Energy (BE GREEN)

All Low or Zero Carbon (LZC) technologies identified within both the London Plan and BREEAM credit guidance have been assessed for their viability to be included in the design. Where technologies are not considered appropriate to the site and energy demand of the development, justification for their exclusion has been provided.

The following localised green technologies have been considered as viable for the site:

- Electric heat pumps
- Photovoltaics

The following localised green technologies have been considered as non-viable for the site:

- Solar thermal
- Biofuel combined heat and power (CHP) local in the building
- Biomass (CHP) local in the building
- Fuel Cells
- Biofuel community heating scheme local in the building
- Wind turbines

4.7.1 Feasibility of Renewable Technologies

An initial assessment has been carried out to determine which technologies are technically feasible on the site. For technologies which are identified as feasible, the following factors have been considered to determine which technologies are appropriate in terms of economic and local planning feasibility:

- Energy generated from each LZC energy source per year
- Payback
- Land Use
- Local Planning Criteria
- Noise
- Life cycle cost/lifecycle impact of the potential specification in terms of carbon emissions
- Any available grants

4.7.2 Solar Panels

Solar panels have been deemed viable for this development. The lower part of the flat roof allows the solar panels to be oriented South facing titled at an angle of 30 degrees.

The table below summarises the desktop study undertaken to determine the feasibility of solar photovoltaic panels at the site:

Technology	Criteria	Requirement Met?
Photovoltaic panels		
Roof orientation	Are available roofs facing south-west to south-east (through south), or flat?	✓
Roof space	Is there enough un-shaded roof area?	✓
Electrical demand	Is there electrical demand on site?	✓

Table 9: Key considerations of solar technology

The final proposals include a 21.44 kWp Photovoltaic (PV) arrays that are predicting an annual yield of 17,728 kWh translating to a carbon saving 4,130 kgCO₂/annum, equating to a 2.44% CO₂ emissions reduction.

Solar thermal technology has been deemed not viable for this project as it would conflict with the roof mounted PV arrays.

4.7.3 Heat Pumps

The table below summarises the desktop study undertaken to determine the feasibility of heat pumps at the site:

Technology	Criteria	Requirement Met?
Heat distribution system	Is it possible to have a low-grade distribution system e.g. under floor heating?	✓
Heat distribution system	Is it compatible with the proposed cooling system?	✓
Ground-source Heat Pump		
Ground conditions	Has a basic ground study concluded that the site is suitable for GSHP?	-
Horizontal piping	Is there a large area of open land where horizontal piping could be installed?	X

Technology	Criteria	Requirement Met?
Vertical piping	Is the ground suitable for vertical piping? Can underground obstacles be avoided?	X
Plant room	Is there space allowed for a GSHP and associated auxiliary equipment?	X
Water-source Heat Pump (River or Lake)		
Resource	Is there an available water source close to the site?	X
Access	Can the available water source be accessed?	X
Air Source Heat Pump		
Roof space	Is there available roof space for air-source heat pumps?	✓
Electrical Capacity	Is there sufficient electrical capacity for air-sourced heat pumps	✓

Table 10 Key considerations of heat pump technology

The final proposals include heat pumps providing the additional 'Be Green' 15.36% savings by use of air source heat pumps, reported herein.

4.7.4 Wind Turbines

The table below summarises the desktop study undertaken to determine the feasibility of either roof mounted or standalone wind turbines at the site:

Technology	Criteria	Requirement Met?
Stand-alone Wind Turbine		
Wind speed	Is average wind speed greater than 6m/s at hub height?	-
Clear air flow to turbine	Is the area free from obstructions that could cause turbulence?	X
Open land around proposed site	Is there sufficient open land for a turbine to be installed?	X
Distance to nearest property	Are surrounding properties far away enough to avoid noise disturbance?	X

Table 11: Key considerations of wind technology

4.7.5 Biofuel Community Heating Scheme

Wood chips / pellets would require many deliveries and storage, not compatible with this location. Liquid biofuel requires less storage space and has been considered in further detail by the design team.

The biodiesel is typically tested against EN14214 and supplied as pure Biodiesel at B100. Certain suppliers have plans to supply liquid biodiesel to sites around London via tanker. The tanker would be sized to hold the required litres per delivery. Once delivered, the fuel would need to be pumped to a holding tank onsite, so the transport, unloading and location of this tank would need to be accommodated.

The table below summarises the desktop study undertaken to determine the feasibility of a biofuel heating scheme at the site:

Technology	Criteria	Requirement Met?
Wood Biomass		
Heat demand	Is there a year-round heat demand?	X
Supply chain	Is there an established supply chain in the local area?	-
Delivery logistics	Is the site accessible for deliveries? Is there sufficient space for a supply vehicle to access a biomass storage tank?	X
Storage	Is there sufficient space for fuel storage to allow a reasonable number of deliveries?	X
Plant room	Is there sufficient space for a biofuel boiler and associated auxiliary equipment?	X
Flue	Can the flue be designed to meet planning authority requirements?	-
Liquid Biofuel		
Heat demand	Is there a year-round heat demand?	X
Supply chain	Is there an established supply chain in the local area? And can the required quantities of biofuel be guaranteed?	-
Security of supply	Is the future supply of biofuel guaranteed?	-
Delivery logistics	Is the site accessible for deliveries? Is there sufficient space for a supply vehicle to access a biofuel storage tank?	X
Storage	Is there sufficient space for fuel storage to allow a reasonable number of deliveries?	X
Running costs	Are the high running costs acceptable?	-

Table 12: Key considerations of biofuel technology

4.7.6 Biofuel Combined Heat and Power (CHP)

A CHP system has been considered and found to be not viable for this development as there is insufficient constant hot water baseload demand. CHP is therefore not recommended for the site.

4.7.7 Fuel Cells

The primary fuel source for fuel cells is hydrogen. This can be obtained (using a reformer) from a wide range of fuel supplies including natural gas, coal gas, methanol, landfill gas and other fuels containing hydrogen.

Hydrogen production is typically characterised by one of three conceptual colours.

- Grey hydrogen is currently the most prevalent, produced from processes that utilise natural gas while generating significant CO₂ emissions.
- Blue hydrogen signifies that the carbon emissions from production are subject to capture, utilisation and storage, which incurs significant additional costs.
- Green hydrogen is generated through electrolysis by renewable energy sources that have negligible CO₂ emissions.

Grey hydrogen is currently the cheapest form, although is subject to the volatility of natural gas prices and regional variations.

The UK's heating requirement equates to approximately 8 million tonnes of hydrogen a year, up from a annual current production level 0.74 million tonnes (consumed almost entirely by industry). Increased production would require cheap green electricity, as well as feasible opportunities for carbon capture.

Fuel cells produce zero emissions (at the point of use) when running on pure hydrogen. However, most building applications to date have involved the use of carbon-based fuels (primarily natural gas) requiring the use of a reformer i.e. grey hydrogen. A consequence of the reforming process is the emission of carbon dioxide, although emissions are still lower than conventional combustion processes due to the higher operating efficiency of the fuel cell.

The efficiencies of fuel-cell plants are in the range of 40% to 55% (electrical power generation) and waste heat is generated, and thus a fuel cell is termed as a 'co-generation'.

Given the presence of a site wide heat network, switching to fuel cells, or hydrogen gas, could be feasible in the future. However, the table below highlights that although natural gas is an alternative fuel supply (which would then be converted to hydrogen for use in a fuel cell), no space is currently allocated for this technology within the energy centre:

Technology	Criteria	Requirement Met?
Fuel Cells		
Fuel Supply	Is there a source of hydrogen available?	X
Fuel Supply	Is there an alternate fuel source available?	X
Plant room	Is there space allowed for a fuel cell and associated auxiliary equipment?	X

Table 13: Key considerations of fuel cell technology

4.7.8 'Be Green' Energy Consumption and CO₂ Emissions

'Be GREEN	Carbon dioxide emissions (tCO ₂ /yr)		
	Regulated	Unregulated	Total
Emissions after demand reduction (tCO ₂ /yr)	210.5	287	497.1
Savings (tCO ₂ /yr)	61.7	0	61.7
Savings (%)	17.8%	0.0%	11.0%

Table 14 CO₂ savings for the commercial units at the Be GREEN stage

The above table shows a predicted **17.8%** reduction in regulated CO₂ emissions over the Part L 2013 notional building at the 'Be Green' stage. This equates to a 11.0% reduction when unregulated emissions are included.

4.8 Overall Carbon Emission Savings (Be Lean + Be Clean + Be Green)

The overall CO₂ savings achieved by the energy strategy are predicted as 133.6 Tonnes tCO₂/yr when compared against the Part L 2013 baseline scenario using the SAP 10 carbon factors.

The following results show the carbon savings for each stage of the energy hierarchy for the proposed development.

Overall	Carbon Dioxide Emissions (tCO ₂ /yr)		
	Regulated	Unregulated	Total
Building Regulations Part L 2013 Compliant Development (TER)	346.8	286.7	633.5
Be lean: Savings from energy demand reduction	272.1	286.7	558.8
Be clean: Savings from heat network	272.1	286.7	558.8
Be green: Savings from renewable energy	210.5	286.7	497.1

Table 15: Summary of regulated and unregulated CO₂ emissions savings for the commercial element of the proposed development

Savings from:	Regulated carbon dioxide savings	
	Tonnes CO ₂ per annum	(%)
Be lean: Savings from energy demand reduction	74.7	21.5%
Be clean: Savings from heat network	0.0	0.0%
Be green: Savings from renewable energy	61.7	17.8%
Total cumulative savings	136.4	39.3%

Table 16: Summary of CO₂ emissions savings for each stage of the hierarchy for the commercial elements of the proposed development

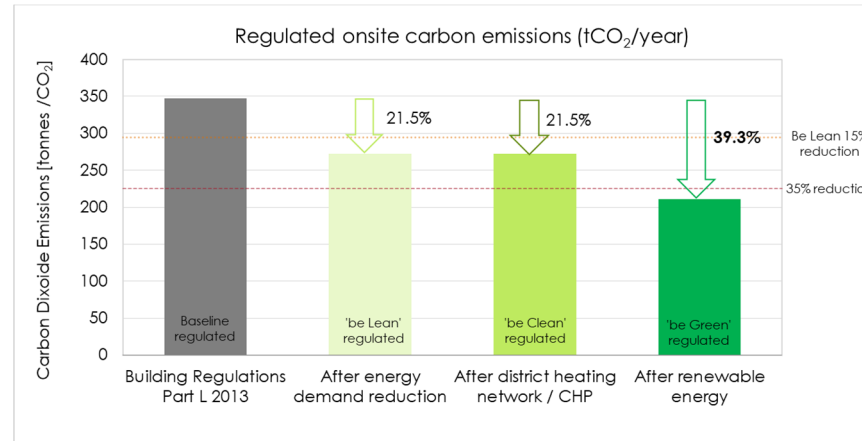


Figure 8 Summary of overall carbon dioxide emissions for each stage of the hierarchy for the proposed development

4.9 Carbon offset Payment

A carbon offset payment of the shortfall in regulated carbon emissions is outlined in this section based on the results reported herein for:

Non-domestic areas are to achieve zero-carbon for regulated carbon emissions as per the London Plan (2021).

The carbon offset payment has been calculated using the GLA rate of £95 per tonne of CO₂ per year over a period of 30 years (95 x 30 years). This equates to a predicted carbon offset payment of £599,838 based upon a predicted CO₂ emissions reduction shortfall of 210.5 tonnes per annum.

	Currently Predicted Annual Shortfall Tonnes CO ₂ (Regulated)	Currently predicted carbon offset payment
Total Carbon Offset	210.5	£599,838

Table 17 Shortfall in Regulated Carbon Dioxide Savings

Through the next stages of the design process the design team will strive to further reduce the predicted carbon shortfall and subsequent carbon offset payment.

5.0 CONCLUSION



CONCLUSION

The following tables detail the predicted carbon savings for the proposed Popes Road development.

Overall	Carbon Dioxide Emissions (tCO ₂ /yr)		
	Regulated	Unregulated	Total
Building Regulations Part L 2013 Compliant Development (TER)	346.8	286.7	633.5
Be lean: Savings from energy demand reduction	272.1	286.7	558.8
Be clean: Savings from heat network	272.1	286.7	558.8
Be green: Savings from renewable energy	210.5	286.7	497.1

Table 18: Summary of total carbon dioxide emissions for each stage of the hierarchy

Savings from:	Regulated carbon dioxide savings	
	Tonnes CO ₂ per annum	(%)
Be lean: Savings from energy demand reduction	74.7	21.5%
Be clean: Savings from heat network	0.0	0.0%
Be green: Savings from renewable energy	61.7	17.8%
Total cumulative savings	136.4	39.3%
(Tonnes CO ₂)		
Cumulative savings from off-set payment	6,314	
Cash in-lieu contribution (£)	£599,838	

Table 19: Summary of carbon dioxide emissions savings for each stage of the hierarchy

Through analysis of the proposed developments final proposals and delivery of 'Be Lean', 'Be Clean', and 'Be Green' measures contained herein, the proposed development has been design to exceed the intent of the planning policies delivering an on-site carbon dioxide emission reduction of 39.3% beyond the Part L2A 2013 baseline building which exceed the 35% requirements set by the GLA and London Borough of Lambeth. The proposed development also exceeds the 15% carbon dioxide at the lean stage by achieving 21.5% against the Part L2A baseline.

In summary:

- **Part L2A:** 39.3 % regulated CO₂ savings
- **Part L2A:** PASS Criterion 3 Solar gains assessment
- **CIBSE TM52:** PASS achieved

For more details on the overheating assessment, please refer to Overheating Statement, HDR, March 2020 for further details.

Related sustainability indicators:

- **BREEAM Excellent:** A pre-assessment review indicates a proposed path to achieving certification

The Figure below shows the currently predicted carbon savings for each step in the GLA's suggested hierarchy for carbon savings. The site total regulated energy savings have been modelled at 39.3%.

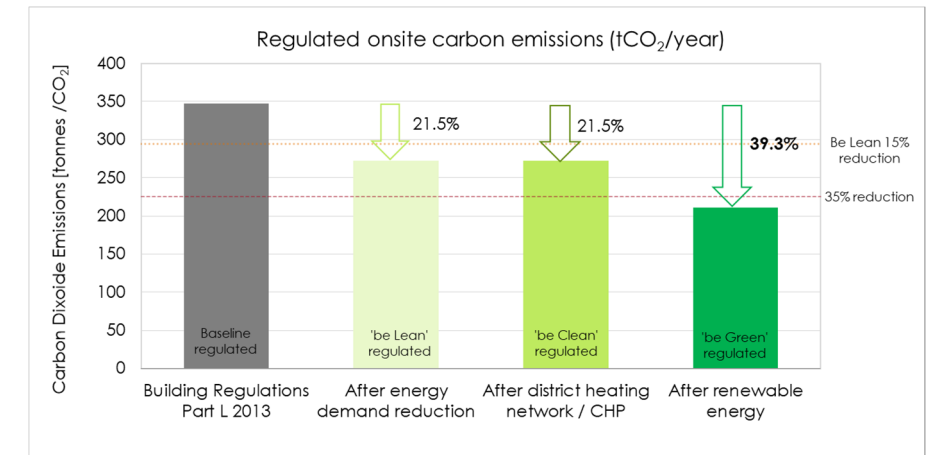


Figure 9: Regulated CO₂ emissions reduction according to the energy hierarchy

6.0 APPENDICES



APPENDIX A. PART L – BRUKL - BASELINE

Project name

Pope's Road - Planning LEAN R2

As designed

Date: Fri Dec 10 15:23:43 2021

Administrative information

Building Details

Address: Brixton, London, SW9

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.13

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.13

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Hurley Palmer Flatt

Telephone number: 02074293333

Address: 240 Blackfriars Road, London, SE1 8NW

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	24.9
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	24.9
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	18.4
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.18	GB000034:Surf[0]
Floor	0.25	0.15	0.15	GB000009:Surf[0]
Roof	0.25	0.12	0.12	02000022:Surf[6]
Windows***, roof windows, and rooflights	2.2	1.4	1.4	0000002C:Surf[0]
Personnel doors	2.2	-	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	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)]				
* There might be more than one surface where the maximum U-value occurs.				
** 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.				
N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	3.5

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- Office - Reception

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	2	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

2- Speculative Retail A1/A3/D2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	1.9	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

3- Office - Circulation/Stairs/Lobby

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	0	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

4- Office - OpenOffices (West)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	1.9	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

5- Office - OpenOffices (East)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	1.9	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

6- Office - Circulation WC

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	0	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

7- Office - Showers/Lockers

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	0	0.73
Standard value	0.91*	2.6	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

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

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
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 supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

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	1.9	1.6	0.5	1.1	0.5	1			
00 Lobby Office 1	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Lobby Office 2	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 1	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 10	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 2	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 3	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 4	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 5	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 6	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 7	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 8	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 9	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 1 I	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 1 P	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 2 I	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 2 P	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 3 P	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 4 P	-	-	-	-	-	-	-	-	0.2	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
01 Leisure 6 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Leisure 7 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Leisure 8 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 14	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 15 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 16 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 17	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 18 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 19 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 20 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
02 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
03 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
03 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
03 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
04 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
04 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
04 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
05 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
05 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
06 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 7	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
06 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
06 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
07 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
07 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
08 A3 Restaurant 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 A3 Restaurant 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office General	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
08 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
08 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
09 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
10 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
11 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
12 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
12 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
13 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
14 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
15 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
16 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
16 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
17 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
18 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
19 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
UG B1 Showers 1	-	-	-	2	-	-	-	-	-	-	-	N/A
UG B1 Showers 2	-	-	-	2	-	-	-	-	-	-	-	N/A
UG B1 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
UG B1 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
UG B1 WC 3	0.5	-	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name	Standard value	Luminaire	Lamp	Display lamp	
		60	60	22	
00 Circulation 1		-	90	-	541
00 Circulation 2		-	90	-	112
00 Circulation 3		-	90	-	62
00 Circulation 4		-	90	-	895

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
00 Circulation 5	-	90	-	60
00 Circulation 6	-	90	-	89
00 Circulation 7	-	90	-	53
00 Lobby Office 1	-	100	80	159
00 Lobby Office 2	-	100	80	146
00 Plant 1	125	-	-	248
00 Retail 1	-	100	80	2046
00 Retail 10	-	100	80	889
00 Retail 2	-	100	80	1981
00 Retail 3	-	100	80	270
00 Retail 4	-	100	80	278
00 Retail 5	-	100	80	685
00 Retail 6	-	100	80	656
00 Retail 7	-	100	80	515
00 Retail 8	-	100	80	622
00 Retail 9	-	100	80	867
00 Stairs 1	-	90	-	51
00 Stairs 2	-	90	-	52
00 Stairs 3	-	90	-	45
00 Stairs 4	-	90	-	49
00 Store 1	125	-	-	51
01 Circulation 1	-	90	-	62
01 Circulation 2	-	90	-	53
01 Circulation 3	-	90	-	89
01 Circulation 4	-	90	-	25
01 Circulation 5	-	90	-	341
01 Circulation 6	-	90	-	304
01 Circulation 7	-	90	-	26
01 Leisure 1 I	-	125	-	348
01 Leisure 1 P	-	125	-	272
01 Leisure 2 I	-	125	-	96
01 Leisure 2 P	-	125	-	55
01 Leisure 3 P	-	125	-	33
01 Leisure 4 P	-	125	-	46
01 Leisure 6 P	-	125	-	31
01 Leisure 7 P	-	125	-	50
01 Leisure 8 P	-	125	-	265
01 Retail 1	-	100	80	296
01 Retail 14	-	100	80	1386
01 Retail 15 (P)	-	100	80	1086
01 Retail 16 (P)	-	100	80	213
01 Retail 17	-	100	80	1419
01 Retail 18 (P)	-	100	80	763

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
01 Retail 19 (P)	-	100	80	1236
01 Retail 2	-	100	80	311
01 Retail 20 (P)	-	100	80	226
01 Retail 3	-	100	80	486
01 Retail 4	-	100	80	463
01 Retail 5	-	100	80	685
01 Retail 6	-	100	80	656
01 Stairs 1	-	90	-	51
01 Stairs 2	-	90	-	52
01 Stairs 3	-	90	-	45
01 Stairs 4	-	90	-	49
02 Circulation 1	-	100	-	56
02 Circulation 2	-	100	-	48
02 Circulation 3	-	100	-	80
02 Circulation 4	-	100	-	22
02 Circulation 5	-	100	-	23
02 Circulation 6	-	100	-	155
02 Office Open 1	120	-	-	746
02 Office Open 2	120	-	-	1049
02 Office Open 3	120	-	-	779
02 Office Open 4	120	-	-	358
02 Office Open 5	120	-	-	964
02 Office Open 6	120	-	-	116
02 Office Perimeter 1	120	-	-	127
02 Office Perimeter 2	120	-	-	133
02 Office Perimeter 3	120	-	-	109
02 Office Perimeter 4	120	-	-	112
02 Office Perimeter East 1	120	-	-	67
02 Office Perimeter North 1	120	-	-	389
02 Office Perimeter North 2	120	-	-	308
02 Office Perimeter North 3	120	-	-	703
02 Office Perimeter North 4	120	-	-	213
02 Office Perimeter North 5	120	-	-	757
02 Office Perimeter South 1	120	-	-	293
02 Office Perimeter South 2	120	-	-	369
02 Office Perimeter South 3	120	-	-	794
02 Office Perimeter South 4	120	-	-	735
02 Office Perimeter South 5	120	-	-	211
02 Office Perimeter West 1	120	-	-	461
02 Stairs 1	-	100	-	46
02 Stairs 2	-	100	-	47
02 Stairs 3	-	100	-	40
02 Stairs 4	-	100	-	44

