



**EPS Group**  
Energy Consultancy and Compliance Services

Project No: 18043

# Oadby and Wigston Borough Council Energy Statement

Proposed C2 Use Class Development at Bushloe House, Station Road,  
Wigston, Leicestershire, LE18 2DR

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SAP Calculations – SBEM Calculations – Renewable Energy Statements – Energy Performance Certificates  
Air Tightness Testing – Extract Fan Testing – Water Calculations – DEC Assessments- Room Integrity Testing



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### Issue Details:

Version	Date	Author	Details
1	30/11/2023	AB	Draft Issue
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## Executive Summary

This report has been commissioned in response to the Climate Change Planning Policy requirements of Oadby & Wigston Borough Council in respect to the proposed C2 Use Class Development at Bushloe House, Station Road, Wigston, Leicestershire, LE18 2DR.

The methodology used herein is consistent with Approved Document L2 (2021) of the Building Regulations and the widely regarded energy hierarchy approach to improving the energy performance of buildings.

The Energy Statement outlines an overall commitment to reducing regulated energy consumption under occupancy through the adoption of enhanced insulation standards and improved HVAC & lighting efficiencies in comparison to the standard requirements of Approved Document L2 (2021) of the Building Regulations.

A feasibility study has also been undertaken into a range of different low carbon and renewable technologies with the installation of an Air to Water Source Heat Pumps being identified as the most appropriate technology for adoption within the proposed development.

Predictive SBEM calculations clearly demonstrate that the proposed development is predicted to emit at least **4.65%** less carbon dioxide than would ordinarily be permitted by the standard requirements of Approved Document L2 (2021) of the Building Regulations.

In the circumstances the scheme is deemed to satisfy the mandatory planning policy requirements of Policy 38 of the adopted Oadby and Wigston Borough Council Local Plan 2011-2031 (April 2019).

## **Table of Contents**

Section 1 - Introduction

Section 2 - Planning Policy Context

Section 3 - Proposed Energy Strategy

Section 4 – Review of Low Carbon and Renewable Technologies

Section 5 - Calculated Energy Performance (Illustrative)

Appendix 1 – BRUKL Reports (SBEM Derived)

## 1.0 Introduction

- 1.1 EPS Group have been appointed to provide an Energy Statement to support the planning application for the proposed C2 Use Class Development at Bushloe House, Station Road, Wigston, Leicestershire, LE18 2DR.
- 1.2 The proposal involves the construction of a new 80 bedroom care home, together with the conversion of the existing Bushloe House to form 10 Apartments and a further 11 Apartments created within an extension to the existing building, all with a C2 use class. As such the proposed works will need to comply with the requirements of Approved Document L2 2021 of the Building Regulations.
- 1.3 The energy consumption of the proposed building has therefore been assessed in accordance with Approved Document L Volume 2: Conservation of Fuel and Power in Buildings other than Dwellings of the Building Regulations 2021 (England) using the National Calculations Method (NCM) – SBEM (Simplified Building Energy Model) v6.1e.
- 1.4 The following fuel emissions factors have been used within the underlying calculations as defined by the updated NCM:

<b>Fuel</b>	<b>CO<sub>2</sub> emission factor (kgCO<sub>2</sub>/kWh)</b>
Natural gas	0.210
Grid supplied electricity	0.136
Grid displaced electricity	0.136

- 1.5 This report is based on planning drawings and provisional documentation and as such the final performance of the proposed development will be dependent on the actual build specifications adopted, the final commissioning results and the actual operation of the buildings.
- 1.6 This report should therefore only be used for planning purposes and should be re-assessed at the detailed design stage if alternative building specifications are followed to those outlined within the report.
- 1.7 The SBEM calculations underlying this report utilise a large number of standard NCM operational parameters as permitted by the NCM rules. However, these may not ultimately match the actual measures adopted within the finalised building and whilst they provide a 'like for like' comparison for Building Regulations, they are not valid for the actual operation of the building or for Building Control submission.
- 1.8 The dimensions that are referenced within this report are based upon SBEM measurement conventions which may result in slight differences with other dimensions quoted elsewhere.

## 2.0 Planning Policy Context

### 2.1 National

The National Planning Policy Framework (NPPF) outlines the Government's planning policies for England and how these are expected to be applied by local authorities. Section 14 of this document details how local policies should address climate change through the promotion of energy efficiency and the adoption of low carbon and renewable technologies. It states:

#### **"14.0 Meeting the challenge of climate change, flooding and coastal change**

152. *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.*

#### **Planning for climate change**

153. *Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.*

154. *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.*

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

*a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);*

*b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and*

- c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.*

156. *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.*
157. *In determining planning applications, local planning authorities should expect new development to:*
- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and*
  - b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.*
158. *When determining planning applications for renewable and low carbon development, local planning authorities should:*
- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and*
  - b) approve the application if its impacts are (or can be made) acceptable. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas."*

## **2.2 Oadby and Wigston Borough Council**

Policy 38: Climate Change, Flood Risk and Renewable Low Carbon Energy of the adopted Oadby and Wigston Borough Council Local Plan 2011-2031, adopted in April 2019 is focused on addressing Climate Change. This policy states:

*"New development proposals in the Borough shall take into account the potential risks and impacts of climate change; and, ensure that the prospect of flood risk is minimised through appropriate mitigation measures.*

*The Council will also expect all major-scale planning applications, including refurbishments (11 or more residential units or 1,000+ square metres of floor area) to be accompanied by a Sustainability / Energy Statement demonstrating how (potential) harmful emissions have been addressed and minimised by taking account of:*