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
02 WC 1	-	100	-	123
02 WC 2	-	100	-	119
03 Circulation 1	-	100	-	48
03 Circulation 2	-	100	-	39
03 Circulation 3	-	100	-	67
03 Circulation 4	-	100	-	21
03 Circulation 5	-	100	-	150
03 Circulation 6	-	100	-	22
03 Office Open 1	120	-	-	744
03 Office Open 2	120	-	-	1037
03 Office Open 3	120	-	-	773
03 Office Open 4	120	-	-	332
03 Office Open 5	120	-	-	964
03 Office Open 6	120	-	-	115
03 Office Perimeter 3	120	-	-	123
03 Office Perimeter 4	120	-	-	128
03 Office Perimeter 5	120	-	-	104
03 Office Perimeter 6	120	-	-	107
03 Office Perimeter East 1	120	-	-	67
03 Office Perimeter North 1	120	-	-	388
03 Office Perimeter North 2	120	-	-	304
03 Office Perimeter North 3	120	-	-	695
03 Office Perimeter North 4	120	-	-	207
03 Office Perimeter North 5	120	-	-	741
03 Office Perimeter South 1	120	-	-	288
03 Office Perimeter South 2	120	-	-	366
03 Office Perimeter South 3	120	-	-	786
03 Office Perimeter South 4	120	-	-	718
03 Office Perimeter South 5	120	-	-	204
03 Office Perimeter West 1	120	-	-	457
03 Stairs 1	-	100	-	39
03 Stairs 2	-	100	-	40
03 Stairs 3	-	100	-	35
03 Stairs 4	-	100	-	38
03 WC 1	-	100	-	110
03 WC 2	-	100	-	108
04 Circulation 1	-	100	-	48
04 Circulation 2	-	100	-	39
04 Circulation 3	-	100	-	67
04 Circulation 4	-	100	-	21
04 Circulation 5	-	100	-	22
04 Office East 1	120	-	-	380
04 Office Open 1	120	-	-	416

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
04 Office Open 2	120	-	-	998
04 Office Open 3	120	-	-	278
04 Office Open 4	120	-	-	351
04 Office Open 5	120	-	-	964
04 Office Open 6	120	-	-	115
04 Office Perimeter 1	120	-	-	123
04 Office Perimeter 2	120	-	-	126
04 Office Perimeter 2	120	-	-	128
04 Office Perimeter 3	120	-	-	131
04 Office Perimeter 3	120	-	-	104
04 Office Perimeter 4	120	-	-	107
04 Office Perimeter 5	120	-	-	233
04 Office Perimeter 6	120	-	-	217
04 Office Perimeter East 1	120	-	-	67
04 Office Perimeter North 1	120	-	-	593
04 Office Perimeter North 2	120	-	-	207
04 Office Perimeter North 3	120	-	-	741
04 Office Perimeter South 1	120	-	-	672
04 Office Perimeter South 2	120	-	-	718
04 Office Perimeter South 3	120	-	-	204
04 Office Perimeter West 1	120	-	-	457
04 Stairs 1	-	100	-	39
04 Stairs 2	-	100	-	40
04 Stairs 3	-	100	-	35
04 Stairs 4	-	100	-	38
04 WC 1	-	100	-	104
04 WC 2	-	100	-	108
05 Circulation 1	-	100	-	48
05 Circulation 2	-	100	-	39
05 Circulation 3	-	100	-	67
05 Circulation 4	-	100	-	21
05 Circulation 5	-	100	-	22
05 Office East 1	120	-	-	380
05 Office Open 1	120	-	-	416
05 Office Open 2	120	-	-	998
05 Office Open 3	120	-	-	351
05 Office Open 3	120	-	-	278
05 Office Open 4	120	-	-	964
05 Office Open 5	120	-	-	115
05 Office Perimeter 1	120	-	-	123
05 Office Perimeter 2	120	-	-	128
05 Office Perimeter 2	120	-	-	126
05 Office Perimeter 3	120	-	-	104

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
05 Office Perimeter 3	120	-	-	131
05 Office Perimeter 4	120	-	-	107
05 Office Perimeter 5	120	-	-	233
05 Office Perimeter 6	120	-	-	217
05 Office Perimeter East 1	120	-	-	67
05 Office Perimeter North 1	120	-	-	593
05 Office Perimeter North 2	120	-	-	207
05 Office Perimeter North 3	120	-	-	741
05 Office Perimeter South 1	120	-	-	672
05 Office Perimeter South 2	120	-	-	718
05 Office Perimeter South 3	120	-	-	204
05 Office Perimeter West 1	120	-	-	457
05 Stairs 1	-	100	-	39
05 Stairs 2	-	100	-	40
05 Stairs 3	-	100	-	35
05 Stairs 4	-	100	-	38
05 WC 1	-	100	-	104
05 WC 2	-	100	-	108
06 Circulation 1	-	100	-	48
06 Circulation 2	-	100	-	39
06 Circulation 3	-	100	-	67
06 Circulation 4	-	100	-	21
06 Circulation 5	-	100	-	22
06 Office East 1	120	-	-	380
06 Office Open 1	120	-	-	416
06 Office Open 2	120	-	-	998
06 Office Open 3	120	-	-	351
06 Office Open 3	120	-	-	278
06 Office Open 4	120	-	-	964
06 Office Open 5	120	-	-	115
06 Office Perimeter 1	120	-	-	123
06 Office Perimeter 2	120	-	-	128
06 Office Perimeter 2	120	-	-	126
06 Office Perimeter 3	120	-	-	131
06 Office Perimeter 4	120	-	-	104
06 Office Perimeter 5	120	-	-	107
06 Office Perimeter 6	120	-	-	233
06 Office Perimeter 7	120	-	-	217
06 Office Perimeter East 1	120	-	-	67
06 Office Perimeter North 1	120	-	-	593
06 Office Perimeter North 2	120	-	-	207
06 Office Perimeter North 3	120	-	-	741
06 Office Perimeter South 1	120	-	-	672

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
06 Office Perimeter South 2	120	-	-	718
06 Office Perimeter South 3	120	-	-	204
06 Office Perimeter West 1	120	-	-	457
06 Stairs 1	-	100	-	39
06 Stairs 2	-	100	-	40
06 Stairs 3	-	100	-	35
06 Stairs 4	-	100	-	38
06 WC 1	-	100	-	104
06 WC 2	-	100	-	108
07 Circulation 1	-	100	-	48
07 Circulation 2	-	100	-	39
07 Circulation 3	-	100	-	67
07 Circulation 4	-	100	-	21
07 Circulation 5	-	100	-	22
07 Office East 1	120	-	-	380
07 Office Open 1	120	-	-	416
07 Office Open 2	120	-	-	998
07 Office Open 3	120	-	-	351
07 Office Open 3	120	-	-	278
07 Office Open 4	120	-	-	964
07 Office Open 5	120	-	-	115
07 Office Perimeter 1	120	-	-	123
07 Office Perimeter 2	120	-	-	128
07 Office Perimeter 2	120	-	-	126
07 Office Perimeter 3	120	-	-	131
07 Office Perimeter 3	120	-	-	104
07 Office Perimeter 4	120	-	-	107
07 Office Perimeter 5	120	-	-	233
07 Office Perimeter 6	120	-	-	217
07 Office Perimeter East 1	120	-	-	67
07 Office Perimeter North 1	120	-	-	593
07 Office Perimeter North 2	120	-	-	207
07 Office Perimeter North 3	120	-	-	741
07 Office Perimeter South 1	120	-	-	672
07 Office Perimeter South 2	120	-	-	718
07 Office Perimeter South 3	120	-	-	204
07 Office Perimeter West 1	120	-	-	457
07 Stairs 1	-	100	-	39
07 Stairs 2	-	100	-	40
07 Stairs 3	-	100	-	35
07 Stairs 4	-	100	-	38
07 WC 1	-	100	-	104
07 WC 2	-	100	-	108

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
08 A3 Restaurant 1	-	70	80	1011
08 A3 Restaurant 2	-	70	80	357
08 Circulation 1	-	100	-	48
08 Circulation 2	-	100	-	31
08 Circulation 3	-	100	-	59
08 Circulation 4	-	100	-	21
08 Circulation 5	-	100	-	22
08 Office East 1	120	-	-	380
08 Office General	120	-	-	432
08 Office Open 1	120	-	-	416
08 Office Open 2	120	-	-	998
08 Office Perimeter 1	120	-	-	123
08 Office Perimeter 2	120	-	-	128
08 Office Perimeter 2	120	-	-	126
08 Office Perimeter 3	120	-	-	131
08 Office Perimeter North 1	120	-	-	593
08 Office Perimeter South 1	120	-	-	672
08 Office Perimeter West 1	120	-	-	457
08 Plant 1	125	-	-	71
08 Plant 2	125	-	-	226
08 Stairs 1	-	100	-	39
08 Stairs 2	-	100	-	40
08 Stairs 3	-	100	-	35
08 Stairs 4	-	100	-	32
08 WC 1	-	100	-	104
08 WC 2	-	100	-	108
09 Circulation 1	-	100	-	48
09 Circulation 5	-	100	-	22
09 Office East 1	120	-	-	380
09 Office Open 1	120	-	-	416
09 Office Open 2	120	-	-	998
09 Office Perimeter 1	120	-	-	123
09 Office Perimeter 2	120	-	-	128
09 Office Perimeter 2	120	-	-	126
09 Office Perimeter 3	120	-	-	131
09 Office Perimeter North 1	120	-	-	593
09 Office Perimeter South 1	120	-	-	672
09 Office Perimeter West 1	120	-	-	457
09 Stairs 1	-	100	-	39
09 Stairs 2	-	100	-	40
09 WC 1	-	100	-	104
10 Circulation 1	-	100	-	48
10 Circulation 5	-	100	-	22

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
10 Office East 1	120	-	-	380
10 Office Open 1	120	-	-	416
10 Office Open 2	120	-	-	998
10 Office Perimeter 1	120	-	-	123
10 Office Perimeter 2	120	-	-	128
10 Office Perimeter 2	120	-	-	126
10 Office Perimeter 3	120	-	-	131
10 Office Perimeter North 1	120	-	-	593
10 Office Perimeter South 1	120	-	-	672
10 Office Perimeter West 1	120	-	-	457
10 Stairs 1	-	100	-	39
10 Stairs 2	-	100	-	40
10 WC 1	-	100	-	104
11 Circulation 1	-	100	-	48
11 Circulation 5	-	100	-	22
11 Office East 1	120	-	-	380
11 Office Open 1	120	-	-	416
11 Office Open 2	120	-	-	998
11 Office Perimeter 1	120	-	-	123
11 Office Perimeter 2	120	-	-	126
11 Office Perimeter 2	120	-	-	128
11 Office Perimeter 3	120	-	-	131
11 Office Perimeter North 1	120	-	-	593
11 Office Perimeter South 1	120	-	-	672
11 Office Perimeter West 1	120	-	-	457
11 Stairs 1	-	100	-	39
11 Stairs 2	-	100	-	40
11 WC 1	-	100	-	104
12 Circulation 1	-	100	-	48
12 Circulation 5	-	100	-	22
12 Office East 1	120	-	-	380
12 Office Open 1	120	-	-	416
12 Office Open 2	120	-	-	998
12 Office Perimeter 1	120	-	-	123
12 Office Perimeter 2	120	-	-	126
12 Office Perimeter 2	120	-	-	128
12 Office Perimeter 3	120	-	-	131
12 Office Perimeter North 1	120	-	-	593
12 Office Perimeter South 1	120	-	-	672
12 Office Perimeter West 1	120	-	-	457
12 Stairs 1	-	100	-	39
12 Stairs 2	-	100	-	40
12 WC 1	-	100	-	104

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
13 Circulation 1	-	100	-	48
13 Circulation 5	-	100	-	22
13 Office East 1	120	-	-	381
13 Office Open 1	120	-	-	417
13 Office Open 2	120	-	-	999
13 Office Perimeter 1	120	-	-	123
13 Office Perimeter 2	120	-	-	128
13 Office Perimeter 2	120	-	-	127
13 Office Perimeter 3	120	-	-	131
13 Office Perimeter North 1	120	-	-	593
13 Office Perimeter South 1	120	-	-	672
13 Office Perimeter West 1	120	-	-	458
13 Stairs 1	-	100	-	39
13 Stairs 2	-	100	-	40
13 WC 1	-	100	-	104
14 Circulation 1	-	100	-	48
14 Circulation 2	-	100	-	22
14 Office Open 1	120	-	-	1010
14 Office Perimeter 1	120	-	-	107
14 Office Perimeter 2	120	-	-	109
14 Office Perimeter 3	120	-	-	120
14 Office Perimeter 4	120	-	-	109
14 Office Perimeter East 1	120	-	-	435
14 Office Perimeter North 1	120	-	-	391
14 Office Perimeter South 1	120	-	-	458
14 Stairs 1	-	100	-	39
14 Stairs 2	-	100	-	40
14 WC 1	-	100	-	104
15 Circulation 1	-	100	-	48
15 Circulation 2	-	100	-	22
15 Office Open 1	120	-	-	1010
15 Office Perimeter 1	120	-	-	107
15 Office Perimeter 2	120	-	-	109
15 Office Perimeter 3	120	-	-	120
15 Office Perimeter 4	120	-	-	109
15 Office Perimeter East 1	120	-	-	435
15 Office Perimeter North 1	120	-	-	391
15 Office Perimeter South 1	120	-	-	458
15 Stairs 1	-	100	-	39
15 Stairs 2	-	100	-	40
15 WC 1	-	100	-	104
16 Circulation 1	-	100	-	48
16 Circulation 2	-	100	-	22

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
16 Office Open 1	120	-	-	1010
16 Office Perimeter 1	120	-	-	107
16 Office Perimeter 2	120	-	-	109
16 Office Perimeter 3	120	-	-	120
16 Office Perimeter 4	120	-	-	109
16 Office Perimeter East 1	120	-	-	435
16 Office Perimeter North 1	120	-	-	391
16 Office Perimeter South 1	120	-	-	458
16 Stairs 1	-	100	-	39
16 Stairs 2	-	100	-	40
16 WC 1	-	100	-	104
17 Circulation 1	-	100	-	48
17 Circulation 2	-	100	-	22
17 Office Open 1	120	-	-	1010
17 Office Perimeter 1	120	-	-	107
17 Office Perimeter 2	120	-	-	109
17 Office Perimeter 3	120	-	-	120
17 Office Perimeter 4	120	-	-	109
17 Office Perimeter East 1	120	-	-	435
17 Office Perimeter North 1	120	-	-	391
17 Office Perimeter South 1	120	-	-	458
17 Stairs 1	-	100	-	39
17 Stairs 2	-	100	-	40
17 WC 1	-	100	-	104
18 Circulation 1	-	100	-	48
18 Circulation 2	-	100	-	22
18 Office Open 1	120	-	-	1010
18 Office Perimeter 1	120	-	-	107
18 Office Perimeter 2	120	-	-	109
18 Office Perimeter 3	120	-	-	120
18 Office Perimeter 4	120	-	-	109
18 Office Perimeter East 1	120	-	-	435
18 Office Perimeter North 1	120	-	-	391
18 Office Perimeter South 1	120	-	-	458
18 Stairs 1	-	100	-	39
18 Stairs 2	-	100	-	40
18 WC 1	-	100	-	104
19 Circulation 1	-	100	-	48
19 Circulation 2	-	100	-	22
19 Office Open 1	120	-	-	1010
19 Office Perimeter 1	120	-	-	107
19 Office Perimeter 2	120	-	-	109
19 Office Perimeter 3	120	-	-	120

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
19 Office Perimeter 4	120	-	-	109
19 Office Perimeter East 1	120	-	-	435
19 Office Perimeter North 1	120	-	-	391
19 Office Perimeter South 1	120	-	-	458
19 Stairs 1	-	100	-	39
19 Stairs 2	-	100	-	40
19 WC 1	-	100	-	104
20 Circulation 1	-	100	-	32
20 Stairs 1	-	100	-	39
UG B1 Circulation	-	90	-	61
UG B1 Circulation 1	-	90	-	88
UG B1 Circulation 2	-	90	-	57
UG B1 Circulation 3	-	90	-	62
UG B1 Circulation 4	-	90	-	337
UG B1 Circulation 5	-	90	-	25
UG B1 Circulation 6	-	90	-	20
UG B1 Lockers 1	-	90	-	58
UG B1 Lockers 2	-	90	-	58
UG B1 Plant Room 1	125	-	-	68
UG B1 Plant Room 2	125	-	-	0
UG B1 Plant Room 3	125	-	-	0
UG B1 Plant Room 4	125	-	-	0
UG B1 Plant Room 5	125	-	-	0
UG B1 Plant Room 6	125	-	-	335
UG B1 Showers 1	-	100	-	58
UG B1 Showers 2	-	100	-	57
UG B1 Stairs 1	-	90	-	51
UG B1 Stairs 2	-	90	-	52
UG B1 Stairs 3	-	90	-	50
UG B1 Store Bike 1	125	-	-	106
UG B1 Store Bike 2	125	-	-	96
UG B1 WC 1	-	100	-	41
UG B1 WC 2	-	100	-	40
UG B1 WC 3	-	100	-	226
UG B2 Circulation 1	-	90	-	62
UG B2 Circulation 2	-	90	-	305
UG B2 Circulation 3	-	90	-	61
UG B2 Circulation 4	-	90	-	25
UG B2 Circulation 5	-	90	-	20
UG B2 Circulation 6	-	90	-	427
UG B2 Plant Room 1	125	-	-	323
UG B2 Plant Room 2	125	-	-	787
UG B2 Plant Room 3	125	-	-	461

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]	
	Standard value	60	60	22	
UG B2 Plant Room 4	125	-	-	194	
UG B2 Plant Room 5	125	-	-	335	
UG B2 Plant Room 6	125	-	-	755	
UG B2 Stairs 1	-	90	-	51	
UG B2 Stairs 2	-	90	-	52	
UG B2 Stairs 3	-	90	-	50	