- Energy efficiency;*
- Water conservation;*
- Sourcing of construction materials;*
- Giving consideration to site orientation aspects of a scheme;*
- Promoting sustainable means of transport;*
- Sustainable waste management solutions (during and post-construction); and,*
- The feasibility of integrating renewable energy solutions into the development.*

## **Flood Risk**

*New development proposals in the Borough must take into account the potential impact of climate change on water resources, water quality and on the level of flood risk posed, as detailed in the Council's latest Strategic Flood Risk Assessment (SFRA) and by the Environment Agency.*

*Development in areas that would be at risk from flooding must be avoided unless it can be demonstrated that:*

- *Appropriate land at lower risk is not available (and this has been evidenced through the application of the National Planning Policy Framework Sequential Test);*
- *There are national policies or other material considerations permitting development of that nature on land with a high risk of flooding;*
- *There are exceptional reasons for development to take place in that location; and,*
- *The localised and cumulative risk of flooding can be fully mitigated through careful design and engineering methods.*

*A detailed Flood Risk Assessment will be required for all development proposals greater than 1 hectare in size situated within a Flood Zone 1 and all development proposals regardless of size situated in Flood Zone 2 or 3, or in an area within Flood Zone 1 which has critical drainage problems. The assessment must identify the necessary mitigation and adaptation measures which must:*

- *Aim to avoid or reduce the risk of flooding and harm from it by ensuring the sequential approach has been taken and the development is safe for the lifetime of the development and will not increase flood risk to others;*
- *Include suitable habitat creation and not cause detriment to existing habitats and species; and*
- *Demonstrate how such measures form an intrinsic part of the overall development.*

*Development must proactively manage surface water run-off through the promotion of sustainable drainage techniques and positive land management, including the use of permeable surfacing.*

*Development of previously developed sites must be accompanied by a desktop study to identify any potential contamination. If there is potential for contamination to be present on site, further more detailed investigation will be required to ensure that contaminants are not mobilised through development and enter groundwater supplies or watercourses.*

## **Renewable / Low Carbon Energy**

*Unless it can be demonstrated by an applicant not to be feasible or viable, all developments greater than 1 hectare in size will be required to incorporate on-site renewable energy generation and / or on-site provision of buildings that reduce the need for non renewable energy use.*

*The Council will support renewable or low-carbon energy schemes, subject to the following considerations:*

- *The degree to which the scale and nature of a proposal impacts on the landscape, particularly having regard to the Council's Landscape Character Assessment;*



- *The degree to which the proposal has demonstrated any environmental, economic and social benefits of a scheme as well as how any environmental or social impacts have been minimised (e.g. visual, noise or smell);*
- *The impact on designated sites on European, national and local biodiversity and geological; and,*
- *The impact on the amenity of residents and other interests of acknowledged importance, including the historic environment."*

### **2.3 Conclusions**

On review of the above planning policy, it is evident that there is a need for development to consider the use of increased energy efficiency standards and the potential for renewable / low carbon technology as part of an overall energy strategy.

The development will therefore minimise carbon dioxide (CO<sub>2</sub>) emissions in comparison to those allowable under the current edition of Approved Document L2 2021 of the Building Regulations by following the widely accepted energy hierarchy approach to energy conservation.

### 3.0 Proposed Energy Strategy

- 3.1 In response to Local Plan Policy 38 and in accordance with the 'Lean' principles of the Energy Hierarchy, it is proposed to adopt the following minimum fabric, lighting and heating standards as a means of reducing the overall energy demand of the proposed development:

Table 2: Proposed Fabric Standards		
Element / Feature	Current Approved Document L2 2021 Minimal Acceptable Standard	Proposed Development Target
New External Walls U-value	0.26 W/m <sup>2</sup> K	<b>0.24 W/m<sup>2</sup>K</b>
Existing External Walls U-value (thermally upgraded)	0.30 W/m <sup>2</sup> K	<b>0.26 W/m<sup>2</sup>K</b>
New Ground Floors U-value	0.18 W/m <sup>2</sup> K	<b>0.15 W/m<sup>2</sup>K</b>
Existing Ground Floors U-value (thermally upgraded)	0.25 W/m <sup>2</sup> K	<b>0.25 W/m<sup>2</sup>K</b>
Existing Pitched Roofs (insulated @ joists) U-value	0.16 W/m <sup>2</sup> K	<b>0.10 W/m<sup>2</sup>K</b>
New Pitched Roofs (insulated @ joists) U-value	0.16 W/m <sup>2</sup> K	<b>0.10 W/m<sup>2</sup>K</b>
Existing Pitched Roofs (insulated @ rafters) U-value	0.18 W/m <sup>2</sup> K	<b>0.18 W/m<sup>2</sup>K</b>
New Pitched Roofs (insulated @ joists) U-value	0.16 W/m <sup>2</sup> K	<b>0.18 W/m<sup>2</sup>K</b>
Flat Roofs U-value	0.18 W/m <sup>2</sup> K	<b>0.18 W/m<sup>2</sup>K</b>
Glazing U-value	1.60 W/m <sup>2</sup> K	<b>1.40 W/m<sup>2</sup>K</b>
Air Permeability	8.00 m <sup>3</sup> /m <sup>2</sup> .h	<b>5.00 m<sup>3</sup>/m<sup>2</sup>.h</b>
Proposed HVAC & Lighting Details		
Heating	Radiator heating with zone control	
Cooling	Comfort Cooling to Day Spaces: <i>Min Efficiencies: SEER = 5.50 &amp; EER = 3.20</i>	
Hot Water Storage	500 litre storage vessel with minimum 80mm spray foam insulation	
Ventilation	Natural Ventilation with intermittent extract fans with a Specific Fan Power (SFP) of 0.30 W/l/s	
Lighting	Highly Efficient LED Fittings with a minimum Luminous Efficacy of 110 Lm/W (lumens per circuit watt x useful light output)	
Lighting Controls	Local manual switching controls	

- 3.2 The above build standards will ensure that the building has a reduced energy demand in comparison to the minimum requirements of Approved Document L2 2021 of the Building Regulations.