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00 Lobby Office 1	N/A	N/A
00 Lobby Office 2	N/A	N/A
00 Retail 1	NO (-62.5%)	NO
00 Retail 10	NO (-67%)	NO
00 Retail 2	NO (-50.1%)	NO
00 Retail 3	NO (-54.4%)	NO
00 Retail 4	NO (-55.2%)	NO
00 Retail 5	NO (-67%)	NO
00 Retail 6	NO (-53.1%)	NO
00 Retail 7	NO (-67.1%)	NO
00 Retail 8	NO (-53.7%)	NO
00 Retail 9	NO (-54.1%)	NO
01 Leisure 1 I	NO (-78.2%)	NO
01 Leisure 1 P	NO (-63.7%)	NO
01 Leisure 2 I	NO (-63.7%)	NO
01 Leisure 2 P	NO (-64.3%)	NO
01 Leisure 3 P	NO (-66.2%)	NO
01 Leisure 4 P	NO (-44.1%)	NO
01 Leisure 6 P	NO (-59.4%)	NO
01 Leisure 7 P	NO (-52.5%)	NO
01 Leisure 8 P	NO (-49.2%)	NO
01 Retail 1	NO (-26.6%)	NO
01 Retail 14	NO (-82.7%)	NO
01 Retail 15 (P)	NO (-63.1%)	NO
01 Retail 16 (P)	NO (-60.9%)	NO
01 Retail 17	NO (-68.2%)	NO
01 Retail 18 (P)	NO (-56.4%)	NO
01 Retail 19 (P)	NO (-47.1%)	NO
01 Retail 2	NO (-46%)	NO
01 Retail 20 (P)	NO (-49.5%)	NO
01 Retail 3	NO (-58.8%)	NO
01 Retail 4	NO (-43.1%)	NO
01 Retail 5	NO (-56.5%)	NO
01 Retail 6	NO (-38.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
02 Office Open 1	NO (-81.7%)	NO
02 Office Open 2	NO (-69.5%)	NO
02 Office Open 3	NO (-86.7%)	NO
02 Office Open 4	NO (-62.6%)	NO
02 Office Open 5	NO (-79.9%)	NO
02 Office Open 6	NO (-56.1%)	NO
02 Office Perimeter 1	NO (-51.9%)	NO
02 Office Perimeter 2	NO (-40.8%)	NO
02 Office Perimeter 3	NO (-67.8%)	NO
02 Office Perimeter 4	NO (-64.6%)	NO
02 Office Perimeter East 1	NO (-51%)	NO
02 Office Perimeter North 1	NO (-60.3%)	NO
02 Office Perimeter North 2	NO (-62.6%)	NO
02 Office Perimeter North 3	NO (-63.6%)	NO
02 Office Perimeter North 4	NO (-58.7%)	NO
02 Office Perimeter North 5	NO (-63.9%)	NO
02 Office Perimeter South 1	NO (-47.9%)	NO
02 Office Perimeter South 2	NO (-45.5%)	NO
02 Office Perimeter South 3	NO (-47.3%)	NO
02 Office Perimeter South 4	NO (-49.3%)	NO
02 Office Perimeter South 5	NO (-45.2%)	NO
02 Office Perimeter West 1	NO (-34.5%)	NO
03 Office Open 1	NO (-83%)	NO
03 Office Open 2	NO (-71.2%)	NO
03 Office Open 3	NO (-88.2%)	NO
03 Office Open 4	NO (-67.4%)	NO
03 Office Open 5	NO (-80.4%)	NO
03 Office Open 6	NO (-54.7%)	NO
03 Office Perimeter 3	NO (-52%)	NO
03 Office Perimeter 4	NO (-40.8%)	NO
03 Office Perimeter 5	NO (-61.3%)	NO
03 Office Perimeter 6	NO (-58.1%)	NO
03 Office Perimeter East 1	NO (-46.8%)	NO
03 Office Perimeter North 1	NO (-60.7%)	NO
03 Office Perimeter North 2	NO (-65.8%)	NO
03 Office Perimeter North 3	NO (-62.9%)	NO
03 Office Perimeter North 4	NO (-57%)	NO
03 Office Perimeter North 5	NO (-63.2%)	NO
03 Office Perimeter South 1	NO (-48.3%)	NO
03 Office Perimeter South 2	NO (-46%)	NO
03 Office Perimeter South 3	NO (-46.5%)	NO
03 Office Perimeter South 4	NO (-48.5%)	NO
03 Office Perimeter South 5	NO (-43.3%)	NO
03 Office Perimeter West 1	NO (-34.1%)	NO
04 Office East 1	NO (-53%)	NO
04 Office Open 1	NO (-73%)	NO
04 Office Open 2	NO (-69.6%)	NO
04 Office Open 3	NO (-83.2%)	NO
04 Office Open 4	NO (-59.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
04 Office Open 5	NO (-80.4%)	NO
04 Office Open 6	NO (-54.7%)	NO
04 Office Perimeter 1	NO (-51.9%)	NO
04 Office Perimeter 2	NO (-68.1%)	NO
04 Office Perimeter 2	NO (-40.7%)	NO
04 Office Perimeter 3	NO (-54.7%)	NO
04 Office Perimeter 3	NO (-61.3%)	NO
04 Office Perimeter 4	NO (-58.1%)	NO
04 Office Perimeter 5	NO (-66.5%)	NO
04 Office Perimeter 6	NO (-57.3%)	NO
04 Office Perimeter East 1	NO (-46.8%)	NO
04 Office Perimeter North 1	NO (-61.6%)	NO
04 Office Perimeter North 2	NO (-57%)	NO
04 Office Perimeter North 3	NO (-63.2%)	NO
04 Office Perimeter South 1	NO (-44.5%)	NO
04 Office Perimeter South 2	NO (-48.4%)	NO
04 Office Perimeter South 3	NO (-43.3%)	NO
04 Office Perimeter West 1	NO (-33.2%)	NO
05 Office East 1	NO (-49.2%)	NO
05 Office Open 1	NO (-72.2%)	NO
05 Office Open 2	NO (-69.5%)	NO
05 Office Open 3	NO (-59.2%)	NO
05 Office Open 3	NO (-83.2%)	NO
05 Office Open 4	NO (-80.4%)	NO
05 Office Open 5	NO (-54.7%)	NO
05 Office Perimeter 1	NO (-51.9%)	NO
05 Office Perimeter 2	NO (-40.7%)	NO
05 Office Perimeter 2	NO (-66.4%)	NO
05 Office Perimeter 3	NO (-61.3%)	NO
05 Office Perimeter 3	NO (-54%)	NO
05 Office Perimeter 4	NO (-58.1%)	NO
05 Office Perimeter 5	NO (-66.6%)	NO
05 Office Perimeter 6	NO (-57.3%)	NO
05 Office Perimeter East 1	NO (-46.7%)	NO
05 Office Perimeter North 1	NO (-61.5%)	NO
05 Office Perimeter North 2	NO (-57%)	NO
05 Office Perimeter North 3	NO (-63.2%)	NO
05 Office Perimeter South 1	NO (-44.4%)	NO
05 Office Perimeter South 2	NO (-48.4%)	NO
05 Office Perimeter South 3	NO (-43.3%)	NO
05 Office Perimeter West 1	NO (-33.2%)	NO
06 Office East 1	NO (-36.7%)	NO
06 Office Open 1	NO (-68.9%)	NO
06 Office Open 2	NO (-68.5%)	NO
06 Office Open 3	NO (-54.9%)	NO
06 Office Open 3	NO (-82.1%)	NO
06 Office Open 4	NO (-79.9%)	NO
06 Office Open 5	NO (-53.6%)	NO
06 Office Perimeter 1	NO (-50.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
06 Office Perimeter 2	NO (-38.8%)	NO
06 Office Perimeter 2	NO (-60.9%)	NO
06 Office Perimeter 3	NO (-50.3%)	NO
06 Office Perimeter 4	NO (-61.2%)	NO
06 Office Perimeter 5	NO (-57.7%)	NO
06 Office Perimeter 6	NO (-64%)	NO
06 Office Perimeter 7	NO (-54.1%)	NO
06 Office Perimeter East 1	NO (-46.2%)	NO
06 Office Perimeter North 1	NO (-61%)	NO
06 Office Perimeter North 2	NO (-56.6%)	NO
06 Office Perimeter North 3	NO (-62.7%)	NO
06 Office Perimeter South 1	NO (-41.6%)	NO
06 Office Perimeter South 2	NO (-46.5%)	NO
06 Office Perimeter South 3	NO (-41.2%)	NO
06 Office Perimeter West 1	NO (-31.6%)	NO
07 Office East 1	NO (-31.3%)	NO
07 Office Open 1	NO (-65.4%)	NO
07 Office Open 2	NO (-68.1%)	NO
07 Office Open 3	NO (-54.9%)	NO
07 Office Open 3	NO (-82.1%)	NO
07 Office Open 4	NO (-79.9%)	NO
07 Office Open 5	NO (-53.6%)	NO
07 Office Perimeter 1	NO (-50.8%)	NO
07 Office Perimeter 2	NO (-38.7%)	NO
07 Office Perimeter 2	NO (-59.2%)	NO
07 Office Perimeter 3	NO (-49.6%)	NO
07 Office Perimeter 3	NO (-61.2%)	NO
07 Office Perimeter 4	NO (-57.7%)	NO
07 Office Perimeter 5	NO (-64.1%)	NO
07 Office Perimeter 6	NO (-54%)	NO
07 Office Perimeter East 1	NO (-46.2%)	NO
07 Office Perimeter North 1	NO (-60.6%)	NO
07 Office Perimeter North 2	NO (-56.6%)	NO
07 Office Perimeter North 3	NO (-62.7%)	NO
07 Office Perimeter South 1	NO (-41.4%)	NO
07 Office Perimeter South 2	NO (-46.5%)	NO
07 Office Perimeter South 3	NO (-41.2%)	NO
07 Office Perimeter West 1	NO (-32%)	NO
08 A3 Restaurant 1	NO (-46.3%)	NO
08 A3 Restaurant 2	N/A	N/A
08 Office East 1	NO (-28.3%)	NO
08 Office General	N/A	N/A
08 Office Open 1	NO (-63.5%)	NO
08 Office Open 2	NO (-67.9%)	NO
08 Office Perimeter 1	NO (-50.7%)	NO
08 Office Perimeter 2	NO (-38.7%)	NO
08 Office Perimeter 2	NO (-58.2%)	NO
08 Office Perimeter 3	NO (-49.1%)	NO
08 Office Perimeter North 1	NO (-60.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
08 Office Perimeter South 1	NO (-41.1%)	NO
08 Office Perimeter West 1	NO (-32%)	NO
09 Office East 1	NO (-27.6%)	NO
09 Office Open 1	NO (-63%)	NO
09 Office Open 2	NO (-67.8%)	NO
09 Office Perimeter 1	NO (-50.7%)	NO
09 Office Perimeter 2	NO (-38.6%)	NO
09 Office Perimeter 2	NO (-58%)	NO
09 Office Perimeter 3	NO (-48.9%)	NO
09 Office Perimeter North 1	NO (-60.3%)	NO
09 Office Perimeter South 1	NO (-41%)	NO
09 Office Perimeter West 1	NO (-31.9%)	NO
10 Office East 1	NO (-27.6%)	NO
10 Office Open 1	NO (-63.1%)	NO
10 Office Open 2	NO (-67.8%)	NO
10 Office Perimeter 1	NO (-50.7%)	NO
10 Office Perimeter 2	NO (-38.6%)	NO
10 Office Perimeter 2	NO (-58%)	NO
10 Office Perimeter 3	NO (-48.9%)	NO
10 Office Perimeter North 1	NO (-60.3%)	NO
10 Office Perimeter South 1	NO (-41.1%)	NO
10 Office Perimeter West 1	NO (-31.9%)	NO
11 Office East 1	NO (-27.6%)	NO
11 Office Open 1	NO (-63%)	NO
11 Office Open 2	NO (-67.9%)	NO
11 Office Perimeter 1	NO (-50.7%)	NO
11 Office Perimeter 2	NO (-58%)	NO
11 Office Perimeter 2	NO (-38.6%)	NO
11 Office Perimeter 3	NO (-48.9%)	NO
11 Office Perimeter North 1	NO (-60.3%)	NO
11 Office Perimeter South 1	NO (-41%)	NO
11 Office Perimeter West 1	NO (-31.9%)	NO
12 Office East 1	NO (-27.6%)	NO
12 Office Open 1	NO (-63%)	NO
12 Office Open 2	NO (-67.9%)	NO
12 Office Perimeter 1	NO (-50.7%)	NO
12 Office Perimeter 2	NO (-58%)	NO
12 Office Perimeter 2	NO (-38.6%)	NO
12 Office Perimeter 3	NO (-48.9%)	NO
12 Office Perimeter North 1	NO (-60.3%)	NO
12 Office Perimeter South 1	NO (-41%)	NO
12 Office Perimeter West 1	NO (-31.9%)	NO
13 Office East 1	NO (-26.9%)	NO
13 Office Open 1	NO (-63.6%)	NO
13 Office Open 2	NO (-68.2%)	NO
13 Office Perimeter 1	NO (-50.8%)	NO
13 Office Perimeter 2	NO (-38.6%)	NO
13 Office Perimeter 2	NO (-57.9%)	NO
13 Office Perimeter 3	NO (-48.7%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
13 Office Perimeter North 1	NO (-60.4%)	NO
13 Office Perimeter South 1	NO (-41.2%)	NO
13 Office Perimeter West 1	NO (-31.2%)	NO
14 Office Open 1	YES (+18.4%)	NO
14 Office Perimeter 1	NO (-52%)	NO
14 Office Perimeter 2	NO (-50.5%)	NO
14 Office Perimeter 3	NO (-38.4%)	NO
14 Office Perimeter 4	NO (-36.9%)	NO
14 Office Perimeter East 1	NO (-7.9%)	NO
14 Office Perimeter North 1	NO (-53%)	NO
14 Office Perimeter South 1	NO (-33.3%)	NO
15 Office Open 1	NO (-31.3%)	NO
15 Office Perimeter 1	NO (-67.1%)	NO
15 Office Perimeter 2	NO (-65.9%)	NO
15 Office Perimeter 3	NO (-56%)	NO
15 Office Perimeter 4	NO (-57%)	NO
15 Office Perimeter East 1	NO (-50.5%)	NO
15 Office Perimeter North 1	NO (-59.5%)	NO
15 Office Perimeter South 1	NO (-43.1%)	NO
16 Office Open 1	YES (+14.8%)	NO
16 Office Perimeter 1	NO (-52.9%)	NO
16 Office Perimeter 2	NO (-51.5%)	NO
16 Office Perimeter 3	NO (-40.8%)	NO
16 Office Perimeter 4	NO (-39.5%)	NO
16 Office Perimeter East 1	NO (-10.6%)	NO
16 Office Perimeter North 1	NO (-53.7%)	NO
16 Office Perimeter South 1	NO (-36.4%)	NO
17 Office Open 1	NO (-31.2%)	NO
17 Office Perimeter 1	NO (-67.1%)	NO
17 Office Perimeter 2	NO (-65.8%)	NO
17 Office Perimeter 3	NO (-56%)	NO
17 Office Perimeter 4	NO (-56.9%)	NO
17 Office Perimeter East 1	NO (-50.5%)	NO
17 Office Perimeter North 1	NO (-59.4%)	NO
17 Office Perimeter South 1	NO (-43.1%)	NO
18 Office Open 1	YES (+16.3%)	NO
18 Office Perimeter 1	NO (-52.4%)	NO
18 Office Perimeter 2	NO (-52%)	NO
18 Office Perimeter 3	NO (-41.3%)	NO
18 Office Perimeter 4	NO (-38.9%)	NO
18 Office Perimeter East 1	NO (-12%)	NO
18 Office Perimeter North 1	NO (-53.7%)	NO
18 Office Perimeter South 1	NO (-36.3%)	NO
19 Office Open 1	NO (-30.8%)	NO
19 Office Perimeter 1	NO (-67%)	NO
19 Office Perimeter 2	NO (-65.1%)	NO
19 Office Perimeter 3	NO (-55.4%)	NO
19 Office Perimeter 4	NO (-56.8%)	NO
19 Office Perimeter East 1	NO (-48.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
19 Office Perimeter North 1	NO (-59.3%)	NO
19 Office Perimeter South 1	NO (-43%)	NO
UG B1 Showers 1	N/A	N/A
UG B1 Showers 2	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of 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
Area [m ²]	28139.5	28139.5
External area [m ²]	21870	21870
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	4	3
Average conductance [W/K]	11519.6	12154.1
Average U-value [W/m ² K]	0.53	0.56
Alpha value* [%]	10.2	10

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

Building Use

% Area	Building Type
17	A1/A2 Retail/Financial and Professional services A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
83	B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups B8 Storage or Distribution C1 Hotels C2 Residential Institutions: Hospitals and Care Homes C2 Residential Institutions: Residential schools C2 Residential Institutions: Universities and colleges C2A Secure Residential Institutions Residential spaces D1 Non-residential Institutions: Community/Day Centre D1 Non-residential Institutions: Libraries, Museums, and Galleries D1 Non-residential Institutions: Education D1 Non-residential Institutions: Primary Health Care Building D1 Non-residential Institutions: Crown and County Courts D2 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	7.64	4.42
Cooling	5.69	9.11
Auxiliary	12.63	12.45
Lighting	9.13	22.26
Hot water	4.76	5.8
Equipment*	43.72	43.72
TOTAL **	39.85	54.03

* 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	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	92	137.99
Primary energy* [kWh/m ²]	108.21	143.03
Total emissions [kg/m ²]	18.4	24.9

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

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] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	25.2	81.5	8.4	6.4	13.8	0.83	3.55	0.91	4.62
Notional	18.3	154.3	5.9	11.3	14.3	0.86	3.79	----	----
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	12.9	115.3	4.3	10.4	23.8	0.83	3.07	0.91	4
Notional	3.2	205.2	1	15	19.3	0.86	3.79	----	----
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	30.9	84.3	10.3	6.8	14.4	0.83	3.42	0.91	4.45
Notional	17.4	153.9	5.6	11.3	14.5	0.86	3.79	----	----
[ST] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	0	725.1	0	84.2	8.2	0.89	2.39	0.91	3.2
Notional	1.7	305.1	0.6	22.4	2.3	0.86	3.79	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	14.2	0	4	0	10.1	0.08	0	1	0
Notional	7.2	0	2.3	0	22.9	0.86	0	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	34.4	0	9.7	0	0	0.98	0	1	0
Notional	24.2	0	7.8	0	0	0.86	0	----	----
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	5.6	115.4	1.9	9.1	14	0.84	3.52	0.91	4.62
Notional	0	304.8	0	22.3	11.7	0.86	3.79	----	----
[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

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.18	0000002C:Surf[1]
Floor	0.2	0.15	0000002C:Surf[4]
Roof	0.15	0.12	02000022:Surf[6]
Windows, roof windows, and rooflights	1.5	1.4	0000002C:Surf[0]
Personnel doors	1.5	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m ³ /(h.m ²) at 50 Pa	5	3.5

APPENDIX B. PART L – BRUKL - BE LEAN

Project name

Pope's Road - Planning LEAN R2

As designed

Date: Fri Dec 10 15:23:43 2021

Administrative information

Building Details

Address: Brixton, London, SW9

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.13

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.13

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Hurley Palmer Flatt

Telephone number: 02074293333

Address: 240 Blackfriars Road, London, SE1 8NW

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	24.9
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	24.9
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	18.4
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.18	GB000034:Surf[0]
Floor	0.25	0.15	0.15	GB000009:Surf[0]
Roof	0.25	0.12	0.12	02000022:Surf[6]
Windows***, roof windows, and rooflights	2.2	1.4	1.4	0000002C:Surf[0]
Personnel doors	2.2	-	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	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)]				
* There might be more than one surface where the maximum U-value occurs.				
** 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.				
N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	3.5

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- Office - Reception

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	2	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

2- Speculative Retail A1/A3/D2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	1.9	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

3- Office - Circulation/Stairs/Lobby

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	0	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

4- Office - OpenOffices (West)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	1.9	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

5- Office - OpenOffices (East)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	1.9	0.73
Standard value	0.91*	3.2	N/A	1.6^	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

6- Office - Circulation WC

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	0	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

7- Office - Showers/Lockers

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.91	3.2	0	0	0.73
Standard value	0.91*	2.6	N/A	N/A	0.5
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.					