## 4.0 Review of Low Carbon and Renewable Technologies

4.1 In response to Local Plan Policy 38 and the ‘Green’ steps of the Energy Hierarchy, a number of low carbon and renewable technologies were reviewed in terms of their overall suitability for use within the proposed development.

### 4.2 Wind Turbine (Column or Roof Mounted)

<b>Benefits</b>	<ul style="list-style-type: none"> <li>When installed in optimum positions, wind turbines can generate a large amount of renewable electricity, the surplus of which can be exported at financial gain to the national grid via the Smart Export Guarantee Scheme.</li> </ul>
<b>Site Limitations / Restrictions</b>	<ul style="list-style-type: none"> <li>Not aesthetically pleasing and will not be in keeping with the immediate local area.</li> <li>The site is too sheltered as a result of its general urban location which would result in unreliable and insufficient outputs.</li> <li>Require on-going maintenance which future occupants may neglect.</li> <li>Can produce unacceptable levels of noise to occupants and neighbours.</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>The technology is not deemed as being suitable for use within the proposed development.</li> </ul>

### 4.3 Solar Photovoltaic

<b>Benefits</b>	<ul style="list-style-type: none"> <li>When installed in optimum positions photovoltaic (PV) arrays can generate a large amount of renewable electricity which can be used locally or exported at financial gain to the national grid via the Smart Export Guarantee Scheme.</li> <li>Minimal on-going costs &amp; maintenance issues following installation.</li> <li>Easy to integrate into a conventional build specification.</li> </ul>
<b>Site Limitations / Restrictions</b>	<ul style="list-style-type: none"> <li>PV panels are not always aesthetically pleasing and may detract from the visual appearance of the buildings.</li> <li>As a result of the rapid decarbonisation of the national grid, the amount of CO<sub>2</sub> savings with this technology is limited as the CO<sub>2</sub> emission factor for grid displaced electricity is relatively low.</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>It is not proposed to use this technology within the proposed development.</li> </ul>

### 4.4 Solar Thermal

<b>Benefits</b>	<ul style="list-style-type: none"> <li>Solar hot water systems can provide an efficient way of contributing to a building's overall hot water requirements.</li> <li>Minimal on-going costs &amp; maintenance issues following installation.</li> </ul>
<b>Site Limitations / Restrictions</b>	<ul style="list-style-type: none"> <li>The amount of CO<sub>2</sub> savings / useful energy savings with this technology is restricted as there is no benefit to producing more hot water than is used within a building.</li> <li>Solar collectors are not always aesthetically pleasing and may detract from the visual appearance of the development.</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>It is not proposed to use this technology within the proposed development.</li> </ul>

#### 4.5 Ground Source Heat Pump

<b>Benefits</b>	<ul style="list-style-type: none"> <li>• High operating efficiencies (CoPs).</li> <li>• Flexible installation options for new build properties including trench and borehole installations.</li> <li>• Reliable and proven technology.</li> <li>• Generally low maintenance costs.</li> <li>• No visual impact on the development.</li> </ul>
<b>Site Limitations / Restrictions</b>	<ul style="list-style-type: none"> <li>• Detailed ground surveys required.</li> <li>• Minimal space to facilitate an installation.</li> <li>• High capital installation costs rendering the technology financially unviable.</li> <li>• If sufficient capacity isn't available within the Distribution Network then local upgrades may be required which could render the technology financially unviable.</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>• The technology is not deemed as being suitable for use within the proposed development.</li> </ul>

#### 4.6 Air Source Heat Pump

<b>Benefits</b>	<ul style="list-style-type: none"> <li>• High operating efficiencies (CoPs).</li> <li>• Reduced visual impact on the property.</li> <li>• Reliable and proven technology.</li> <li>• Generally low maintenance costs.</li> </ul>
<b>Site Limitations / Restrictions</b>	<ul style="list-style-type: none"> <li>• Often require a supplementary immersion heating system for the production of hot water.</li> <li>• The external units can result in some noise related problems although this can be limited through the careful selection of particular models with low operating acoustic levels and the potential use of acoustic housing units.</li> <li>• If sufficient capacity isn't available within the Distribution Network then local upgrades may be required which could render the technology financially unviable.</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>• <b>It is proposed to use this technology within the proposed development.</b></li> <li>• <b>It is also noted that Air to Air Source Heat Pump technology will be utilised within the proposed cooling systems for the building as detailed within the lean specifications outlined within Section 3.</b></li> </ul>

#### 4.7 Biomass Boilers

<b>Benefits</b>	<ul style="list-style-type: none"> <li>• Reliable and proven technology.</li> </ul>
<b>Site Limitations / Restrictions</b>	<ul style="list-style-type: none"> <li>• Require large storage facilities for the fuel.</li> <li>• On-going cleaning, maintenance and management requirements.</li> <li>• Require regular fuel deliveries.</li> <li>• Would contribute to poor urban air quality.</li> </ul>
<b>Conclusion</b>	<ul style="list-style-type: none"> <li>• The technology is not deemed as being suitable for use within the proposed development.</li> </ul>

4.8 On review of the above technologies, it is recommended that Air to Water Source Heat Pumps (ASHPs) are installed to provide the development's heating and hot water from a low carbon source. This will provide an affordable and significant reduction in the energy consumed by the building post occupation.

- 4.9 Highly efficient Air to Water Source Heat Pumps with a minimum SCOP of 3.10 will therefore be specified for the whole development.
- 4.10 It should also be noted that highly efficient 'Air to Air' Source Heat Pumps are also proposed under the 'Lean' measures for the new care home as outlined within Section 3 as an effective means of providing comfort cooling.

## 5.0 Calculated Energy Performance (Illustrative)

- 5.1 Having identified the use of Air to Water Source Heat Pumps as being the most suitable low carbon or renewable technology for use within the proposed development, SBEM v6.1e calculations were prepared for the care home and apartment buildings based upon the proposed specifications outlined within Section 3 of this report, together with Air Source Heat Pumps as detailed in Paragraph 4.9.
- 5.2 The key results of the Proposed SBEM Calculations are summarised within the table below with the full BRUKL output documents provided in the Appendix of this report for detailed review:

Table 3: Annual Carbon Dioxide Emissions				
Building	TER (kgCO <sub>2</sub> /m <sup>2</sup> /Year)	Target Emissions (kgCO <sub>2</sub> /Year)	BER (kgCO <sub>2</sub> /m <sup>2</sup> /Year)	Building Emissions (kgCO <sub>2</sub> /Year)
Care Home	7.89	35,639.13	7.77	35,097.09
Apartments	5.16	9,903.07	4.34	8,329.33
<b>Total Development Baseline Carbon Dioxide Emissions (kgCO<sub>2</sub>/Year)</b>				45,542.20
<b>Total Development Proposed Carbon Dioxide Emissions (kgCO<sub>2</sub>/Year)</b>				43,426.42
<b>Total Development Carbon Dioxide Emissions Savings (kgCO<sub>2</sub>/Year)</b>				2,115.78
<b>Percentage Annual Reduction in CO<sub>2</sub> Emissions</b>				<b>4.65%</b>

- 5.3 On review of the above, it is evident that the proposed development will achieve an overall reduction in regulated CO<sub>2</sub> emissions of **4.65%** in comparison to Approved Document L2 (2021) of the Building Regulations.
- 5.4 The proposed energy strategy and predicted energy performance of the development is therefore deemed to exceed the requirements of Policy 38 of the adopted Oadby and Wigston Borough Council Local Plan 2011-2031 (April 2019).



## **Appendix 1:**

### **BRUKL Reports (SBEM Derived)**

## Project name

Care Home

As designed

Date: Thu Nov 30 16:59:36 2023

## Administrative information

## Building Details

**Address:** Care Home, Bushloe House, Station Road,  
Wigston, Leicestershire, LE18 2DR

## Certifier details

**Name:** Daniel Towns

**Telephone number:** 0115 7270599

**Address:** EPS Group 3C Pelham Court Pelham Road,  
Nottingham, NG5 1AP

## Certification tool

**Calculation engine:** SBEM

**Calculation engine version:** v6.1.e.0

**Interface to calculation engine:** DesignBuilder SBEM

**Interface to calculation engine version:** v7.2.0

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

**Foundation area [m<sup>2</sup>]:** 1122.91

The CO<sub>2</sub> emission and primary energy rates of the building must not exceed the targets

Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> annum	7.89
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> annum	7.77
Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	84.81
Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> annum	83.51
Do the building's emission and primary energy rates exceed the targets?	BER =< TER   BPER =< TPER

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

Fabric element	U <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	First surface with maximum value
Walls*	0.26	0.24	0.26	Third Floor - 03:08 Sleep-over Room 3_W_4
Floors	0.18	0.15	0.18	Second Floor - 02:58 Corridor 02_F_5
Pitched roofs	0.16	0.13	0.18	Third Floor - 03:15 Staircase_R_7
Flat roofs	0.18	0.18	0.18	First Floor - 01:65 Lounge Room_R_4
Windows** and roof windows	1.6	1.4	1.4	Ground floor - 00:67 Activites Hobbies room 01_G_13
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors
U <sub>a</sub> -Limit = Limiting area-weighted average U-values [W/(m <sup>2</sup> K)]		U <sub>i</sub> -Calc = Calculated maximum individual element U-values [W/(m <sup>2</sup> K)]		
U <sub>a</sub> -Calc = Calculated area-weighted average U-values [W/(m <sup>2</sup> K)]				
* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.				
** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.				
^ For fire doors, limiting U-value is 1.8 W/m <sup>2</sup> K				
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.				