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

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
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 supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

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	1.9	1.6	0.5	1.1	0.5	1			
00 Lobby Office 1	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Lobby Office 2	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 1	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 10	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 2	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 3	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 4	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 5	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 6	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 7	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 8	-	-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 9	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 1 I	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 1 P	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 2 I	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 2 P	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 3 P	-	-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 4 P	-	-	-	-	-	-	-	-	0.2	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
01 Leisure 6 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Leisure 7 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Leisure 8 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 14	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 15 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 16 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 17	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 18 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 19 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 20 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
02 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
03 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
03 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
03 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
04 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
04 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
04 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
05 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
05 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
06 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 7	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
06 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
06 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
07 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
07 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
08 A3 Restaurant 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 A3 Restaurant 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office General	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
08 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
08 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
09 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
10 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
11 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
12 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
12 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
13 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
14 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
15 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
16 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
16 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
17 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
18 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
19 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
UG B1 Showers 1	-	-	-	2	-	-	-	-	-	-	-	N/A
UG B1 Showers 2	-	-	-	2	-	-	-	-	-	-	-	N/A
UG B1 WC 1	0.5	-	-	-	-	-	-	-	-	-	-	N/A
UG B1 WC 2	0.5	-	-	-	-	-	-	-	-	-	-	N/A
UG B1 WC 3	0.5	-	-	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name	Standard value	Luminaire	Lamp	Display lamp	
		60	60	22	
00 Circulation 1		-	90	-	541
00 Circulation 2		-	90	-	112
00 Circulation 3		-	90	-	62
00 Circulation 4		-	90	-	895

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
00 Circulation 5	-	90	-	60
00 Circulation 6	-	90	-	89
00 Circulation 7	-	90	-	53
00 Lobby Office 1	-	100	80	159
00 Lobby Office 2	-	100	80	146
00 Plant 1	125	-	-	248
00 Retail 1	-	100	80	2046
00 Retail 10	-	100	80	889
00 Retail 2	-	100	80	1981
00 Retail 3	-	100	80	270
00 Retail 4	-	100	80	278
00 Retail 5	-	100	80	685
00 Retail 6	-	100	80	656
00 Retail 7	-	100	80	515
00 Retail 8	-	100	80	622
00 Retail 9	-	100	80	867
00 Stairs 1	-	90	-	51
00 Stairs 2	-	90	-	52
00 Stairs 3	-	90	-	45
00 Stairs 4	-	90	-	49
00 Store 1	125	-	-	51
01 Circulation 1	-	90	-	62
01 Circulation 2	-	90	-	53
01 Circulation 3	-	90	-	89
01 Circulation 4	-	90	-	25
01 Circulation 5	-	90	-	341
01 Circulation 6	-	90	-	304
01 Circulation 7	-	90	-	26
01 Leisure 1 I	-	125	-	348
01 Leisure 1 P	-	125	-	272
01 Leisure 2 I	-	125	-	96
01 Leisure 2 P	-	125	-	55
01 Leisure 3 P	-	125	-	33
01 Leisure 4 P	-	125	-	46
01 Leisure 6 P	-	125	-	31
01 Leisure 7 P	-	125	-	50
01 Leisure 8 P	-	125	-	265
01 Retail 1	-	100	80	296
01 Retail 14	-	100	80	1386
01 Retail 15 (P)	-	100	80	1086
01 Retail 16 (P)	-	100	80	213
01 Retail 17	-	100	80	1419
01 Retail 18 (P)	-	100	80	763

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
01 Retail 19 (P)	-	100	80	1236
01 Retail 2	-	100	80	311
01 Retail 20 (P)	-	100	80	226
01 Retail 3	-	100	80	486
01 Retail 4	-	100	80	463
01 Retail 5	-	100	80	685
01 Retail 6	-	100	80	656
01 Stairs 1	-	90	-	51
01 Stairs 2	-	90	-	52
01 Stairs 3	-	90	-	45
01 Stairs 4	-	90	-	49
02 Circulation 1	-	100	-	56
02 Circulation 2	-	100	-	48
02 Circulation 3	-	100	-	80
02 Circulation 4	-	100	-	22
02 Circulation 5	-	100	-	23
02 Circulation 6	-	100	-	155
02 Office Open 1	120	-	-	746
02 Office Open 2	120	-	-	1049
02 Office Open 3	120	-	-	779
02 Office Open 4	120	-	-	358
02 Office Open 5	120	-	-	964
02 Office Open 6	120	-	-	116
02 Office Perimeter 1	120	-	-	127
02 Office Perimeter 2	120	-	-	133
02 Office Perimeter 3	120	-	-	109
02 Office Perimeter 4	120	-	-	112
02 Office Perimeter East 1	120	-	-	67
02 Office Perimeter North 1	120	-	-	389
02 Office Perimeter North 2	120	-	-	308
02 Office Perimeter North 3	120	-	-	703
02 Office Perimeter North 4	120	-	-	213
02 Office Perimeter North 5	120	-	-	757
02 Office Perimeter South 1	120	-	-	293
02 Office Perimeter South 2	120	-	-	369
02 Office Perimeter South 3	120	-	-	794
02 Office Perimeter South 4	120	-	-	735
02 Office Perimeter South 5	120	-	-	211
02 Office Perimeter West 1	120	-	-	461
02 Stairs 1	-	100	-	46
02 Stairs 2	-	100	-	47
02 Stairs 3	-	100	-	40
02 Stairs 4	-	100	-	44

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
02 WC 1	-	100	-	123
02 WC 2	-	100	-	119
03 Circulation 1	-	100	-	48
03 Circulation 2	-	100	-	39
03 Circulation 3	-	100	-	67
03 Circulation 4	-	100	-	21
03 Circulation 5	-	100	-	150
03 Circulation 6	-	100	-	22
03 Office Open 1	120	-	-	744
03 Office Open 2	120	-	-	1037
03 Office Open 3	120	-	-	773
03 Office Open 4	120	-	-	332
03 Office Open 5	120	-	-	964
03 Office Open 6	120	-	-	115
03 Office Perimeter 3	120	-	-	123
03 Office Perimeter 4	120	-	-	128
03 Office Perimeter 5	120	-	-	104
03 Office Perimeter 6	120	-	-	107
03 Office Perimeter East 1	120	-	-	67
03 Office Perimeter North 1	120	-	-	388
03 Office Perimeter North 2	120	-	-	304
03 Office Perimeter North 3	120	-	-	695
03 Office Perimeter North 4	120	-	-	207
03 Office Perimeter North 5	120	-	-	741
03 Office Perimeter South 1	120	-	-	288
03 Office Perimeter South 2	120	-	-	366
03 Office Perimeter South 3	120	-	-	786
03 Office Perimeter South 4	120	-	-	718
03 Office Perimeter South 5	120	-	-	204
03 Office Perimeter West 1	120	-	-	457
03 Stairs 1	-	100	-	39
03 Stairs 2	-	100	-	40
03 Stairs 3	-	100	-	35
03 Stairs 4	-	100	-	38
03 WC 1	-	100	-	110
03 WC 2	-	100	-	108
04 Circulation 1	-	100	-	48
04 Circulation 2	-	100	-	39
04 Circulation 3	-	100	-	67
04 Circulation 4	-	100	-	21
04 Circulation 5	-	100	-	22
04 Office East 1	120	-	-	380
04 Office Open 1	120	-	-	416

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
04 Office Open 2	120	-	-	998
04 Office Open 3	120	-	-	278
04 Office Open 4	120	-	-	351
04 Office Open 5	120	-	-	964
04 Office Open 6	120	-	-	115
04 Office Perimeter 1	120	-	-	123
04 Office Perimeter 2	120	-	-	126
04 Office Perimeter 2	120	-	-	128
04 Office Perimeter 3	120	-	-	131
04 Office Perimeter 3	120	-	-	104
04 Office Perimeter 4	120	-	-	107
04 Office Perimeter 5	120	-	-	233
04 Office Perimeter 6	120	-	-	217
04 Office Perimeter East 1	120	-	-	67
04 Office Perimeter North 1	120	-	-	593
04 Office Perimeter North 2	120	-	-	207
04 Office Perimeter North 3	120	-	-	741
04 Office Perimeter South 1	120	-	-	672
04 Office Perimeter South 2	120	-	-	718
04 Office Perimeter South 3	120	-	-	204
04 Office Perimeter West 1	120	-	-	457
04 Stairs 1	-	100	-	39
04 Stairs 2	-	100	-	40
04 Stairs 3	-	100	-	35
04 Stairs 4	-	100	-	38
04 WC 1	-	100	-	104
04 WC 2	-	100	-	108
05 Circulation 1	-	100	-	48
05 Circulation 2	-	100	-	39
05 Circulation 3	-	100	-	67
05 Circulation 4	-	100	-	21
05 Circulation 5	-	100	-	22
05 Office East 1	120	-	-	380
05 Office Open 1	120	-	-	416
05 Office Open 2	120	-	-	998
05 Office Open 3	120	-	-	351
05 Office Open 3	120	-	-	278
05 Office Open 4	120	-	-	964
05 Office Open 5	120	-	-	115
05 Office Perimeter 1	120	-	-	123
05 Office Perimeter 2	120	-	-	128
05 Office Perimeter 2	120	-	-	126
05 Office Perimeter 3	120	-	-	104

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
05 Office Perimeter 3	120	-	-	131
05 Office Perimeter 4	120	-	-	107
05 Office Perimeter 5	120	-	-	233
05 Office Perimeter 6	120	-	-	217
05 Office Perimeter East 1	120	-	-	67
05 Office Perimeter North 1	120	-	-	593
05 Office Perimeter North 2	120	-	-	207
05 Office Perimeter North 3	120	-	-	741
05 Office Perimeter South 1	120	-	-	672
05 Office Perimeter South 2	120	-	-	718
05 Office Perimeter South 3	120	-	-	204
05 Office Perimeter West 1	120	-	-	457
05 Stairs 1	-	100	-	39
05 Stairs 2	-	100	-	40
05 Stairs 3	-	100	-	35
05 Stairs 4	-	100	-	38
05 WC 1	-	100	-	104
05 WC 2	-	100	-	108
06 Circulation 1	-	100	-	48
06 Circulation 2	-	100	-	39
06 Circulation 3	-	100	-	67
06 Circulation 4	-	100	-	21
06 Circulation 5	-	100	-	22
06 Office East 1	120	-	-	380
06 Office Open 1	120	-	-	416
06 Office Open 2	120	-	-	998
06 Office Open 3	120	-	-	351
06 Office Open 3	120	-	-	278
06 Office Open 4	120	-	-	964
06 Office Open 5	120	-	-	115
06 Office Perimeter 1	120	-	-	123
06 Office Perimeter 2	120	-	-	128
06 Office Perimeter 2	120	-	-	126
06 Office Perimeter 3	120	-	-	131
06 Office Perimeter 4	120	-	-	104
06 Office Perimeter 5	120	-	-	107
06 Office Perimeter 6	120	-	-	233
06 Office Perimeter 7	120	-	-	217
06 Office Perimeter East 1	120	-	-	67
06 Office Perimeter North 1	120	-	-	593
06 Office Perimeter North 2	120	-	-	207
06 Office Perimeter North 3	120	-	-	741
06 Office Perimeter South 1	120	-	-	672

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
06 Office Perimeter South 2	120	-	-	718
06 Office Perimeter South 3	120	-	-	204
06 Office Perimeter West 1	120	-	-	457
06 Stairs 1	-	100	-	39
06 Stairs 2	-	100	-	40
06 Stairs 3	-	100	-	35
06 Stairs 4	-	100	-	38
06 WC 1	-	100	-	104
06 WC 2	-	100	-	108
07 Circulation 1	-	100	-	48
07 Circulation 2	-	100	-	39
07 Circulation 3	-	100	-	67
07 Circulation 4	-	100	-	21
07 Circulation 5	-	100	-	22
07 Office East 1	120	-	-	380
07 Office Open 1	120	-	-	416
07 Office Open 2	120	-	-	998
07 Office Open 3	120	-	-	351
07 Office Open 3	120	-	-	278
07 Office Open 4	120	-	-	964
07 Office Open 5	120	-	-	115
07 Office Perimeter 1	120	-	-	123
07 Office Perimeter 2	120	-	-	128
07 Office Perimeter 2	120	-	-	126
07 Office Perimeter 3	120	-	-	131
07 Office Perimeter 3	120	-	-	104
07 Office Perimeter 4	120	-	-	107
07 Office Perimeter 5	120	-	-	233
07 Office Perimeter 6	120	-	-	217
07 Office Perimeter East 1	120	-	-	67
07 Office Perimeter North 1	120	-	-	593
07 Office Perimeter North 2	120	-	-	207
07 Office Perimeter North 3	120	-	-	741
07 Office Perimeter South 1	120	-	-	672
07 Office Perimeter South 2	120	-	-	718
07 Office Perimeter South 3	120	-	-	204
07 Office Perimeter West 1	120	-	-	457
07 Stairs 1	-	100	-	39
07 Stairs 2	-	100	-	40
07 Stairs 3	-	100	-	35
07 Stairs 4	-	100	-	38
07 WC 1	-	100	-	104
07 WC 2	-	100	-	108

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
08 A3 Restaurant 1	-	70	80	1011
08 A3 Restaurant 2	-	70	80	357
08 Circulation 1	-	100	-	48
08 Circulation 2	-	100	-	31
08 Circulation 3	-	100	-	59
08 Circulation 4	-	100	-	21
08 Circulation 5	-	100	-	22
08 Office East 1	120	-	-	380
08 Office General	120	-	-	432
08 Office Open 1	120	-	-	416
08 Office Open 2	120	-	-	998
08 Office Perimeter 1	120	-	-	123
08 Office Perimeter 2	120	-	-	128
08 Office Perimeter 2	120	-	-	126
08 Office Perimeter 3	120	-	-	131
08 Office Perimeter North 1	120	-	-	593
08 Office Perimeter South 1	120	-	-	672
08 Office Perimeter West 1	120	-	-	457
08 Plant 1	125	-	-	71
08 Plant 2	125	-	-	226
08 Stairs 1	-	100	-	39
08 Stairs 2	-	100	-	40
08 Stairs 3	-	100	-	35
08 Stairs 4	-	100	-	32
08 WC 1	-	100	-	104
08 WC 2	-	100	-	108
09 Circulation 1	-	100	-	48
09 Circulation 5	-	100	-	22
09 Office East 1	120	-	-	380
09 Office Open 1	120	-	-	416
09 Office Open 2	120	-	-	998
09 Office Perimeter 1	120	-	-	123
09 Office Perimeter 2	120	-	-	128
09 Office Perimeter 2	120	-	-	126
09 Office Perimeter 3	120	-	-	131
09 Office Perimeter North 1	120	-	-	593
09 Office Perimeter South 1	120	-	-	672
09 Office Perimeter West 1	120	-	-	457
09 Stairs 1	-	100	-	39
09 Stairs 2	-	100	-	40
09 WC 1	-	100	-	104
10 Circulation 1	-	100	-	48
10 Circulation 5	-	100	-	22

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
10 Office East 1	120	-	-	380
10 Office Open 1	120	-	-	416
10 Office Open 2	120	-	-	998
10 Office Perimeter 1	120	-	-	123
10 Office Perimeter 2	120	-	-	128
10 Office Perimeter 2	120	-	-	126
10 Office Perimeter 3	120	-	-	131
10 Office Perimeter North 1	120	-	-	593
10 Office Perimeter South 1	120	-	-	672
10 Office Perimeter West 1	120	-	-	457
10 Stairs 1	-	100	-	39
10 Stairs 2	-	100	-	40
10 WC 1	-	100	-	104
11 Circulation 1	-	100	-	48
11 Circulation 5	-	100	-	22
11 Office East 1	120	-	-	380
11 Office Open 1	120	-	-	416
11 Office Open 2	120	-	-	998
11 Office Perimeter 1	120	-	-	123
11 Office Perimeter 2	120	-	-	126
11 Office Perimeter 2	120	-	-	128
11 Office Perimeter 3	120	-	-	131
11 Office Perimeter North 1	120	-	-	593
11 Office Perimeter South 1	120	-	-	672
11 Office Perimeter West 1	120	-	-	457
11 Stairs 1	-	100	-	39
11 Stairs 2	-	100	-	40
11 WC 1	-	100	-	104
12 Circulation 1	-	100	-	48
12 Circulation 5	-	100	-	22
12 Office East 1	120	-	-	380
12 Office Open 1	120	-	-	416
12 Office Open 2	120	-	-	998
12 Office Perimeter 1	120	-	-	123
12 Office Perimeter 2	120	-	-	126
12 Office Perimeter 2	120	-	-	128
12 Office Perimeter 3	120	-	-	131
12 Office Perimeter North 1	120	-	-	593
12 Office Perimeter South 1	120	-	-	672
12 Office Perimeter West 1	120	-	-	457
12 Stairs 1	-	100	-	39
12 Stairs 2	-	100	-	40
12 WC 1	-	100	-	104

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
13 Circulation 1	-	100	-	48
13 Circulation 5	-	100	-	22
13 Office East 1	120	-	-	381
13 Office Open 1	120	-	-	417
13 Office Open 2	120	-	-	999
13 Office Perimeter 1	120	-	-	123
13 Office Perimeter 2	120	-	-	128
13 Office Perimeter 2	120	-	-	127
13 Office Perimeter 3	120	-	-	131
13 Office Perimeter North 1	120	-	-	593
13 Office Perimeter South 1	120	-	-	672
13 Office Perimeter West 1	120	-	-	458
13 Stairs 1	-	100	-	39
13 Stairs 2	-	100	-	40
13 WC 1	-	100	-	104
14 Circulation 1	-	100	-	48
14 Circulation 2	-	100	-	22
14 Office Open 1	120	-	-	1010
14 Office Perimeter 1	120	-	-	107
14 Office Perimeter 2	120	-	-	109
14 Office Perimeter 3	120	-	-	120
14 Office Perimeter 4	120	-	-	109
14 Office Perimeter East 1	120	-	-	435
14 Office Perimeter North 1	120	-	-	391
14 Office Perimeter South 1	120	-	-	458
14 Stairs 1	-	100	-	39
14 Stairs 2	-	100	-	40
14 WC 1	-	100	-	104
15 Circulation 1	-	100	-	48
15 Circulation 2	-	100	-	22
15 Office Open 1	120	-	-	1010
15 Office Perimeter 1	120	-	-	107
15 Office Perimeter 2	120	-	-	109
15 Office Perimeter 3	120	-	-	120
15 Office Perimeter 4	120	-	-	109
15 Office Perimeter East 1	120	-	-	435
15 Office Perimeter North 1	120	-	-	391
15 Office Perimeter South 1	120	-	-	458
15 Stairs 1	-	100	-	39
15 Stairs 2	-	100	-	40
15 WC 1	-	100	-	104
16 Circulation 1	-	100	-	48
16 Circulation 2	-	100	-	22

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
16 Office Open 1	120	-	-	1010
16 Office Perimeter 1	120	-	-	107
16 Office Perimeter 2	120	-	-	109
16 Office Perimeter 3	120	-	-	120
16 Office Perimeter 4	120	-	-	109
16 Office Perimeter East 1	120	-	-	435
16 Office Perimeter North 1	120	-	-	391
16 Office Perimeter South 1	120	-	-	458
16 Stairs 1	-	100	-	39
16 Stairs 2	-	100	-	40
16 WC 1	-	100	-	104
17 Circulation 1	-	100	-	48
17 Circulation 2	-	100	-	22
17 Office Open 1	120	-	-	1010
17 Office Perimeter 1	120	-	-	107
17 Office Perimeter 2	120	-	-	109
17 Office Perimeter 3	120	-	-	120
17 Office Perimeter 4	120	-	-	109
17 Office Perimeter East 1	120	-	-	435
17 Office Perimeter North 1	120	-	-	391
17 Office Perimeter South 1	120	-	-	458
17 Stairs 1	-	100	-	39
17 Stairs 2	-	100	-	40
17 WC 1	-	100	-	104
18 Circulation 1	-	100	-	48
18 Circulation 2	-	100	-	22
18 Office Open 1	120	-	-	1010
18 Office Perimeter 1	120	-	-	107
18 Office Perimeter 2	120	-	-	109
18 Office Perimeter 3	120	-	-	120
18 Office Perimeter 4	120	-	-	109
18 Office Perimeter East 1	120	-	-	435
18 Office Perimeter North 1	120	-	-	391
18 Office Perimeter South 1	120	-	-	458
18 Stairs 1	-	100	-	39
18 Stairs 2	-	100	-	40
18 WC 1	-	100	-	104
19 Circulation 1	-	100	-	48
19 Circulation 2	-	100	-	22
19 Office Open 1	120	-	-	1010
19 Office Perimeter 1	120	-	-	107
19 Office Perimeter 2	120	-	-	109
19 Office Perimeter 3	120	-	-	120

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
19 Office Perimeter 4	120	-	-	109
19 Office Perimeter East 1	120	-	-	435
19 Office Perimeter North 1	120	-	-	391
19 Office Perimeter South 1	120	-	-	458
19 Stairs 1	-	100	-	39
19 Stairs 2	-	100	-	40
19 WC 1	-	100	-	104
20 Circulation 1	-	100	-	32
20 Stairs 1	-	100	-	39
UG B1 Circulation	-	90	-	61
UG B1 Circulation 1	-	90	-	88
UG B1 Circulation 2	-	90	-	57
UG B1 Circulation 3	-	90	-	62
UG B1 Circulation 4	-	90	-	337
UG B1 Circulation 5	-	90	-	25
UG B1 Circulation 6	-	90	-	20
UG B1 Lockers 1	-	90	-	58
UG B1 Lockers 2	-	90	-	58
UG B1 Plant Room 1	125	-	-	68
UG B1 Plant Room 2	125	-	-	0
UG B1 Plant Room 3	125	-	-	0
UG B1 Plant Room 4	125	-	-	0
UG B1 Plant Room 5	125	-	-	0
UG B1 Plant Room 6	125	-	-	335
UG B1 Showers 1	-	100	-	58
UG B1 Showers 2	-	100	-	57
UG B1 Stairs 1	-	90	-	51
UG B1 Stairs 2	-	90	-	52
UG B1 Stairs 3	-	90	-	50
UG B1 Store Bike 1	125	-	-	106
UG B1 Store Bike 2	125	-	-	96
UG B1 WC 1	-	100	-	41
UG B1 WC 2	-	100	-	40
UG B1 WC 3	-	100	-	226
UG B2 Circulation 1	-	90	-	62
UG B2 Circulation 2	-	90	-	305
UG B2 Circulation 3	-	90	-	61
UG B2 Circulation 4	-	90	-	25
UG B2 Circulation 5	-	90	-	20
UG B2 Circulation 6	-	90	-	427
UG B2 Plant Room 1	125	-	-	323
UG B2 Plant Room 2	125	-	-	787
UG B2 Plant Room 3	125	-	-	461

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
UG B2 Plant Room 4		125	-	-	194
UG B2 Plant Room 5		125	-	-	335
UG B2 Plant Room 6		125	-	-	755
UG B2 Stairs 1		-	90	-	51
UG B2 Stairs 2		-	90	-	52
UG B2 Stairs 3		-	90	-	50

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00 Lobby Office 1	N/A	N/A
00 Lobby Office 2	N/A	N/A
00 Retail 1	NO (-62.5%)	NO
00 Retail 10	NO (-67%)	NO
00 Retail 2	NO (-50.1%)	NO
00 Retail 3	NO (-54.4%)	NO
00 Retail 4	NO (-55.2%)	NO
00 Retail 5	NO (-67%)	NO
00 Retail 6	NO (-53.1%)	NO
00 Retail 7	NO (-67.1%)	NO
00 Retail 8	NO (-53.7%)	NO
00 Retail 9	NO (-54.1%)	NO
01 Leisure 1 I	NO (-78.2%)	NO
01 Leisure 1 P	NO (-63.7%)	NO
01 Leisure 2 I	NO (-63.7%)	NO
01 Leisure 2 P	NO (-64.3%)	NO
01 Leisure 3 P	NO (-66.2%)	NO
01 Leisure 4 P	NO (-44.1%)	NO
01 Leisure 6 P	NO (-59.4%)	NO
01 Leisure 7 P	NO (-52.5%)	NO
01 Leisure 8 P	NO (-49.2%)	NO
01 Retail 1	NO (-26.6%)	NO
01 Retail 14	NO (-82.7%)	NO
01 Retail 15 (P)	NO (-63.1%)	NO
01 Retail 16 (P)	NO (-60.9%)	NO
01 Retail 17	NO (-68.2%)	NO
01 Retail 18 (P)	NO (-56.4%)	NO
01 Retail 19 (P)	NO (-47.1%)	NO
01 Retail 2	NO (-46%)	NO
01 Retail 20 (P)	NO (-49.5%)	NO
01 Retail 3	NO (-58.8%)	NO
01 Retail 4	NO (-43.1%)	NO
01 Retail 5	NO (-56.5%)	NO
01 Retail 6	NO (-38.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
02 Office Open 1	NO (-81.7%)	NO
02 Office Open 2	NO (-69.5%)	NO
02 Office Open 3	NO (-86.7%)	NO
02 Office Open 4	NO (-62.6%)	NO
02 Office Open 5	NO (-79.9%)	NO
02 Office Open 6	NO (-56.1%)	NO
02 Office Perimeter 1	NO (-51.9%)	NO
02 Office Perimeter 2	NO (-40.8%)	NO
02 Office Perimeter 3	NO (-67.8%)	NO
02 Office Perimeter 4	NO (-64.6%)	NO
02 Office Perimeter East 1	NO (-51%)	NO
02 Office Perimeter North 1	NO (-60.3%)	NO
02 Office Perimeter North 2	NO (-62.6%)	NO
02 Office Perimeter North 3	NO (-63.6%)	NO
02 Office Perimeter North 4	NO (-58.7%)	NO
02 Office Perimeter North 5	NO (-63.9%)	NO
02 Office Perimeter South 1	NO (-47.9%)	NO
02 Office Perimeter South 2	NO (-45.5%)	NO
02 Office Perimeter South 3	NO (-47.3%)	NO
02 Office Perimeter South 4	NO (-49.3%)	NO
02 Office Perimeter South 5	NO (-45.2%)	NO
02 Office Perimeter West 1	NO (-34.5%)	NO
03 Office Open 1	NO (-83%)	NO
03 Office Open 2	NO (-71.2%)	NO
03 Office Open 3	NO (-88.2%)	NO
03 Office Open 4	NO (-67.4%)	NO
03 Office Open 5	NO (-80.4%)	NO
03 Office Open 6	NO (-54.7%)	NO
03 Office Perimeter 3	NO (-52%)	NO
03 Office Perimeter 4	NO (-40.8%)	NO
03 Office Perimeter 5	NO (-61.3%)	NO
03 Office Perimeter 6	NO (-58.1%)	NO
03 Office Perimeter East 1	NO (-46.8%)	NO
03 Office Perimeter North 1	NO (-60.7%)	NO
03 Office Perimeter North 2	NO (-65.8%)	NO
03 Office Perimeter North 3	NO (-62.9%)	NO
03 Office Perimeter North 4	NO (-57%)	NO
03 Office Perimeter North 5	NO (-63.2%)	NO
03 Office Perimeter South 1	NO (-48.3%)	NO
03 Office Perimeter South 2	NO (-46%)	NO
03 Office Perimeter South 3	NO (-46.5%)	NO
03 Office Perimeter South 4	NO (-48.5%)	NO
03 Office Perimeter South 5	NO (-43.3%)	NO
03 Office Perimeter West 1	NO (-34.1%)	NO
04 Office East 1	NO (-53%)	NO
04 Office Open 1	NO (-73%)	NO
04 Office Open 2	NO (-69.6%)	NO
04 Office Open 3	NO (-83.2%)	NO
04 Office Open 4	NO (-59.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
04 Office Open 5	NO (-80.4%)	NO
04 Office Open 6	NO (-54.7%)	NO
04 Office Perimeter 1	NO (-51.9%)	NO
04 Office Perimeter 2	NO (-68.1%)	NO
04 Office Perimeter 2	NO (-40.7%)	NO
04 Office Perimeter 3	NO (-54.7%)	NO
04 Office Perimeter 3	NO (-61.3%)	NO
04 Office Perimeter 4	NO (-58.1%)	NO
04 Office Perimeter 5	NO (-66.5%)	NO
04 Office Perimeter 6	NO (-57.3%)	NO
04 Office Perimeter East 1	NO (-46.8%)	NO
04 Office Perimeter North 1	NO (-61.6%)	NO
04 Office Perimeter North 2	NO (-57%)	NO
04 Office Perimeter North 3	NO (-63.2%)	NO
04 Office Perimeter South 1	NO (-44.5%)	NO
04 Office Perimeter South 2	NO (-48.4%)	NO
04 Office Perimeter South 3	NO (-43.3%)	NO
04 Office Perimeter West 1	NO (-33.2%)	NO
05 Office East 1	NO (-49.2%)	NO
05 Office Open 1	NO (-72.2%)	NO
05 Office Open 2	NO (-69.5%)	NO
05 Office Open 3	NO (-59.2%)	NO
05 Office Open 3	NO (-83.2%)	NO
05 Office Open 4	NO (-80.4%)	NO
05 Office Open 5	NO (-54.7%)	NO
05 Office Perimeter 1	NO (-51.9%)	NO
05 Office Perimeter 2	NO (-40.7%)	NO
05 Office Perimeter 2	NO (-66.4%)	NO
05 Office Perimeter 3	NO (-61.3%)	NO
05 Office Perimeter 3	NO (-54%)	NO
05 Office Perimeter 4	NO (-58.1%)	NO
05 Office Perimeter 5	NO (-66.6%)	NO
05 Office Perimeter 6	NO (-57.3%)	NO
05 Office Perimeter East 1	NO (-46.7%)	NO
05 Office Perimeter North 1	NO (-61.5%)	NO
05 Office Perimeter North 2	NO (-57%)	NO
05 Office Perimeter North 3	NO (-63.2%)	NO
05 Office Perimeter South 1	NO (-44.4%)	NO
05 Office Perimeter South 2	NO (-48.4%)	NO
05 Office Perimeter South 3	NO (-43.3%)	NO
05 Office Perimeter West 1	NO (-33.2%)	NO
06 Office East 1	NO (-36.7%)	NO
06 Office Open 1	NO (-68.9%)	NO
06 Office Open 2	NO (-68.5%)	NO
06 Office Open 3	NO (-54.9%)	NO
06 Office Open 3	NO (-82.1%)	NO
06 Office Open 4	NO (-79.9%)	NO
06 Office Open 5	NO (-53.6%)	NO
06 Office Perimeter 1	NO (-50.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
06 Office Perimeter 2	NO (-38.8%)	NO
06 Office Perimeter 2	NO (-60.9%)	NO
06 Office Perimeter 3	NO (-50.3%)	NO
06 Office Perimeter 4	NO (-61.2%)	NO
06 Office Perimeter 5	NO (-57.7%)	NO
06 Office Perimeter 6	NO (-64%)	NO
06 Office Perimeter 7	NO (-54.1%)	NO
06 Office Perimeter East 1	NO (-46.2%)	NO
06 Office Perimeter North 1	NO (-61%)	NO
06 Office Perimeter North 2	NO (-56.6%)	NO
06 Office Perimeter North 3	NO (-62.7%)	NO
06 Office Perimeter South 1	NO (-41.6%)	NO
06 Office Perimeter South 2	NO (-46.5%)	NO
06 Office Perimeter South 3	NO (-41.2%)	NO
06 Office Perimeter West 1	NO (-31.6%)	NO
07 Office East 1	NO (-31.3%)	NO
07 Office Open 1	NO (-65.4%)	NO
07 Office Open 2	NO (-68.1%)	NO
07 Office Open 3	NO (-54.9%)	NO
07 Office Open 3	NO (-82.1%)	NO
07 Office Open 4	NO (-79.9%)	NO
07 Office Open 5	NO (-53.6%)	NO
07 Office Perimeter 1	NO (-50.8%)	NO
07 Office Perimeter 2	NO (-38.7%)	NO
07 Office Perimeter 2	NO (-59.2%)	NO
07 Office Perimeter 3	NO (-49.6%)	NO
07 Office Perimeter 3	NO (-61.2%)	NO
07 Office Perimeter 4	NO (-57.7%)	NO
07 Office Perimeter 5	NO (-64.1%)	NO
07 Office Perimeter 6	NO (-54%)	NO
07 Office Perimeter East 1	NO (-46.2%)	NO
07 Office Perimeter North 1	NO (-60.6%)	NO
07 Office Perimeter North 2	NO (-56.6%)	NO
07 Office Perimeter North 3	NO (-62.7%)	NO
07 Office Perimeter South 1	NO (-41.4%)	NO
07 Office Perimeter South 2	NO (-46.5%)	NO
07 Office Perimeter South 3	NO (-41.2%)	NO
07 Office Perimeter West 1	NO (-32%)	NO
08 A3 Restaurant 1	NO (-46.3%)	NO
08 A3 Restaurant 2	N/A	N/A
08 Office East 1	NO (-28.3%)	NO
08 Office General	N/A	N/A
08 Office Open 1	NO (-63.5%)	NO
08 Office Open 2	NO (-67.9%)	NO
08 Office Perimeter 1	NO (-50.7%)	NO
08 Office Perimeter 2	NO (-38.7%)	NO
08 Office Perimeter 2	NO (-58.2%)	NO
08 Office Perimeter 3	NO (-49.1%)	NO
08 Office Perimeter North 1	NO (-60.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
08 Office Perimeter South 1	NO (-41.1%)	NO
08 Office Perimeter West 1	NO (-32%)	NO
09 Office East 1	NO (-27.6%)	NO
09 Office Open 1	NO (-63%)	NO
09 Office Open 2	NO (-67.8%)	NO
09 Office Perimeter 1	NO (-50.7%)	NO
09 Office Perimeter 2	NO (-38.6%)	NO
09 Office Perimeter 2	NO (-58%)	NO
09 Office Perimeter 3	NO (-48.9%)	NO
09 Office Perimeter North 1	NO (-60.3%)	NO
09 Office Perimeter South 1	NO (-41%)	NO
09 Office Perimeter West 1	NO (-31.9%)	NO
10 Office East 1	NO (-27.6%)	NO
10 Office Open 1	NO (-63.1%)	NO
10 Office Open 2	NO (-67.8%)	NO
10 Office Perimeter 1	NO (-50.7%)	NO
10 Office Perimeter 2	NO (-38.6%)	NO
10 Office Perimeter 2	NO (-58%)	NO
10 Office Perimeter 3	NO (-48.9%)	NO
10 Office Perimeter North 1	NO (-60.3%)	NO
10 Office Perimeter South 1	NO (-41.1%)	NO
10 Office Perimeter West 1	NO (-31.9%)	NO
11 Office East 1	NO (-27.6%)	NO
11 Office Open 1	NO (-63%)	NO
11 Office Open 2	NO (-67.9%)	NO
11 Office Perimeter 1	NO (-50.7%)	NO
11 Office Perimeter 2	NO (-58%)	NO
11 Office Perimeter 2	NO (-38.6%)	NO
11 Office Perimeter 3	NO (-48.9%)	NO
11 Office Perimeter North 1	NO (-60.3%)	NO
11 Office Perimeter South 1	NO (-41%)	NO
11 Office Perimeter West 1	NO (-31.9%)	NO
12 Office East 1	NO (-27.6%)	NO
12 Office Open 1	NO (-63%)	NO
12 Office Open 2	NO (-67.9%)	NO
12 Office Perimeter 1	NO (-50.7%)	NO
12 Office Perimeter 2	NO (-58%)	NO
12 Office Perimeter 2	NO (-38.6%)	NO
12 Office Perimeter 3	NO (-48.9%)	NO
12 Office Perimeter North 1	NO (-60.3%)	NO
12 Office Perimeter South 1	NO (-41%)	NO
12 Office Perimeter West 1	NO (-31.9%)	NO
13 Office East 1	NO (-26.9%)	NO
13 Office Open 1	NO (-63.6%)	NO
13 Office Open 2	NO (-68.2%)	NO
13 Office Perimeter 1	NO (-50.8%)	NO
13 Office Perimeter 2	NO (-38.6%)	NO
13 Office Perimeter 2	NO (-57.9%)	NO
13 Office Perimeter 3	NO (-48.7%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
13 Office Perimeter North 1	NO (-60.4%)	NO
13 Office Perimeter South 1	NO (-41.2%)	NO
13 Office Perimeter West 1	NO (-31.2%)	NO
14 Office Open 1	YES (+18.4%)	NO
14 Office Perimeter 1	NO (-52%)	NO
14 Office Perimeter 2	NO (-50.5%)	NO
14 Office Perimeter 3	NO (-38.4%)	NO
14 Office Perimeter 4	NO (-36.9%)	NO
14 Office Perimeter East 1	NO (-7.9%)	NO
14 Office Perimeter North 1	NO (-53%)	NO
14 Office Perimeter South 1	NO (-33.3%)	NO
15 Office Open 1	NO (-31.3%)	NO
15 Office Perimeter 1	NO (-67.1%)	NO
15 Office Perimeter 2	NO (-65.9%)	NO
15 Office Perimeter 3	NO (-56%)	NO
15 Office Perimeter 4	NO (-57%)	NO
15 Office Perimeter East 1	NO (-50.5%)	NO
15 Office Perimeter North 1	NO (-59.5%)	NO
15 Office Perimeter South 1	NO (-43.1%)	NO
16 Office Open 1	YES (+14.8%)	NO
16 Office Perimeter 1	NO (-52.9%)	NO
16 Office Perimeter 2	NO (-51.5%)	NO
16 Office Perimeter 3	NO (-40.8%)	NO
16 Office Perimeter 4	NO (-39.5%)	NO
16 Office Perimeter East 1	NO (-10.6%)	NO
16 Office Perimeter North 1	NO (-53.7%)	NO
16 Office Perimeter South 1	NO (-36.4%)	NO
17 Office Open 1	NO (-31.2%)	NO
17 Office Perimeter 1	NO (-67.1%)	NO
17 Office Perimeter 2	NO (-65.8%)	NO
17 Office Perimeter 3	NO (-56%)	NO
17 Office Perimeter 4	NO (-56.9%)	NO
17 Office Perimeter East 1	NO (-50.5%)	NO
17 Office Perimeter North 1	NO (-59.4%)	NO
17 Office Perimeter South 1	NO (-43.1%)	NO
18 Office Open 1	YES (+16.3%)	NO
18 Office Perimeter 1	NO (-52.4%)	NO
18 Office Perimeter 2	NO (-52%)	NO
18 Office Perimeter 3	NO (-41.3%)	NO
18 Office Perimeter 4	NO (-38.9%)	NO
18 Office Perimeter East 1	NO (-12%)	NO
18 Office Perimeter North 1	NO (-53.7%)	NO
18 Office Perimeter South 1	NO (-36.3%)	NO
19 Office Open 1	NO (-30.8%)	NO
19 Office Perimeter 1	NO (-67%)	NO
19 Office Perimeter 2	NO (-65.1%)	NO
19 Office Perimeter 3	NO (-55.4%)	NO
19 Office Perimeter 4	NO (-56.8%)	NO
19 Office Perimeter East 1	NO (-48.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
19 Office Perimeter North 1	NO (-59.3%)	NO
19 Office Perimeter South 1	NO (-43%)	NO
UG B1 Showers 1	N/A	N/A
UG B1 Showers 2	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of 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
Area [m ²]	28139.5	28139.5
External area [m ²]	21870	21870
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	4	3
Average conductance [W/K]	11519.6	12154.1
Average U-value [W/m ² K]	0.53	0.56
Alpha value* [%]	10.2	10

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

Building Use

% Area	Building Type
17	A1/A2 Retail/Financial and Professional services A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
83	B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups B8 Storage or Distribution C1 Hotels C2 Residential Institutions: Hospitals and Care Homes C2 Residential Institutions: Residential schools C2 Residential Institutions: Universities and colleges C2A Secure Residential Institutions Residential spaces D1 Non-residential Institutions: Community/Day Centre D1 Non-residential Institutions: Libraries, Museums, and Galleries D1 Non-residential Institutions: Education D1 Non-residential Institutions: Primary Health Care Building D1 Non-residential Institutions: Crown and County Courts D2 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	7.64	4.42
Cooling	5.69	9.11
Auxiliary	12.63	12.45
Lighting	9.13	22.26
Hot water	4.76	5.8
Equipment*	43.72	43.72
TOTAL **	39.85	54.03

* 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	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	92	137.99
Primary energy* [kWh/m ²]	108.21	143.03
Total emissions [kg/m ²]	18.4	24.9

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

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] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	25.2	81.5	8.4	6.4	13.8	0.83	3.55	0.91	4.62
Notional	18.3	154.3	5.9	11.3	14.3	0.86	3.79	----	----
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	12.9	115.3	4.3	10.4	23.8	0.83	3.07	0.91	4
Notional	3.2	205.2	1	15	19.3	0.86	3.79	----	----
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	30.9	84.3	10.3	6.8	14.4	0.83	3.42	0.91	4.45
Notional	17.4	153.9	5.6	11.3	14.5	0.86	3.79	----	----
[ST] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	0	725.1	0	84.2	8.2	0.89	2.39	0.91	3.2
Notional	1.7	305.1	0.6	22.4	2.3	0.86	3.79	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	14.2	0	4	0	10.1	0.08	0	1	0
Notional	7.2	0	2.3	0	22.9	0.86	0	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	34.4	0	9.7	0	0	0.98	0	1	0
Notional	24.2	0	7.8	0	0	0.86	0	----	----
[ST] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	5.6	115.4	1.9	9.1	14	0.84	3.52	0.91	4.62
Notional	0	304.8	0	22.3	11.7	0.86	3.79	----	----
[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

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.18	0000002C:Surf[1]
Floor	0.2	0.15	0000002C:Surf[4]
Roof	0.15	0.12	02000022:Surf[6]
Windows, roof windows, and rooflights	1.5	1.4	0000002C:Surf[0]
Personnel doors	1.5	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m ³ /(h.m ²) at 50 Pa	5	3.5

APPENDIX C. PART L – BRUKL - BE GREEN

Project name

Pope's Road - Planning GREEN RT

As designed

Date: Fri Dec 10 16:39:48 2021

Administrative information

Building Details

Address: Brixton, London, SW9

Certification tool

Calculation engine: Apache

Calculation engine version: 7.0.13

Interface to calculation engine: IES Virtual Environment

Interface to calculation engine version: 7.0.13

BRUKL compliance check version: v5.6.b.0

Certifier details

Name: Hurley Palmer Flatt

Telephone number: 02074293333

Address: 240 Blackfriars Road, London, SE1 8NW

Criterion 1: The calculated CO₂ emission rate for the building must not exceed the target

CO ₂ emission rate from the notional building, kgCO ₂ /m ² .annum	24.1
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	24.1
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	16.7
Are emissions from the building less than or equal to the target?	BER =< TER
Are as built details the same as used in the BER calculations?	Separate submission

Criterion 2: The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Values which do not achieve the standards in the Non-Domestic Building Services Compliance Guide and Part L are displayed in red.