Air permeability	Limiting standard	This building
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	8	5



## Building services

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

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

### 1- Comfort Cooling

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	3.1	5.5	-	-	-
<b>Standard value</b>	2.5*	5	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

### 2- ASHP (radiators)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	3.1	-	-	-	-
<b>Standard value</b>	2.5*	N/A	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

### 1- Hot Water Cylinder via ASHP

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	Hot water provided by HVAC system	0.012
<b>Standard value</b>	N/A	N/A

## Zone-level mechanical ventilation, exhaust, and terminal units

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

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	<b>Standard value</b>	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
Ground floor - 00:65 WC 02		-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:64 WC 01		-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:38 En-suite G-07		-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:40 En-suite G-08		-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:37 En-suite G-06		-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:36 En-suite G-05		-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:10 En Suite G-09		-	-	0.3	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Ground floor - 00:43 En-suite G-12	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:44 En-suite G-13	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:50 En-suite G-14	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:45 En-suite G-15	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:46 En-suite G-16	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:18 En-suite G-18	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:31 En Suite G-17	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:47 En-suite G-19	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:48 En-suite G-20	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:29 Dis. WC- 02	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:33 En-suite G-01	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:32 En-suite G-03	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:34 En-suite G-02	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:41 En-suite G-10	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:42 En-suite G-11	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:35 En-suite G-04	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:28 Dis. WC- 01	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:05 Assisted bathroom- 01	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:49 En-suite G-09	-	-	0.3	-	-	-	-	-	-	-	N/A
Ground floor - 00:66 WC 03	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:52 En-suite S-23	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:49 En-suite S-20	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:01 WC 01	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:47 En-suite S-19	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:29 WC 01	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:33 En-suite S-01	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:66 En-suite S-30	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:65 En-suite S-29	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:64 En-suite S-28	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:63 En-suite S-27	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:69 En-suite S-26	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:67 En-suite S-25	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:36 En-suite S-24	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:57 Dis. WC	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:45 En-suite S-18	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:22 Dis. WC 02	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:02 En-suite S-02	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:80 En-suite S-03	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:43 En-suite S-17	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:76 En-suite S-10	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:78 En-suite S-11	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:81 En-suite S-12	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:88 En-suite S-13	-	-	0.3	-	-	-	-	-	-	-	N/A

Zone name	SFP [W/(l/s)]									HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H		
Standard value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1	Zone	Standard
Second Floor - 02:75 Assisted Bathroom 01	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:42 En-suite S-16	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:03 En-suite S-04	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:13 Dis.WC 01	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:26 En-suite S-09	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:37 En-suite S-14	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:15 En-suite S-05	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:17 En-suite S-06	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:21 En-suite S-08	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:35 En-suite S-15	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:19 En-suite S-07	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:86 WC	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:31 En-suite S-22	-	-	0.3	-	-	-	-	-	-	-	N/A
Second Floor - 02:48 En-suite S-21	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:86 WC	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:03 En-Suite F-07	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:04 En-Suite F-08	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:24 En-Suite F-15	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:83 En-Suite F-06	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:82 En-Suite F-05	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:07 En-Suite F-09	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:21 En-Suite F-14	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:80 Disabled WC	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:08 Assisted Bathroom	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:75 En-Suite F-04	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:27 En-Suite F-16	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:11 En-Suite F-10	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:13 En-Suite F-11	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:14 En-Suite F-12	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:17 En-Suite F-13	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:62 Disabled WC	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:59 En-Suite F-30	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:58 En-Suite F-29	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:55 En-Suite F-28	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:54 En-Suite F-27	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:51 En-Suite F-26	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:50 En-Suite F-25	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:47 En-Suite F-24	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:46 Disabled WC	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:31 En-Suite F-18	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:29 En-Suite F-17	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:44 WC	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:64 WC	-	-	0.3	-	-	-	-	-	-	-	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 value	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
First Floor - 01:34 En-Suite F-19	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:42 En-Suite F-23	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:35 En-Suite F-20	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:67 En-Suite F-01	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:70 En-Suite F-02	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:71 En-Suite F-03	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:38 En-Suite F-21	-	-	0.3	-	-	-	-	-	-	-	N/A
First Floor - 01:39 En-Suite F-22	-	-	0.3	-	-	-	-	-	-	-	N/A
Third Floor - 03:22 Laundry	-	-	0.3	-	-	-	-	-	-	-	N/A
Third Floor - 03:06 En-Suite 2	-	-	0.3	-	-	-	-	-	-	-	N/A
Third Floor - 03:09 En-Suite 3	-	-	0.3	-	-	-	-	-	-	-	N/A
Third Floor - 03:14 Disabled WC	-	-	0.3	-	-	-	-	-	-	-	N/A
Third Floor - 03:16 Kitchen	-	-	-	-	-	-	-	-	1	-	N/A
Third Floor - 03:04 En-Suite 1	-	-	0.3	-	-	-	-	-	-	-	N/A
Third Floor - 03:02 Staff Lockers + Showers	-	-	0.3	-	-	-	-	-	-	-	N/A

Zone name	General lighting and display lighting	General luminaire	Display light source	
	Standard value	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	95	80	0.3	
Ground floor - 00:67 Activites Hobbies room 01	105	-	-	
Ground floor - 00:54 Lounge room 01	105	-	-	
Ground floor - 00:02 Lounge Room-01	105	-	-	
Second Floor - 02:68 Lounge 03	105	-	-	
Second Floor - 02:55 Activities Hobbies Room 01	105	-	-	
Second Floor - 02:34 Lounge 02	105	-	-	
Second Floor - 02:08 Lounge 01	105	-	-	
First Floor - 01:25 Lounge Room	105	-	-	
First Floor - 01:65 Lounge Room	105	-	-	
First Floor - 01:66 Hobbies Room	105	-	-	
First Floor - 01:01 Lounge Room	105	-	-	
Third Floor - 03:01 Staff Common Room	105	-	-	
Ground floor - 00:25 Cinema 01	105	-	-	
Ground floor - 00:24 Cafe 01	105	-	-	
Ground floor - 00:06 Bedroom G-01	105	-	-	
Ground floor - 00:07 Bedroom G-02	105	-	-	
Ground floor - 00:69 Corridor 02	105	-	-	
Ground floor - 00:65 WC 02	105	-	-	
Ground floor - 00:62 Staircase and Lift 01	105	-	-	
Ground floor - 00:68 Staircase	105	-	-	
Ground floor - 00:64 WC 01	105	-	-	
Ground floor - 00:51 Foyer 01	105	-	-	
Ground floor - 00:19 Bedroom G-18	105	-	-	
Ground floor - 00:17 Bedroom G-17	105	-	-	

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
Ground floor - 00:16 Bedroom G-16		105	-	-
Ground floor - 00:15 Bedroom G-15		105	-	-
Ground floor - 00:14 Bedroom G-14		105	-	-
Ground floor - 00:52 Hairdressers 01		105	-	-
Ground floor - 00:58 Reception 01		105	105	1.286
Ground floor - 00:04 Admin Office- 01		105	-	-
Ground floor - 00:57 Office 02		105	-	-
Ground floor - 00:53 Lobby 01		105	-	-
Ground floor - 00:38 En-suite G-07		105	-	-
Ground floor - 00:03 Bedroom G-07		105	-	-
Ground floor - 00:40 En-suite G-08		105	-	-
Ground floor - 00:39 Bedroom G-08		105	-	-
Ground floor - 00:23 Bedroom- G-06		105	-	-
Ground floor - 00:37 En-suite G-06		105	-	-
Ground floor - 00:26 Corridor 01		105	-	-
Ground floor - 00:09 Bedroom G-05		105	-	-
Ground floor - 00:36 En-suite G-05		105	-	-
Ground floor - 00:10 En Suite G-09		105	-	-
Ground floor - 00:43 En-suite G-12		105	-	-
Ground floor - 00:13 Bedroom G-12		105	-	-
Ground floor - 00:22 Bedroom G-13		105	-	-
Ground floor - 00:44 En-suite G-13		105	-	-
Ground floor - 00:50 En-suite G-14		105	-	-
Ground floor - 00:45 En-suite G-15		105	-	-
Ground floor - 00:46 En-suite G-16		105	-	-
Ground floor - 00:18 En-suite G-18		105	-	-
Ground floor - 00:31 En Suite G-17		105	-	-
Ground floor - 00:20 Bedroom G-19		105	-	-
Ground floor - 00:47 En-suite G-19		105	-	-
Ground floor - 00:21 Bedroom G-20		105	-	-
Ground floor - 00:48 En-suite G-20		105	-	-
Ground floor - 00:60 Services 01		105	-	-
Ground floor - 00:29 Dis. WC- 02		105	-	-
Ground floor - 00:33 En-suite G-01		105	-	-
Ground floor - 00:01 Bedroom G-03		105	-	-
Ground floor - 00:32 En-suite G-03		105	-	-
Ground floor - 00:34 En-suite G-02		105	-	-
Ground floor - 00:56 Office 01		105	-	-
Ground floor - 00:61 Sluice 01		105	-	-
Ground floor - 00:55 Nurse Station 01		105	-	-
Ground floor - 00:63 Store 01		105	-	-
Ground floor - 00:11 Bedroom G-10		105	-	-
Ground floor - 00:41 En-suite G-10		105	-	-