Building fabric

Element	U _a -Limit	U _a -Calc	U _i -Calc	Surface where the maximum value occurs*
Wall**	0.35	0.18	0.18	0000002C:Surf[1]
Floor	0.25	0.16	0.18	0000002C:Surf[4]
Roof	0.25	0.12	0.12	02000022:Surf[6]
Windows***, roof windows, and rooflights	2.2	1.4	1.4	0000002C:Surf[0]
Personnel doors	2.2	-	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	-	No Vehicle access doors in building
High usage entrance doors	3.5	-	-	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)]				
* There might be more than one surface where the maximum U-value occurs.				
** 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.				
N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air Permeability	Worst acceptable standard	This building
m ³ /(h.m ²) at 50 Pa	10	3.5

Building services

The standard values listed below are minimum values for efficiencies and maximum values for SFPs. Refer to the Non-Domestic Building Services Compliance Guide for details.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	>0.95

1- Office - Reception

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.3	3.2	0	2	0.73
Standard value	2.5*	3.2	N/A	1.6^	0.5
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. For types <=12 kW output, refer to EN 14825 for limiting standards.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

2- Speculative Retail A1/A3/D2

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2.5	3.2	0	1.9	0.73
Standard value	2.5*	3.2	N/A	1.6^	0.5
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. For types <=12 kW output, refer to EN 14825 for limiting standards.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

3- Office - Circulation/Stairs/Lobby

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	0	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

4- Office - OpenOffices (West)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.23	3.2	0	1.9	0.8
Standard value	2.5*	3.2	N/A	1.6^	0.5
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. For types <=12 kW output, refer to EN 14825 for limiting standards.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

5- Office - OpenOffices (East)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.36	3.2	0	1.9	0.8
Standard value	2.5*	3.2	N/A	1.6^	0.5
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. For types <=12 kW output, refer to EN 14825 for limiting standards.					
^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.					

6- Office - Circulation WC

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	1	-	0	0	-
Standard value	0.86	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES

7- Office - Showers/Lockers

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	2	3.2	0	0	0.73
Standard value	2.5*	2.6	N/A	N/A	0.5
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. For types <=12 kW output, refer to EN 14825 for limiting standards.

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

Local mechanical ventilation, exhaust, and terminal units

ID	System type in Non-domestic Building Services Compliance Guide
A	Local supply or extract ventilation units serving a single area
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 supply and extract ventilation units serving a single room or zone with heating and heat recovery
E	Local supply and extract ventilation system serving a single area with heating and heat recovery
F	Other local ventilation units
G	Fan-assisted terminal VAV unit
H	Fan coil units
I	Zonal extract system where the fan is remote from the zone with grease filter

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	1.9	1.6	0.5	1.1	0.5	1		
00 Lobby Office 1		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Lobby Office 2		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 1		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 10		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 2		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 3		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 4		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 5		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 6		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 7		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 8		-	-	-	-	-	-	-	0.2	-	-	N/A
00 Retail 9		-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 1 I		-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 1 P		-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 2 I		-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 2 P		-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 3 P		-	-	-	-	-	-	-	0.2	-	-	N/A
01 Leisure 4 P		-	-	-	-	-	-	-	0.2	-	-	N/A

Zone name	SFP [W/(I/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	1.9	1.6	0.5	1.1	0.5	1			
01 Leisure 6 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Leisure 7 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Leisure 8 P	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 14	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 15 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 16 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 17	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 18 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 19 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 20 (P)	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
01 Retail 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter North 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter South 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
02 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
02 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
03 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
03 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter North 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter South 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
03 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
03 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
04 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Open 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
04 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
04 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
04 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
05 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
05 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
05 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
06 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter 7	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
06 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
06 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
06 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
07 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Open 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 5	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter 6	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter North 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter South 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
07 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
07 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
08 A3 Restaurant 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 A3 Restaurant 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office General	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
08 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
08 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
08 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
09 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
09 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
10 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
10 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
11 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
11 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
12 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
12 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
12 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
13 Office East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Open 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 Office Perimeter West 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
13 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
14 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
14 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
15 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
15 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
16 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	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	1.9	1.6	0.5	1.1	0.5	1			
16 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
16 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
17 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
17 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
18 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
18 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
19 Office Open 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 2	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 3	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter 4	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter East 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter North 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 Office Perimeter South 1	-	-	-	-	-	-	-	0.2	-	-	-	N/A
19 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
UG B1 Showers 1	-	-	-	2	-	-	-	-	-	-	-	N/A
UG B1 Showers 2	-	-	-	2	-	-	-	-	-	-	-	N/A
UG B1 WC 1	-	-	0.5	-	-	-	-	-	-	-	-	N/A
UG B1 WC 2	-	-	0.5	-	-	-	-	-	-	-	-	N/A
UG B1 WC 3	-	-	0.5	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name	Standard value	Luminaire	Lamp	Display lamp	
		60	60	22	
00 Circulation 1		-	90	-	541
00 Circulation 2		-	90	-	112
00 Circulation 3		-	90	-	62
00 Circulation 4		-	90	-	895

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
00 Circulation 5	-	90	-	60
00 Circulation 6	-	90	-	89
00 Circulation 7	-	90	-	53
00 Lobby Office 1	-	100	80	159
00 Lobby Office 2	-	100	80	146
00 Plant 1	125	-	-	248
00 Retail 1	-	100	80	2046
00 Retail 10	-	100	80	889
00 Retail 2	-	100	80	1981
00 Retail 3	-	100	80	270
00 Retail 4	-	100	80	278
00 Retail 5	-	100	80	685
00 Retail 6	-	100	80	656
00 Retail 7	-	100	80	515
00 Retail 8	-	100	80	622
00 Retail 9	-	100	80	867
00 Stairs 1	-	90	-	51
00 Stairs 2	-	90	-	52
00 Stairs 3	-	90	-	45
00 Stairs 4	-	90	-	49
00 Store 1	125	-	-	51
01 Circulation 1	-	90	-	62
01 Circulation 2	-	90	-	53
01 Circulation 3	-	90	-	89
01 Circulation 4	-	90	-	25
01 Circulation 5	-	90	-	341
01 Circulation 6	-	90	-	304
01 Circulation 7	-	90	-	26
01 Leisure 1 I	-	125	-	348
01 Leisure 1 P	-	125	-	272
01 Leisure 2 I	-	125	-	96
01 Leisure 2 P	-	125	-	55
01 Leisure 3 P	-	125	-	33
01 Leisure 4 P	-	125	-	46
01 Leisure 6 P	-	125	-	31
01 Leisure 7 P	-	125	-	50
01 Leisure 8 P	-	125	-	265
01 Retail 1	-	100	80	296
01 Retail 14	-	100	80	1386
01 Retail 15 (P)	-	100	80	1086
01 Retail 16 (P)	-	100	80	213
01 Retail 17	-	100	80	1419
01 Retail 18 (P)	-	100	80	763

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
01 Retail 19 (P)	-	100	80	1236
01 Retail 2	-	100	80	311
01 Retail 20 (P)	-	100	80	226
01 Retail 3	-	100	80	486
01 Retail 4	-	100	80	463
01 Retail 5	-	100	80	685
01 Retail 6	-	100	80	656
01 Stairs 1	-	90	-	51
01 Stairs 2	-	90	-	52
01 Stairs 3	-	90	-	45
01 Stairs 4	-	90	-	49
02 Circulation 1	-	100	-	56
02 Circulation 2	-	100	-	48
02 Circulation 3	-	100	-	80
02 Circulation 4	-	100	-	22
02 Circulation 5	-	100	-	23
02 Circulation 6	-	100	-	155
02 Office Open 1	120	-	-	746
02 Office Open 2	120	-	-	1049
02 Office Open 3	120	-	-	779
02 Office Open 4	120	-	-	358
02 Office Open 5	120	-	-	964
02 Office Open 6	120	-	-	116
02 Office Perimeter 1	120	-	-	127
02 Office Perimeter 2	120	-	-	133
02 Office Perimeter 3	120	-	-	109
02 Office Perimeter 4	120	-	-	112
02 Office Perimeter East 1	120	-	-	67
02 Office Perimeter North 1	120	-	-	389
02 Office Perimeter North 2	120	-	-	308
02 Office Perimeter North 3	120	-	-	703
02 Office Perimeter North 4	120	-	-	213
02 Office Perimeter North 5	120	-	-	757
02 Office Perimeter South 1	120	-	-	293
02 Office Perimeter South 2	120	-	-	369
02 Office Perimeter South 3	120	-	-	794
02 Office Perimeter South 4	120	-	-	735
02 Office Perimeter South 5	120	-	-	211
02 Office Perimeter West 1	120	-	-	461
02 Stairs 1	-	100	-	46
02 Stairs 2	-	100	-	47
02 Stairs 3	-	100	-	40
02 Stairs 4	-	100	-	44

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
02 WC 1	-	100	-	123
02 WC 2	-	100	-	119
03 Circulation 1	-	100	-	48
03 Circulation 2	-	100	-	39
03 Circulation 3	-	100	-	67
03 Circulation 4	-	100	-	21
03 Circulation 5	-	100	-	150
03 Circulation 6	-	100	-	22
03 Office Open 1	120	-	-	744
03 Office Open 2	120	-	-	1037
03 Office Open 3	120	-	-	773
03 Office Open 4	120	-	-	332
03 Office Open 5	120	-	-	964
03 Office Open 6	120	-	-	115
03 Office Perimeter 3	120	-	-	123
03 Office Perimeter 4	120	-	-	128
03 Office Perimeter 5	120	-	-	104
03 Office Perimeter 6	120	-	-	107
03 Office Perimeter East 1	120	-	-	67
03 Office Perimeter North 1	120	-	-	388
03 Office Perimeter North 2	120	-	-	304
03 Office Perimeter North 3	120	-	-	695
03 Office Perimeter North 4	120	-	-	207
03 Office Perimeter North 5	120	-	-	741
03 Office Perimeter South 1	120	-	-	288
03 Office Perimeter South 2	120	-	-	366
03 Office Perimeter South 3	120	-	-	786
03 Office Perimeter South 4	120	-	-	718
03 Office Perimeter South 5	120	-	-	204
03 Office Perimeter West 1	120	-	-	457
03 Stairs 1	-	100	-	39
03 Stairs 2	-	100	-	40
03 Stairs 3	-	100	-	35
03 Stairs 4	-	100	-	38
03 WC 1	-	100	-	110
03 WC 2	-	100	-	108
04 Circulation 1	-	100	-	48
04 Circulation 2	-	100	-	39
04 Circulation 3	-	100	-	67
04 Circulation 4	-	100	-	21
04 Circulation 5	-	100	-	22
04 Office East 1	120	-	-	380
04 Office Open 1	120	-	-	416

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
04 Office Open 2	120	-	-	998
04 Office Open 3	120	-	-	278
04 Office Open 4	120	-	-	351
04 Office Open 5	120	-	-	964
04 Office Open 6	120	-	-	115
04 Office Perimeter 1	120	-	-	123
04 Office Perimeter 2	120	-	-	126
04 Office Perimeter 2	120	-	-	128
04 Office Perimeter 3	120	-	-	131
04 Office Perimeter 3	120	-	-	104
04 Office Perimeter 4	120	-	-	107
04 Office Perimeter 5	120	-	-	233
04 Office Perimeter 6	120	-	-	217
04 Office Perimeter East 1	120	-	-	67
04 Office Perimeter North 1	120	-	-	593
04 Office Perimeter North 2	120	-	-	207
04 Office Perimeter North 3	120	-	-	741
04 Office Perimeter South 1	120	-	-	672
04 Office Perimeter South 2	120	-	-	718
04 Office Perimeter South 3	120	-	-	204
04 Office Perimeter West 1	120	-	-	457
04 Stairs 1	-	100	-	39
04 Stairs 2	-	100	-	40
04 Stairs 3	-	100	-	35
04 Stairs 4	-	100	-	38
04 WC 1	-	100	-	104
04 WC 2	-	100	-	108
05 Circulation 1	-	100	-	48
05 Circulation 2	-	100	-	39
05 Circulation 3	-	100	-	67
05 Circulation 4	-	100	-	21
05 Circulation 5	-	100	-	22
05 Office East 1	120	-	-	380
05 Office Open 1	120	-	-	416
05 Office Open 2	120	-	-	998
05 Office Open 3	120	-	-	351
05 Office Open 3	120	-	-	278
05 Office Open 4	120	-	-	964
05 Office Open 5	120	-	-	115
05 Office Perimeter 1	120	-	-	123
05 Office Perimeter 2	120	-	-	128
05 Office Perimeter 2	120	-	-	126
05 Office Perimeter 3	120	-	-	104

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
05 Office Perimeter 3	120	-	-	131
05 Office Perimeter 4	120	-	-	107
05 Office Perimeter 5	120	-	-	233
05 Office Perimeter 6	120	-	-	217
05 Office Perimeter East 1	120	-	-	67
05 Office Perimeter North 1	120	-	-	593
05 Office Perimeter North 2	120	-	-	207
05 Office Perimeter North 3	120	-	-	741
05 Office Perimeter South 1	120	-	-	672
05 Office Perimeter South 2	120	-	-	718
05 Office Perimeter South 3	120	-	-	204
05 Office Perimeter West 1	120	-	-	457
05 Stairs 1	-	100	-	39
05 Stairs 2	-	100	-	40
05 Stairs 3	-	100	-	35
05 Stairs 4	-	100	-	38
05 WC 1	-	100	-	104
05 WC 2	-	100	-	108
06 Circulation 1	-	100	-	48
06 Circulation 2	-	100	-	39
06 Circulation 3	-	100	-	67
06 Circulation 4	-	100	-	21
06 Circulation 5	-	100	-	22
06 Office East 1	120	-	-	380
06 Office Open 1	120	-	-	416
06 Office Open 2	120	-	-	998
06 Office Open 3	120	-	-	351
06 Office Open 3	120	-	-	278
06 Office Open 4	120	-	-	964
06 Office Open 5	120	-	-	115
06 Office Perimeter 1	120	-	-	123
06 Office Perimeter 2	120	-	-	128
06 Office Perimeter 2	120	-	-	126
06 Office Perimeter 3	120	-	-	131
06 Office Perimeter 4	120	-	-	104
06 Office Perimeter 5	120	-	-	107
06 Office Perimeter 6	120	-	-	233
06 Office Perimeter 7	120	-	-	217
06 Office Perimeter East 1	120	-	-	67
06 Office Perimeter North 1	120	-	-	593
06 Office Perimeter North 2	120	-	-	207
06 Office Perimeter North 3	120	-	-	741
06 Office Perimeter South 1	120	-	-	672

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
06 Office Perimeter South 2	120	-	-	718
06 Office Perimeter South 3	120	-	-	204
06 Office Perimeter West 1	120	-	-	457
06 Stairs 1	-	100	-	39
06 Stairs 2	-	100	-	40
06 Stairs 3	-	100	-	35
06 Stairs 4	-	100	-	38
06 WC 1	-	100	-	104
06 WC 2	-	100	-	108
07 Circulation 1	-	100	-	48
07 Circulation 2	-	100	-	39
07 Circulation 3	-	100	-	67
07 Circulation 4	-	100	-	21
07 Circulation 5	-	100	-	22
07 Office East 1	120	-	-	380
07 Office Open 1	120	-	-	416
07 Office Open 2	120	-	-	998
07 Office Open 3	120	-	-	351
07 Office Open 3	120	-	-	278
07 Office Open 4	120	-	-	964
07 Office Open 5	120	-	-	115
07 Office Perimeter 1	120	-	-	123
07 Office Perimeter 2	120	-	-	128
07 Office Perimeter 2	120	-	-	126
07 Office Perimeter 3	120	-	-	131
07 Office Perimeter 3	120	-	-	104
07 Office Perimeter 4	120	-	-	107
07 Office Perimeter 5	120	-	-	233
07 Office Perimeter 6	120	-	-	217
07 Office Perimeter East 1	120	-	-	67
07 Office Perimeter North 1	120	-	-	593
07 Office Perimeter North 2	120	-	-	207
07 Office Perimeter North 3	120	-	-	741
07 Office Perimeter South 1	120	-	-	672
07 Office Perimeter South 2	120	-	-	718
07 Office Perimeter South 3	120	-	-	204
07 Office Perimeter West 1	120	-	-	457
07 Stairs 1	-	100	-	39
07 Stairs 2	-	100	-	40
07 Stairs 3	-	100	-	35
07 Stairs 4	-	100	-	38
07 WC 1	-	100	-	104
07 WC 2	-	100	-	108

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
08 A3 Restaurant 1	-	70	80	1011
08 A3 Restaurant 2	-	70	80	357
08 Circulation 1	-	100	-	48
08 Circulation 2	-	100	-	31
08 Circulation 3	-	100	-	59
08 Circulation 4	-	100	-	21
08 Circulation 5	-	100	-	22
08 Office East 1	120	-	-	380
08 Office General	120	-	-	432
08 Office Open 1	120	-	-	416
08 Office Open 2	120	-	-	998
08 Office Perimeter 1	120	-	-	123
08 Office Perimeter 2	120	-	-	128
08 Office Perimeter 2	120	-	-	126
08 Office Perimeter 3	120	-	-	131
08 Office Perimeter North 1	120	-	-	593
08 Office Perimeter South 1	120	-	-	672
08 Office Perimeter West 1	120	-	-	457
08 Plant 1	125	-	-	71
08 Plant 2	125	-	-	226
08 Stairs 1	-	100	-	39
08 Stairs 2	-	100	-	40
08 Stairs 3	-	100	-	35
08 Stairs 4	-	100	-	32
08 WC 1	-	100	-	104
08 WC 2	-	100	-	108
09 Circulation 1	-	100	-	48
09 Circulation 5	-	100	-	22
09 Office East 1	120	-	-	380
09 Office Open 1	120	-	-	416
09 Office Open 2	120	-	-	998
09 Office Perimeter 1	120	-	-	123
09 Office Perimeter 2	120	-	-	128
09 Office Perimeter 2	120	-	-	126
09 Office Perimeter 3	120	-	-	131
09 Office Perimeter North 1	120	-	-	593
09 Office Perimeter South 1	120	-	-	672
09 Office Perimeter West 1	120	-	-	457
09 Stairs 1	-	100	-	39
09 Stairs 2	-	100	-	40
09 WC 1	-	100	-	104
10 Circulation 1	-	100	-	48
10 Circulation 5	-	100	-	22

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
10 Office East 1	120	-	-	380
10 Office Open 1	120	-	-	416
10 Office Open 2	120	-	-	998
10 Office Perimeter 1	120	-	-	123
10 Office Perimeter 2	120	-	-	128
10 Office Perimeter 2	120	-	-	126
10 Office Perimeter 3	120	-	-	131
10 Office Perimeter North 1	120	-	-	593
10 Office Perimeter South 1	120	-	-	672
10 Office Perimeter West 1	120	-	-	457
10 Stairs 1	-	100	-	39
10 Stairs 2	-	100	-	40
10 WC 1	-	100	-	104
11 Circulation 1	-	100	-	48
11 Circulation 5	-	100	-	22
11 Office East 1	120	-	-	380
11 Office Open 1	120	-	-	416
11 Office Open 2	120	-	-	998
11 Office Perimeter 1	120	-	-	123
11 Office Perimeter 2	120	-	-	126
11 Office Perimeter 2	120	-	-	128
11 Office Perimeter 3	120	-	-	131
11 Office Perimeter North 1	120	-	-	593
11 Office Perimeter South 1	120	-	-	672
11 Office Perimeter West 1	120	-	-	457
11 Stairs 1	-	100	-	39
11 Stairs 2	-	100	-	40
11 WC 1	-	100	-	104
12 Circulation 1	-	100	-	48
12 Circulation 5	-	100	-	22
12 Office East 1	120	-	-	380
12 Office Open 1	120	-	-	416
12 Office Open 2	120	-	-	998
12 Office Perimeter 1	120	-	-	123
12 Office Perimeter 2	120	-	-	126
12 Office Perimeter 2	120	-	-	128
12 Office Perimeter 3	120	-	-	131
12 Office Perimeter North 1	120	-	-	593
12 Office Perimeter South 1	120	-	-	672
12 Office Perimeter West 1	120	-	-	457
12 Stairs 1	-	100	-	39
12 Stairs 2	-	100	-	40
12 WC 1	-	100	-	104

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
13 Circulation 1	-	100	-	48
13 Circulation 5	-	100	-	22
13 Office East 1	120	-	-	381
13 Office Open 1	120	-	-	417
13 Office Open 2	120	-	-	999
13 Office Perimeter 1	120	-	-	123
13 Office Perimeter 2	120	-	-	128
13 Office Perimeter 2	120	-	-	127
13 Office Perimeter 3	120	-	-	131
13 Office Perimeter North 1	120	-	-	593
13 Office Perimeter South 1	120	-	-	672
13 Office Perimeter West 1	120	-	-	458
13 Stairs 1	-	100	-	39
13 Stairs 2	-	100	-	40
13 WC 1	-	100	-	104
14 Circulation 1	-	100	-	48
14 Circulation 2	-	100	-	22
14 Office Open 1	120	-	-	1010
14 Office Perimeter 1	120	-	-	107
14 Office Perimeter 2	120	-	-	109
14 Office Perimeter 3	120	-	-	120
14 Office Perimeter 4	120	-	-	109
14 Office Perimeter East 1	120	-	-	435
14 Office Perimeter North 1	120	-	-	391
14 Office Perimeter South 1	120	-	-	458
14 Stairs 1	-	100	-	39
14 Stairs 2	-	100	-	40
14 WC 1	-	100	-	104
15 Circulation 1	-	100	-	48
15 Circulation 2	-	100	-	22
15 Office Open 1	120	-	-	1010
15 Office Perimeter 1	120	-	-	107
15 Office Perimeter 2	120	-	-	109
15 Office Perimeter 3	120	-	-	120
15 Office Perimeter 4	120	-	-	109
15 Office Perimeter East 1	120	-	-	435
15 Office Perimeter North 1	120	-	-	391
15 Office Perimeter South 1	120	-	-	458
15 Stairs 1	-	100	-	39
15 Stairs 2	-	100	-	40
15 WC 1	-	100	-	104
16 Circulation 1	-	100	-	48
16 Circulation 2	-	100	-	22