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
<b>Standard value</b>	95	80	0.3
Ground floor - 00:12 Bedroom G-11	105	-	-
Ground floor - 00:42 En-suite G-11	105	-	-
Ground floor - 00:08 Bedroom- G-04	105	-	-
Ground floor - 00:35 En-suite G-04	105	-	-
Ground floor - 00:59 Refuse chute 01	105	-	-
Ground floor - 00:30 Drugs store treatment room-01	105	-	-
Ground floor - 00:28 Dis. WC- 01	105	-	-
Ground floor - 00:05 Assisted bathroom- 01	105	-	-
Ground floor - 00:49 En-suite G-09	105	-	-
Ground floor - 00:27 Staircase 01	105	-	-
Ground floor - 00:66 WC 03	105	-	-
Second Floor - 02:87 Staircase 01	105	-	-
Second Floor - 02:54 Bedroom S-23	105	-	-
Second Floor - 02:52 En-suite S-23	105	-	-
Second Floor - 02:59 Corridor 03	105	-	-
Second Floor - 02:49 En-suite S-20	105	-	-
Second Floor - 02:50 Bedroom S-20	105	-	-
Second Floor - 02:44 Bedroom S-01	105	-	-
Second Floor - 02:58 Corridor 02	105	-	-
Second Floor - 02:01 WC 01	105	-	-
Second Floor - 02:56 Staircase 03	105	-	-
Second Floor - 02:47 En-suite S-19	105	-	-
Second Floor - 02:32 Bedroom S-19	105	-	-
Second Floor - 02:85 Bedroom S-02	105	-	-
Second Floor - 02:29 WC 01	105	-	-
Second Floor - 02:53 Bedroom S-22	105	-	-
Second Floor - 02:51 Bedroom S-21	105	-	-
Second Floor - 02:33 En-suite S-01	105	-	-
Second Floor - 02:11 Services 01	105	-	-
Second Floor - 02:73 Bedroom S-30	105	-	-
Second Floor - 02:66 En-suite S-30	105	-	-
Second Floor - 02:65 En-suite S-29	105	-	-
Second Floor - 02:72 Bedroom S-29	105	-	-
Second Floor - 02:71 Bedroom S-28	105	-	-
Second Floor - 02:64 En-suite S-28	105	-	-
Second Floor - 02:63 En-suite S-27	105	-	-
Second Floor - 02:70 Bedroom S-27	105	-	-
Second Floor - 02:62 Bedroom S-26	105	-	-
Second Floor - 02:69 En-suite S-26	105	-	-
Second Floor - 02:67 En-suite S-25	105	-	-
Second Floor - 02:61 Bedroom S-25	105	-	-
Second Floor - 02:60 Bedroom S-24	105	-	-
Second Floor - 02:36 En-suite S-24	105	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
Second Floor - 02:57 Dis. WC		105	-	-
Second Floor - 02:30 Hoist Store		105	-	-
Second Floor - 02:27 Store 1		105	-	-
Second Floor - 02:45 En-suite S-18		105	-	-
Second Floor - 02:46 Bedroom S-18		105	-	-
Second Floor - 02:22 Dis. WC 02		105	-	-
Second Floor - 02:02 En-suite S-02		105	-	-
Second Floor - 02:80 En-suite S-03		105	-	-
Second Floor - 02:05 Bedroom S-03		105	-	-
Second Floor - 02:06 Office 01		105	-	-
Second Floor - 02:43 En-suite S-17		105	-	-
Second Floor - 02:41 Bedroom S-17		105	-	-
Second Floor - 02:89 Sluice 01		105	-	-
Second Floor - 02:10 Nurse Station 01		105	-	-
Second Floor - 02:74 Sluice 01		105	-	-
Second Floor - 02:77 Bedroom S-10		105	-	-
Second Floor - 02:76 En-suite S-10		105	-	-
Second Floor - 02:79 Bedroom S-11		105	-	-
Second Floor - 02:78 En-suite S-11		105	-	-
Second Floor - 02:81 En-suite S-12		105	-	-
Second Floor - 02:82 Bedroom S-12		105	-	-
Second Floor - 02:84 Bedroom S-13		105	-	-
Second Floor - 02:88 En-suite S-13		105	-	-
Second Floor - 02:07 Bedroom S-04		105	-	-
Second Floor - 02:75 Assisted Bathroom 01		105	-	-
Second Floor - 02:28 Nurse Station 01		105	-	-
Second Floor - 02:42 En-suite S-16		105	-	-
Second Floor - 02:40 Bedroom S-16		105	-	-
Second Floor - 02:03 En-suite S-04		105	-	-
Second Floor - 02:04 Refuse Chute 01		105	-	-
Second Floor - 02:09 Drugs Store Treatment Room 01		105	-	-
Second Floor - 02:13 Dis.WC 01		105	-	-
Second Floor - 02:83 Drugs Store Treatment Room 02		105	-	-
Second Floor - 02:12 Store 01		105	-	-
Second Floor - 02:16 Bedroom S-05		105	-	-
Second Floor - 02:14 Corridor 01		105	-	-
Second Floor - 02:26 En-suite S-09		105	-	-
Second Floor - 02:25 Bedroom S-09		105	-	-
Second Floor - 02:38 Bedroom S-14		105	-	-
Second Floor - 02:37 En-suite S-14		105	-	-
Second Floor - 02:15 En-suite S-05		105	-	-
Second Floor - 02:17 En-suite S-06		105	-	-
Second Floor - 02:23 Bedroom S-08		105	-	-

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
Standard value	95	80	0.3
Second Floor - 02:39 Bedroom S-15	105	-	-
Second Floor - 02:18 Bedroom S-06	105	-	-
Second Floor - 02:21 En-suite S-08	105	-	-
Second Floor - 02:35 En-suite S-15	105	-	-
Second Floor - 02:24 Staircase 02	105	-	-
Second Floor - 02:19 En-suite S-07	105	-	-
Second Floor - 02:20 Bedroom S-08	105	-	-
Second Floor - 02:86 WC	105	-	-
Second Floor - 02:31 En-suite S-22	105	-	-
Second Floor - 02:48 En-suite S-21	105	-	-
First Floor - 01:86 WC	105	-	-
First Floor - 01:87 Corridor	105	-	-
First Floor - 01:02 Bedroom F-07	105	-	-
First Floor - 01:85 Staircase	105	-	-
First Floor - 01:03 En-Suite F-07	105	-	-
First Floor - 01:84 Bedroom F-06	105	-	-
First Floor - 01:04 En-Suite F-08	105	-	-
First Floor - 01:05 Bedroom F-08	105	-	-
First Floor - 01:23 Bedroom F-15	105	-	-
First Floor - 01:24 En-Suite F-15	105	-	-
First Floor - 01:89 Corridor	105	-	-
First Floor - 01:83 En-Suite F-06	105	-	-
First Floor - 01:82 En-Suite F-05	105	-	-
First Floor - 01:06 Bedroom F-09	105	-	-
First Floor - 01:22 Bedroom F-14	105	-	-
First Floor - 01:81 Bedroom F-05	105	-	-
First Floor - 01:07 En-Suite F-09	105	-	-
First Floor - 01:21 En-Suite F-14	105	-	-
First Floor - 01:80 Disabled WC	105	-	-
First Floor - 01:88 Corridor	105	-	-
First Floor - 01:08 Assisted Bathroom	105	-	-
First Floor - 01:10 Bedroom F-10	105	-	-
First Floor - 01:12 Bedroom F-11	105	-	-
First Floor - 01:15 Bedoom F-12	105	-	-
First Floor - 01:16 Bedroom F-13	105	-	-
First Floor - 01:19 Drug Store	105	-	-
First Floor - 01:20 Store	105	-	-
First Floor - 01:26 Bedroom F-16	105	-	-
First Floor - 01:79 Drug Store	105	-	-
First Floor - 01:75 En-Suite F-04	105	-	-
First Floor - 01:76 Refuse Chute	105	-	-
First Floor - 01:74 Bedroom F-04	105	-	-
First Floor - 01:77 Sluice	105	-	-