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
16 Office Open 1	120	-	-	1010
16 Office Perimeter 1	120	-	-	107
16 Office Perimeter 2	120	-	-	109
16 Office Perimeter 3	120	-	-	120
16 Office Perimeter 4	120	-	-	109
16 Office Perimeter East 1	120	-	-	435
16 Office Perimeter North 1	120	-	-	391
16 Office Perimeter South 1	120	-	-	458
16 Stairs 1	-	100	-	39
16 Stairs 2	-	100	-	40
16 WC 1	-	100	-	104
17 Circulation 1	-	100	-	48
17 Circulation 2	-	100	-	22
17 Office Open 1	120	-	-	1010
17 Office Perimeter 1	120	-	-	107
17 Office Perimeter 2	120	-	-	109
17 Office Perimeter 3	120	-	-	120
17 Office Perimeter 4	120	-	-	109
17 Office Perimeter East 1	120	-	-	435
17 Office Perimeter North 1	120	-	-	391
17 Office Perimeter South 1	120	-	-	458
17 Stairs 1	-	100	-	39
17 Stairs 2	-	100	-	40
17 WC 1	-	100	-	104
18 Circulation 1	-	100	-	48
18 Circulation 2	-	100	-	22
18 Office Open 1	120	-	-	1010
18 Office Perimeter 1	120	-	-	107
18 Office Perimeter 2	120	-	-	109
18 Office Perimeter 3	120	-	-	120
18 Office Perimeter 4	120	-	-	109
18 Office Perimeter East 1	120	-	-	435
18 Office Perimeter North 1	120	-	-	391
18 Office Perimeter South 1	120	-	-	458
18 Stairs 1	-	100	-	39
18 Stairs 2	-	100	-	40
18 WC 1	-	100	-	104
19 Circulation 1	-	100	-	48
19 Circulation 2	-	100	-	22
19 Office Open 1	120	-	-	1010
19 Office Perimeter 1	120	-	-	107
19 Office Perimeter 2	120	-	-	109
19 Office Perimeter 3	120	-	-	120

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			General lighting [W]
	Luminaire	Lamp	Display lamp	
Standard value	60	60	22	
19 Office Perimeter 4	120	-	-	109
19 Office Perimeter East 1	120	-	-	435
19 Office Perimeter North 1	120	-	-	391
19 Office Perimeter South 1	120	-	-	458
19 Stairs 1	-	100	-	39
19 Stairs 2	-	100	-	40
19 WC 1	-	100	-	104
20 Circulation 1	-	100	-	32
20 Stairs 1	-	100	-	39
UG B1 Circulation	-	90	-	61
UG B1 Circulation 1	-	90	-	88
UG B1 Circulation 2	-	90	-	57
UG B1 Circulation 3	-	90	-	62
UG B1 Circulation 4	-	90	-	337
UG B1 Circulation 5	-	90	-	25
UG B1 Circulation 6	-	90	-	20
UG B1 Lockers 1	-	90	-	58
UG B1 Lockers 2	-	90	-	58
UG B1 Plant Room 1	125	-	-	68
UG B1 Plant Room 2	125	-	-	0
UG B1 Plant Room 3	125	-	-	0
UG B1 Plant Room 4	125	-	-	0
UG B1 Plant Room 5	125	-	-	0
UG B1 Plant Room 6	125	-	-	335
UG B1 Showers 1	-	100	-	58
UG B1 Showers 2	-	100	-	57
UG B1 Stairs 1	-	90	-	51
UG B1 Stairs 2	-	90	-	52
UG B1 Stairs 3	-	90	-	50
UG B1 Store Bike 1	125	-	-	106
UG B1 Store Bike 2	125	-	-	96
UG B1 WC 1	-	100	-	41
UG B1 WC 2	-	100	-	40
UG B1 WC 3	-	100	-	226
UG B2 Circulation 1	-	90	-	62
UG B2 Circulation 2	-	90	-	305
UG B2 Circulation 3	-	90	-	61
UG B2 Circulation 4	-	90	-	25
UG B2 Circulation 5	-	90	-	20
UG B2 Circulation 6	-	90	-	427
UG B2 Plant Room 1	125	-	-	323
UG B2 Plant Room 2	125	-	-	787
UG B2 Plant Room 3	125	-	-	461

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
UG B2 Plant Room 4		125	-	-	194
UG B2 Plant Room 5		125	-	-	335
UG B2 Plant Room 6		125	-	-	755
UG B2 Stairs 1		-	90	-	51
UG B2 Stairs 2		-	90	-	52
UG B2 Stairs 3		-	90	-	50

Criterion 3: The spaces in the building should have appropriate passive control measures to limit solar gains

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
00 Lobby Office 1	N/A	N/A
00 Lobby Office 2	N/A	N/A
00 Retail 1	NO (-62.5%)	NO
00 Retail 10	NO (-67%)	NO
00 Retail 2	NO (-50.1%)	NO
00 Retail 3	NO (-54.4%)	NO
00 Retail 4	NO (-55.2%)	NO
00 Retail 5	NO (-67%)	NO
00 Retail 6	NO (-53.1%)	NO
00 Retail 7	NO (-67.1%)	NO
00 Retail 8	NO (-53.7%)	NO
00 Retail 9	NO (-54.1%)	NO
01 Leisure 1 I	NO (-78.2%)	NO
01 Leisure 1 P	NO (-63.7%)	NO
01 Leisure 2 I	NO (-63.7%)	NO
01 Leisure 2 P	NO (-64.3%)	NO
01 Leisure 3 P	NO (-66.2%)	NO
01 Leisure 4 P	NO (-44.1%)	NO
01 Leisure 6 P	NO (-59.4%)	NO
01 Leisure 7 P	NO (-52.5%)	NO
01 Leisure 8 P	NO (-49.2%)	NO
01 Retail 1	NO (-26.6%)	NO
01 Retail 14	NO (-82.7%)	NO
01 Retail 15 (P)	NO (-63.1%)	NO
01 Retail 16 (P)	NO (-60.9%)	NO
01 Retail 17	NO (-68.2%)	NO
01 Retail 18 (P)	NO (-56.4%)	NO
01 Retail 19 (P)	NO (-47.1%)	NO
01 Retail 2	NO (-46%)	NO
01 Retail 20 (P)	NO (-49.5%)	NO
01 Retail 3	NO (-58.8%)	NO
01 Retail 4	NO (-43.1%)	NO
01 Retail 5	NO (-56.5%)	NO
01 Retail 6	NO (-38.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
02 Office Open 1	NO (-81.7%)	NO
02 Office Open 2	NO (-69.5%)	NO
02 Office Open 3	NO (-86.7%)	NO
02 Office Open 4	NO (-62.6%)	NO
02 Office Open 5	NO (-79.9%)	NO
02 Office Open 6	NO (-56.1%)	NO
02 Office Perimeter 1	NO (-51.9%)	NO
02 Office Perimeter 2	NO (-40.8%)	NO
02 Office Perimeter 3	NO (-67.8%)	NO
02 Office Perimeter 4	NO (-64.6%)	NO
02 Office Perimeter East 1	NO (-51%)	NO
02 Office Perimeter North 1	NO (-60.3%)	NO
02 Office Perimeter North 2	NO (-62.6%)	NO
02 Office Perimeter North 3	NO (-63.6%)	NO
02 Office Perimeter North 4	NO (-58.7%)	NO
02 Office Perimeter North 5	NO (-63.9%)	NO
02 Office Perimeter South 1	NO (-47.9%)	NO
02 Office Perimeter South 2	NO (-45.5%)	NO
02 Office Perimeter South 3	NO (-47.3%)	NO
02 Office Perimeter South 4	NO (-49.3%)	NO
02 Office Perimeter South 5	NO (-45.2%)	NO
02 Office Perimeter West 1	NO (-34.5%)	NO
03 Office Open 1	NO (-83%)	NO
03 Office Open 2	NO (-71.2%)	NO
03 Office Open 3	NO (-88.2%)	NO
03 Office Open 4	NO (-67.4%)	NO
03 Office Open 5	NO (-80.4%)	NO
03 Office Open 6	NO (-54.7%)	NO
03 Office Perimeter 3	NO (-52%)	NO
03 Office Perimeter 4	NO (-40.8%)	NO
03 Office Perimeter 5	NO (-61.3%)	NO
03 Office Perimeter 6	NO (-58.1%)	NO
03 Office Perimeter East 1	NO (-46.8%)	NO
03 Office Perimeter North 1	NO (-60.7%)	NO
03 Office Perimeter North 2	NO (-65.8%)	NO
03 Office Perimeter North 3	NO (-62.9%)	NO
03 Office Perimeter North 4	NO (-57%)	NO
03 Office Perimeter North 5	NO (-63.2%)	NO
03 Office Perimeter South 1	NO (-48.3%)	NO
03 Office Perimeter South 2	NO (-46%)	NO
03 Office Perimeter South 3	NO (-46.5%)	NO
03 Office Perimeter South 4	NO (-48.5%)	NO
03 Office Perimeter South 5	NO (-43.3%)	NO
03 Office Perimeter West 1	NO (-34.1%)	NO
04 Office East 1	NO (-53%)	NO
04 Office Open 1	NO (-73%)	NO
04 Office Open 2	NO (-69.6%)	NO
04 Office Open 3	NO (-83.2%)	NO
04 Office Open 4	NO (-59.1%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
04 Office Open 5	NO (-80.4%)	NO
04 Office Open 6	NO (-54.7%)	NO
04 Office Perimeter 1	NO (-51.9%)	NO
04 Office Perimeter 2	NO (-68.1%)	NO
04 Office Perimeter 2	NO (-40.7%)	NO
04 Office Perimeter 3	NO (-54.7%)	NO
04 Office Perimeter 3	NO (-61.3%)	NO
04 Office Perimeter 4	NO (-58.1%)	NO
04 Office Perimeter 5	NO (-66.5%)	NO
04 Office Perimeter 6	NO (-57.3%)	NO
04 Office Perimeter East 1	NO (-46.8%)	NO
04 Office Perimeter North 1	NO (-61.6%)	NO
04 Office Perimeter North 2	NO (-57%)	NO
04 Office Perimeter North 3	NO (-63.2%)	NO
04 Office Perimeter South 1	NO (-44.5%)	NO
04 Office Perimeter South 2	NO (-48.4%)	NO
04 Office Perimeter South 3	NO (-43.3%)	NO
04 Office Perimeter West 1	NO (-33.2%)	NO
05 Office East 1	NO (-49.2%)	NO
05 Office Open 1	NO (-72.2%)	NO
05 Office Open 2	NO (-69.5%)	NO
05 Office Open 3	NO (-59.2%)	NO
05 Office Open 3	NO (-83.2%)	NO
05 Office Open 4	NO (-80.4%)	NO
05 Office Open 5	NO (-54.7%)	NO
05 Office Perimeter 1	NO (-51.9%)	NO
05 Office Perimeter 2	NO (-40.7%)	NO
05 Office Perimeter 2	NO (-66.4%)	NO
05 Office Perimeter 3	NO (-61.3%)	NO
05 Office Perimeter 3	NO (-54%)	NO
05 Office Perimeter 4	NO (-58.1%)	NO
05 Office Perimeter 5	NO (-66.6%)	NO
05 Office Perimeter 6	NO (-57.3%)	NO
05 Office Perimeter East 1	NO (-46.7%)	NO
05 Office Perimeter North 1	NO (-61.5%)	NO
05 Office Perimeter North 2	NO (-57%)	NO
05 Office Perimeter North 3	NO (-63.2%)	NO
05 Office Perimeter South 1	NO (-44.4%)	NO
05 Office Perimeter South 2	NO (-48.4%)	NO
05 Office Perimeter South 3	NO (-43.3%)	NO
05 Office Perimeter West 1	NO (-33.2%)	NO
06 Office East 1	NO (-36.7%)	NO
06 Office Open 1	NO (-68.9%)	NO
06 Office Open 2	NO (-68.5%)	NO
06 Office Open 3	NO (-54.9%)	NO
06 Office Open 3	NO (-82.1%)	NO
06 Office Open 4	NO (-79.9%)	NO
06 Office Open 5	NO (-53.6%)	NO
06 Office Perimeter 1	NO (-50.9%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
06 Office Perimeter 2	NO (-38.8%)	NO
06 Office Perimeter 2	NO (-60.9%)	NO
06 Office Perimeter 3	NO (-50.3%)	NO
06 Office Perimeter 4	NO (-61.2%)	NO
06 Office Perimeter 5	NO (-57.7%)	NO
06 Office Perimeter 6	NO (-64%)	NO
06 Office Perimeter 7	NO (-54.1%)	NO
06 Office Perimeter East 1	NO (-46.2%)	NO
06 Office Perimeter North 1	NO (-61%)	NO
06 Office Perimeter North 2	NO (-56.6%)	NO
06 Office Perimeter North 3	NO (-62.7%)	NO
06 Office Perimeter South 1	NO (-41.6%)	NO
06 Office Perimeter South 2	NO (-46.5%)	NO
06 Office Perimeter South 3	NO (-41.2%)	NO
06 Office Perimeter West 1	NO (-31.6%)	NO
07 Office East 1	NO (-31.3%)	NO
07 Office Open 1	NO (-65.4%)	NO
07 Office Open 2	NO (-68.1%)	NO
07 Office Open 3	NO (-54.9%)	NO
07 Office Open 3	NO (-82.1%)	NO
07 Office Open 4	NO (-79.9%)	NO
07 Office Open 5	NO (-53.6%)	NO
07 Office Perimeter 1	NO (-50.8%)	NO
07 Office Perimeter 2	NO (-38.7%)	NO
07 Office Perimeter 2	NO (-59.2%)	NO
07 Office Perimeter 3	NO (-49.6%)	NO
07 Office Perimeter 3	NO (-61.2%)	NO
07 Office Perimeter 4	NO (-57.7%)	NO
07 Office Perimeter 5	NO (-64.1%)	NO
07 Office Perimeter 6	NO (-54%)	NO
07 Office Perimeter East 1	NO (-46.2%)	NO
07 Office Perimeter North 1	NO (-60.6%)	NO
07 Office Perimeter North 2	NO (-56.6%)	NO
07 Office Perimeter North 3	NO (-62.7%)	NO
07 Office Perimeter South 1	NO (-41.4%)	NO
07 Office Perimeter South 2	NO (-46.5%)	NO
07 Office Perimeter South 3	NO (-41.2%)	NO
07 Office Perimeter West 1	NO (-32%)	NO
08 A3 Restaurant 1	NO (-46.3%)	NO
08 A3 Restaurant 2	N/A	N/A
08 Office East 1	NO (-28.3%)	NO
08 Office General	N/A	N/A
08 Office Open 1	NO (-63.5%)	NO
08 Office Open 2	NO (-67.9%)	NO
08 Office Perimeter 1	NO (-50.7%)	NO
08 Office Perimeter 2	NO (-38.7%)	NO
08 Office Perimeter 2	NO (-58.2%)	NO
08 Office Perimeter 3	NO (-49.1%)	NO
08 Office Perimeter North 1	NO (-60.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
08 Office Perimeter South 1	NO (-41.1%)	NO
08 Office Perimeter West 1	NO (-32%)	NO
09 Office East 1	NO (-27.6%)	NO
09 Office Open 1	NO (-63%)	NO
09 Office Open 2	NO (-67.8%)	NO
09 Office Perimeter 1	NO (-50.7%)	NO
09 Office Perimeter 2	NO (-38.6%)	NO
09 Office Perimeter 2	NO (-58%)	NO
09 Office Perimeter 3	NO (-48.9%)	NO
09 Office Perimeter North 1	NO (-60.3%)	NO
09 Office Perimeter South 1	NO (-41%)	NO
09 Office Perimeter West 1	NO (-31.9%)	NO
10 Office East 1	NO (-27.6%)	NO
10 Office Open 1	NO (-63.1%)	NO
10 Office Open 2	NO (-67.9%)	NO
10 Office Perimeter 1	NO (-50.7%)	NO
10 Office Perimeter 2	NO (-38.6%)	NO
10 Office Perimeter 2	NO (-58%)	NO
10 Office Perimeter 3	NO (-48.9%)	NO
10 Office Perimeter North 1	NO (-60.3%)	NO
10 Office Perimeter South 1	NO (-41.1%)	NO
10 Office Perimeter West 1	NO (-31.9%)	NO
11 Office East 1	NO (-27.6%)	NO
11 Office Open 1	NO (-63%)	NO
11 Office Open 2	NO (-67.9%)	NO
11 Office Perimeter 1	NO (-50.7%)	NO
11 Office Perimeter 2	NO (-58%)	NO
11 Office Perimeter 2	NO (-38.6%)	NO
11 Office Perimeter 3	NO (-48.9%)	NO
11 Office Perimeter North 1	NO (-60.3%)	NO
11 Office Perimeter South 1	NO (-41%)	NO
11 Office Perimeter West 1	NO (-31.9%)	NO
12 Office East 1	NO (-27.6%)	NO
12 Office Open 1	NO (-63%)	NO
12 Office Open 2	NO (-67.9%)	NO
12 Office Perimeter 1	NO (-50.7%)	NO
12 Office Perimeter 2	NO (-58%)	NO
12 Office Perimeter 2	NO (-38.6%)	NO
12 Office Perimeter 3	NO (-48.9%)	NO
12 Office Perimeter North 1	NO (-60.3%)	NO
12 Office Perimeter South 1	NO (-41%)	NO
12 Office Perimeter West 1	NO (-31.9%)	NO
13 Office East 1	NO (-26.9%)	NO
13 Office Open 1	NO (-63.6%)	NO
13 Office Open 2	NO (-68.2%)	NO
13 Office Perimeter 1	NO (-50.8%)	NO
13 Office Perimeter 2	NO (-38.6%)	NO
13 Office Perimeter 2	NO (-57.9%)	NO
13 Office Perimeter 3	NO (-48.7%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
13 Office Perimeter North 1	NO (-60.4%)	NO
13 Office Perimeter South 1	NO (-41.2%)	NO
13 Office Perimeter West 1	NO (-31.2%)	NO
14 Office Open 1	YES (+18.4%)	NO
14 Office Perimeter 1	NO (-52%)	NO
14 Office Perimeter 2	NO (-50.5%)	NO
14 Office Perimeter 3	NO (-38.4%)	NO
14 Office Perimeter 4	NO (-36.9%)	NO
14 Office Perimeter East 1	NO (-7.9%)	NO
14 Office Perimeter North 1	NO (-53%)	NO
14 Office Perimeter South 1	NO (-33.3%)	NO
15 Office Open 1	NO (-31.3%)	NO
15 Office Perimeter 1	NO (-67.1%)	NO
15 Office Perimeter 2	NO (-65.9%)	NO
15 Office Perimeter 3	NO (-56%)	NO
15 Office Perimeter 4	NO (-57%)	NO
15 Office Perimeter East 1	NO (-50.5%)	NO
15 Office Perimeter North 1	NO (-59.5%)	NO
15 Office Perimeter South 1	NO (-43.1%)	NO
16 Office Open 1	YES (+14.8%)	NO
16 Office Perimeter 1	NO (-52.9%)	NO
16 Office Perimeter 2	NO (-51.5%)	NO
16 Office Perimeter 3	NO (-40.8%)	NO
16 Office Perimeter 4	NO (-39.5%)	NO
16 Office Perimeter East 1	NO (-10.6%)	NO
16 Office Perimeter North 1	NO (-53.7%)	NO
16 Office Perimeter South 1	NO (-36.4%)	NO
17 Office Open 1	NO (-31.2%)	NO
17 Office Perimeter 1	NO (-67.1%)	NO
17 Office Perimeter 2	NO (-65.8%)	NO
17 Office Perimeter 3	NO (-56%)	NO
17 Office Perimeter 4	NO (-56.9%)	NO
17 Office Perimeter East 1	NO (-50.5%)	NO
17 Office Perimeter North 1	NO (-59.4%)	NO
17 Office Perimeter South 1	NO (-43.1%)	NO
18 Office Open 1	YES (+16.3%)	NO
18 Office Perimeter 1	NO (-52.4%)	NO
18 Office Perimeter 2	NO (-52%)	NO
18 Office Perimeter 3	NO (-41.3%)	NO
18 Office Perimeter 4	NO (-38.9%)	NO
18 Office Perimeter East 1	NO (-12%)	NO
18 Office Perimeter North 1	NO (-53.7%)	NO
18 Office Perimeter South 1	NO (-36.3%)	NO
19 Office Open 1	NO (-30.8%)	NO
19 Office Perimeter 1	NO (-67%)	NO
19 Office Perimeter 2	NO (-65.1%)	NO
19 Office Perimeter 3	NO (-55.4%)	NO
19 Office Perimeter 4	NO (-56.8%)	NO
19 Office Perimeter East 1	NO (-48.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
19 Office Perimeter North 1	NO (-59.3%)	NO
19 Office Perimeter South 1	NO (-43%)	NO
UG B1 Showers 1	N/A	N/A
UG B1 Showers 2	N/A	N/A

Criterion 4: The performance of the building, as built, should be consistent with the calculated BER

Separate submission

Criterion 5: The necessary provisions for enabling energy-efficient operation of the building should be in place

Separate submission

EPBD (Recast): Consideration of 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
Area [m ²]	28139.6	28139.5
External area [m ²]	21870	21870
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	4	3
Average conductance [W/K]	11541.7	12154.1
Average U-value [W/m ² K]	0.53	0.56
Alpha value* [%]	10.2	10

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

Building Use

% Area	Building Type
17	A1/A2 Retail/Financial and Professional services A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
83	B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups B8 Storage or Distribution C1 Hotels C2 Residential Institutions: Hospitals and Care Homes C2 Residential Institutions: Residential schools C2 Residential Institutions: Universities and colleges C2A Secure Residential Institutions Residential spaces D1 Non-residential Institutions: Community/Day Centre D1 Non-residential Institutions: Libraries, Museums, and Galleries D1 Non-residential Institutions: Education D1 Non-residential Institutions: Primary Health Care Building D1 Non-residential Institutions: Crown and County Courts D2 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	2.51	1.83
Cooling	5.61	9.11
Auxiliary	12.85	12.43
Lighting	9.13	22.26
Hot water	3.47	2.24
Equipment*	43.72	43.72
TOTAL **	33.56	47.88

* 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	0.63	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	90.53	137.92
Primary energy* [kWh/m ²]	100.46	142.29
Total emissions [kg/m ²]	16.7	24.1

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

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] Fan coil systems, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	23.5	81.4	2.1	6.3	13.8	3.16	3.61	3.36	4.62
Notional	18.2	154.3	2	11.3	14.3	2.56	3.79	----	----
[ST] Fan coil systems, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	12.2	113.4	1.5	10.3	23.7	2.29	3.07	2.5	4
Notional	2.8	205.6	0.3	15.1	19.2	2.56	3.79	----	----
[ST] Fan coil systems, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	28.9	84.3	2.6	6.7	14.4	3.04	3.48	3.23	4.45
Notional	17.3	153.9	1.9	11.3	14.5	2.56	3.79	----	----
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	0	780.1	0	90.6	8.2	1.96	2.39	2	3.2
Notional	0	288.1	0	21.1	2.3	2.56	3.79	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	14.1	0	4	0	10.1	0.08	0	1	0
Notional	6.1	0	2	0	22.9	0.86	0	----	----
[ST] Unflued radiant heater, [HS] Direct or storage electric heater, [HFT] Electricity, [CFT] Electricity									
Actual	34.2	0	9.7	0	0	0.98	0	1	0
Notional	24	0	7.7	0	0	0.86	0	----	----
[ST] Fan coil systems, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity									
Actual	4.2	112.1	0.4	8.8	11.4	3.04	3.52	3.3	4.62
Notional	0	311.6	0	22.8	9.6	2.56	3.79	----	----
[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

Key Features

The Building Control Body is advised to give particular attention to items whose specifications are better than typically expected.

Building fabric

Element	U _{i-Typ}	U _{i-Min}	Surface where the minimum value occurs*
Wall	0.23	0.18	0000002C:Surf[1]
Floor	0.2	0.15	GB000009:Surf[0]
Roof	0.15	0.12	02000022:Surf[6]
Windows, roof windows, and rooflights	1.5	1.4	0000002C:Surf[0]
Personnel doors	1.5	-	No Personnel doors in building
Vehicle access & similar large doors	1.5	-	No Vehicle access doors in building
High usage entrance doors	1.5	-	No High usage entrance doors in building
U _{i-Typ} = Typical individual element U-values [W/(m ² K)]		U _{i-Min} = Minimum individual element U-values [W/(m ² K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m ³ /(h.m ²) at 50 Pa	5	3.5

APPENDIX D. ENERGY MODEL INPUTS

Description	Units	East Office Open Office	West Office Open Office	Office Shower/Locker	Office VC	Office Circulation Lobby Corridor	Office Bike Store	Office Plant Room	Office Reception	Retail Retail units	Retail Circulation
Name in IES		Office - OpenOffices (East)	Office - OpenOffices (West)	Office - Showers/Lockers	Office - Circulation VC	Office - Circulation/Stairs/Lobby	Office - Stores	Office/Retail - Plant Areas	Office - Reception	Speculative Retail A1/A3/D2	Retail - Circulation
System Description											
Outdoor air delivery (Ventilation)		Office AHUw/Hex	Office AHUw/Hex	Office Showers AHU w/Hex	Extract Fan	Air transfer from office	Basement AHU w/Hex	Basement AHU w/Hex	Basement AHU w/Hex	MVHR	Air transfer
Central Plant		air source heat pump	air source heat pump	none	none	none	none	none	none	none	none
Room Conditioning Heating		hydronic fan coil	hydronic fan coil	dx fan coil	panel heater	panel heater	panel heater	none	dx fan coil	air source heat pump	panel heaters
Room Conditioning Cooling		hydronic fan coil	hydronic fan coil	dx fan coil	none	none	none	none	dx fan coil	air source heat pump	No
Plant Heating Details											
Heating system type (assumed system in model)	Description	air source heat pump	air source heat pump	air source heat pump	panel heater	panel heater	panel heater		air source heat pump	air source heat pump	panel heater
Heat Fuel Type	Elect/gas	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity		Electricity	Electricity	Electricity
Heat generator seasonal efficiency	SCOP/%	3.36	3.23	2	n/a	n/a	n/a	n/a	3.3	2.5	n/a
Boiler installed on or after 1998?	Yes/No	No	No	No	No	No	No	No	No	n/a	n/a
Central Time Control?	Yes/No	Yes	Yes	no	No	No	No	No	Yes	Yes	No
Optimum start/stop control?	Yes/No	Yes	Yes	no	No	No	No	No	Yes	Yes	No
Local Time Control?	Yes/No	Yes	Yes	Yes	No	No	No	No	Yes	Yes	No
Local Temperature Control?	Yes/No	Yes	Yes	no	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Weather Compensation Control?	Yes/No	Yes	Yes	no	No	No	No	No	Yes	No	No
Is there provision for metering?	Yes/No	Yes	Yes	no	No	No	No	No	Yes	Yes	No
Does the metering warn "out of range" values?	Yes/No	Yes	Yes	no	No	No	No	No	Yes	Yes	No
Pump	List	Variable Speed Multiple Pressure Sensors	Variable Speed Multiple Pressure Sensors	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Plant Cooling Details											
Cooling system type (assumed system in model)	Description	E series mitsubishi HP	air source heat pump	air source heat pump	none	none	none	none	air source heat pump	air source heat pump	none
Nominal EER	EER	3.19	2.90	3.20	n/a	n/a	n/a	n/a	3.19	3.2	n/a
Seasonal EER	SEER	4.62	4.45	n/a	n/a	n/a	n/a	n/a	4.62	3.2	n/a
Power	k/w	186	615	n/a	n/a	n/a	n/a	n/a	7	72	n/a
Does it Qualify for ECA? (tax credits)	Yes/No	?	?	?	?	?	?	?	?	?	?
Mixed mode? (CMM)	Description	No	No	No	No	No	No	No	No	No	n/a
Ventilation / AHU											
Specific Fan power for AHU	W/l/s	1.9	2.0	included in COP		n/a	AHU 2 / FCU 0.2	AHU 2 / FCU 0.2	AHU 2 / FCU 0.2	AHU 2 / FCU 0.2	n/a
Demand controlled ventilation?	List	No	No	No	n/a	n/a	No	No	No	No	n/a
Ductwork Leakage Classification	Type	B	B	B	B	B	B	B	B	n/a	n/a
AHU Leakage Classification	Type	L2	L2	L2	L2	L2	L2	L2	L2	n/a	n/a
Heat recovery	Type	Plate Recuperator	Plate Recuperator	Plate Recuperator	n/a	n/a	Plate Recuperator	Plate Recuperator	Plate recuperator	Plate recuperator	n/a
	% efficiency	80%	80%	73%	n/a	n/a	73%	73%	73%	73%	n/a
8. DHW											
DHW system type	Description	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps	Air Source Heat Pumps
Heat generator seasonal efficiency	SCOP/%	250%	250%	250%	250%	250%	250%	250%	250%	250%	n/a
DHW system delivery efficiency	%	95%	95%	95%	95%	95%	95%	95%	95%	95%	-
DHW Fuel Type	Elect/gas	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	Electricity	n/a
Is the system a storage system?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	n/a
Storage Volume	litres	5500	5500	5500	5500	5500	5500	5500	5500	5500	n/a
Insulation	Type	pipe length 800m	pipe length 800m	pipe length 800m	pipe length 800m	pipe length 800m	pipe length 800m	pipe length 800m	pipe length 800m	pipe length 800m	n/a
	Pump power	0.8									
Does the system have secondary circulation?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	n/a
10. Building Management											
Electric Power Factor of the building	Power Factor Control	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	
Lighting systems have provision for metering?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Lighting systems metering warns of 'out of range' values?	Yes/No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
11. L2C technologies											
Low carbon technologies	Description	air source heat pump	air source heat pump	none	none	none	none	none	none	air source heat pump	none
Renewable technologies	Description	none	none	none	none	none	none	none	none	none	none

Usage Type	Averaged lighting power density lm/W	Local Manual Switching	Constant illuminance control* [Y/N]	Occupancy Sensor Type / Controls	Automatic Daylighting Control [Y/N]	Daylight Control Type (Switching / Dimming)	Daylight Sensor Type (Standalone / Addressable)
Gym - Changing Facilities	100	N	N	Auto-On-Off (0.9)	N		
Gym - Circulation area	100	N	N	Auto-On-Off (0.9)	N		
Gym	120	N	N	Auto-On-Off (0.9)	N		
Gym - Plant Rooms	125	Y	N	None (0.1)	N		
Office - Changing Facilities	100	N	N	Auto-On-Off (0.9)	N		
Office - Circulation	100	N	N	Auto-On-Off (0.9)	N		
Office - Plant Room	125	Y	N	None (0.1)	N		
Office - Open Office	120	N	Y	Auto-On-Off (0.9)	Y	Dimming	Addressable
Office - WC	100	N	N	Auto-On-Off (0.9)	N		
Office - Store (Bike)	125	N	N	Auto-On-Off (0.9)	N		
Office - Reception	100	N	N	Auto-On-Off (0.9)	N		
Restaurant	70	N	N	Auto-On-Dimmed (0.95)	N		
Kitchen	125	Y	N	None (0.1)	N		
Retail - Circulation	90	N	N	Auto-On-Off (0.9)	N		
Retail - Sales Area	100	Y	N	None (0.1)	N		

Appendix E. DISTRICT HEATING CORRESPONDANCE

Knabe-Nicol, Cyril

From: Sousa, João <joao.sousa@veolia.com>
Sent: 06 December 2021 10:11
To: Knabe-Nicol, Cyril
Cc: Bernal, Carlos; Pegg, Timothy
Subject: Re: WED14106 Hondo Pope's Road connection of to the SELCHP DH

CAUTION: [EXTERNAL] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Cyril,

I hope this email finds you well.

The proposed connection is not viable as a standalone connection and you should seek an alternative energy source.

In case things change in the future I will let you know.

Thank you for contacting us.

Kindest Regards,

Joao Sousa CEng MICE
District Heating Contract Manager
United Kingdom

e. joao.sousa@veolia.com

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t. +44 (0)20 3567 6148

SELCHP Ltd / Veolia ES SELCHP Ltd , Landmann Way, Deptford, LONDON SE14 5RS

www.selchp.com www.veolia.co.uk

On Mon, 6 Dec 2021 at 10:02, Knabe-Nicol, Cyril <Cyril.Knabe-Nicol@hdrinc.com> wrote:

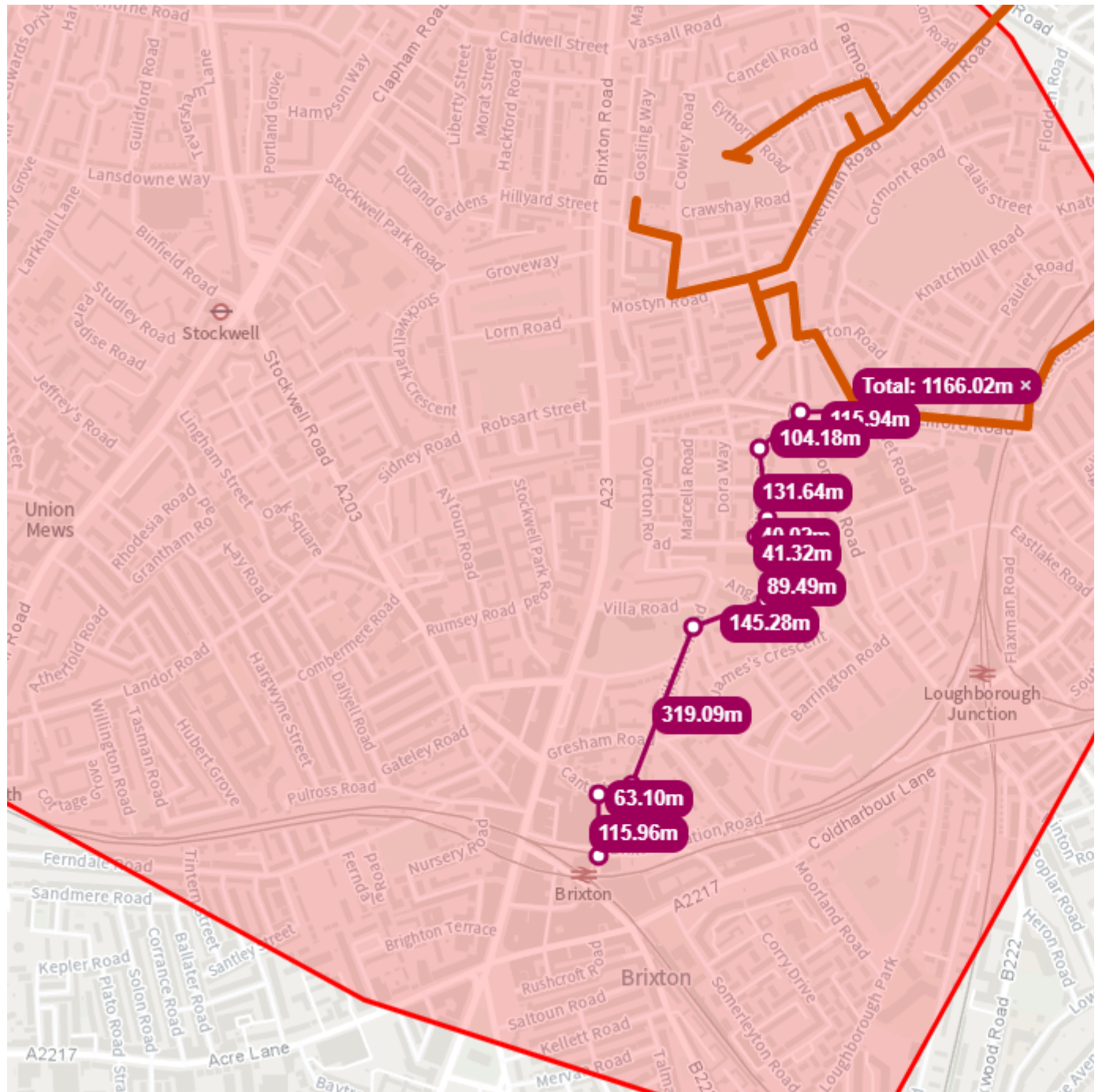
Good morning Joao,

We are currently at the planning stage for a new development on Pope Road,

The site comprises the erection of a part G + 19, part G + 8 storey building comprising flexible A1/A3/B1/D1/D2 uses at basement, ground and first floor, with restaurant (A3) use on floor 8 and B1 accommodation on floors 2 to 19. The proposed development is 28,000 sqm.

The heat demand is approximately 78,510 kWh per year based on the Building Regulation Part L 2A 2013 Model, and the hot water is estimated at 133,946kWh.

I have included the site location with the location of your proposed DH road. a



Please could you confirm if the network will be extend to the proposed site ?

Regards

Cyril Knabe-Nicol, BSc MSc PgDip

Associate – Sustainability Consultant

HDR

240 Blackfriars Rd,

London, SE1 8NW, United Kingdom

D 02075353771

Cyril.Knabe-Nicol@hdrinc.com

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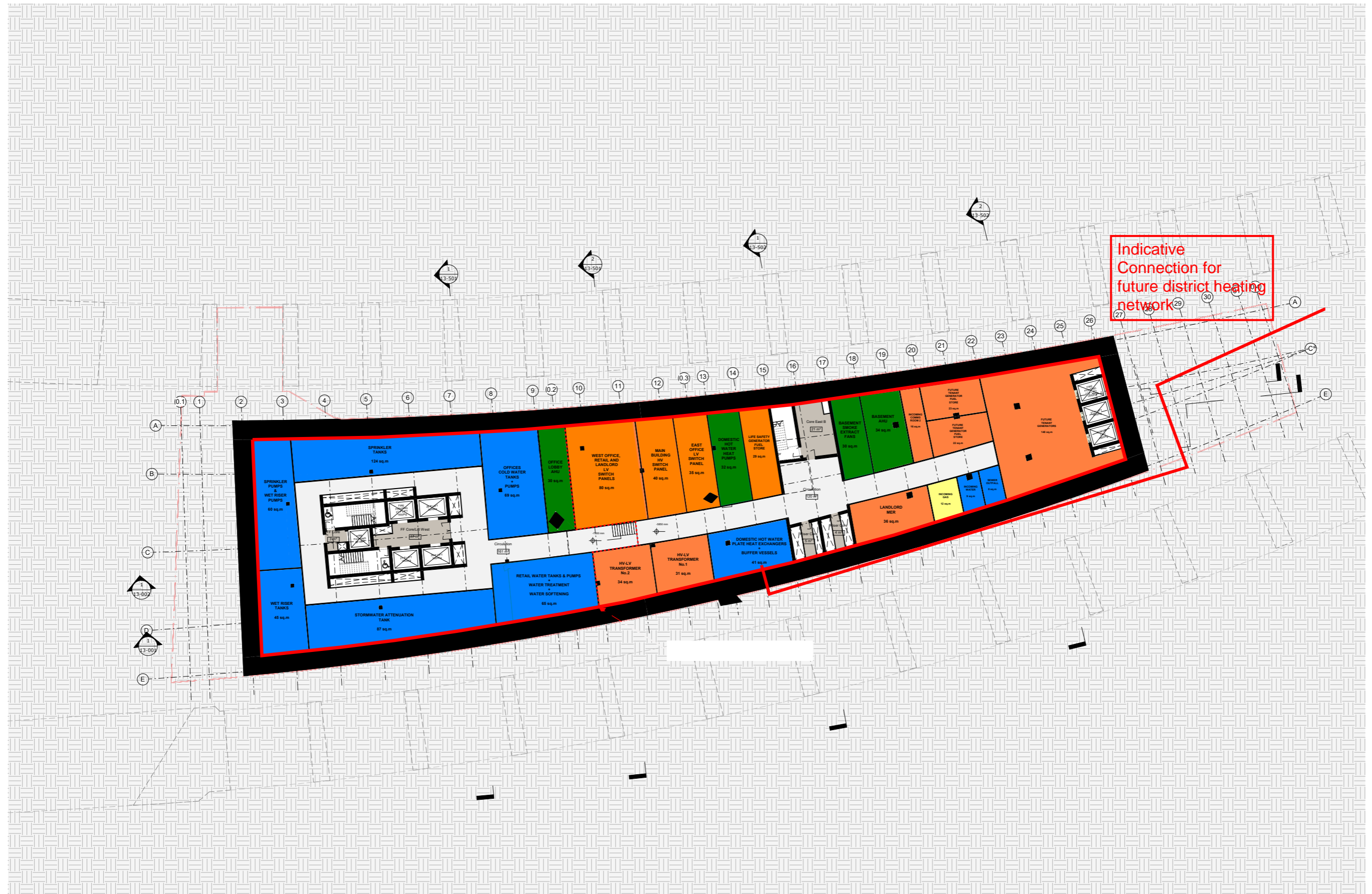
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Plantroom

Basement 2





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