General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
Standard value	95	80	0.3
First Floor - 01:78 Nurse Station	105	-	-
First Floor - 01:18 Nurse Station	105	-	-
First Floor - 01:27 En-Suite F-16	105	-	-
First Floor - 01:73 Office	105	-	-
First Floor - 01:09 Store	105	-	-
First Floor - 01:11 En-Suite F-10	105	-	-
First Floor - 01:13 En-Suite F-11	105	-	-
First Floor - 01:14 En-Suite F-12	105	-	-
First Floor - 01:17 En-Suite F-13	105	-	-
First Floor - 01:28 Bedroom F-17	105	-	-
First Floor - 01:62 Disabled WC	105	-	-
First Floor - 01:61 Services	105	-	-
First Floor - 01:60 Bedroom F-30	105	-	-
First Floor - 01:59 En-Suite F-30	105	-	-
First Floor - 01:58 En-Suite F-29	105	-	-
First Floor - 01:57 Bedroom F-29	105	-	-
First Floor - 01:56 Bedroom F-28	105	-	-
First Floor - 01:55 En-Suite F-28	105	-	-
First Floor - 01:54 En-Suite F-27	105	-	-
First Floor - 01:53 Bedroom F-27	105	-	-
First Floor - 01:52 Bedroom F-26	105	-	-
First Floor - 01:51 En-Suite F-26	105	-	-
First Floor - 01:50 En-Suite F-25	105	-	-
First Floor - 01:49 Bedroom F-25	105	-	-
First Floor - 01:48 Bedroom F-24	105	-	-
First Floor - 01:47 En-Suite F-24	105	-	-
First Floor - 01:46 Disabled WC	105	-	-
First Floor - 01:45 Hoist Store	105	-	-
First Floor - 01:30 Store	105	-	-
First Floor - 01:31 En-Suite F-18	105	-	-
First Floor - 01:32 Bedroom F-18	105	-	-
First Floor - 01:43 Staircase	105	-	-
First Floor - 01:29 En-Suite F-17	105	-	-
First Floor - 01:63 Staircase	105	-	-
First Floor - 01:44 WC	105	-	-
First Floor - 01:33 Bedroom F-19	105	-	-
First Floor - 01:64 WC	105	-	-
First Floor - 01:34 En-Suite F-19	105	-	-
First Floor - 01:41 Bedroom F-23	105	-	-
First Floor - 01:42 En-Suite F-23	105	-	-
First Floor - 01:35 En-Suite F-20	105	-	-
First Floor - 01:36 Bedroom F-20	105	-	-
First Floor - 01:67 En-Suite F-01	105	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
First Floor - 01:40 Bedroom F-22		105	-	-
First Floor - 01:37 Bedroom F-21		105	-	-
First Floor - 01:68 Bedroom F-01		105	-	-
First Floor - 01:69 Bedroom F-02		105	-	-
First Floor - 01:70 En-Suite F-02		105	-	-
First Floor - 01:71 En-Suite F-03		105	-	-
First Floor - 01:72 Bedroom F-03		105	-	-
First Floor - 01:38 En-Suite F-21		105	-	-
First Floor - 01:39 En-Suite F-22		105	-	-
Third Floor - 03:23 Staircase		105	-	-
Third Floor - 03:22 Laundry		105	-	-
Third Floor - 03:06 En-Suite 2		105	-	-
Third Floor - 03:21 Ironing Room		105	-	-
Third Floor - 03:20 Laundry Store		105	-	-
Third Floor - 03:24 Corridor		105	-	-
Third Floor - 03:19 Cleaners Store		105	-	-
Third Floor - 03:09 En-Suite 3		105	-	-
Third Floor - 03:10 Sprinkler Room 1		105	-	-
Third Floor - 03:13 Services		105	-	-
Third Floor - 03:14 Disabled WC		105	-	-
Third Floor - 03:25 Corridor		105	-	-
Third Floor - 03:18 Kitchen Office		105	-	-
Third Floor - 03:17 Kitchen Store		105	-	-
Third Floor - 03:16 Kitchen		105	-	-
Third Floor - 03:15 Staircase		105	-	-
Third Floor - 03:12 Maintenance Room		105	-	-
Third Floor - 03:08 Sleep-over Room 3		105	-	-
Third Floor - 03:07 Sleep-over Room 2		105	-	-
Third Floor - 03:05 Sprinkler Room 2		105	-	-
Third Floor - 03:04 En-Suite 1		105	-	-
Third Floor - 03:03 Sleep-over Room 1		105	-	-
Third Floor - 03:02 Staff Lockers + Showers		105	-	-
Third Floor - 03:11 Plant Room		105	-	-

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

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Ground floor - 00:67 Activites Hobbies room 01	NO (-64.2%)	NO
Ground floor - 00:54 Lounge room 01	NO (-16.7%)	NO
Ground floor - 00:02 Lounge Room-01	NO (-34%)	NO
Second Floor - 02:68 Lounge 03	YES (+102.8%)	NO
Second Floor - 02:55 Activities Hobbies Room 01	YES (+40%)	NO
Second Floor - 02:34 Lounge 02	NO (-42.5%)	NO
Second Floor - 02:08 Lounge 01	YES (+97.7%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
First Floor - 01:25 Lounge Room	NO (-42.6%)	NO
First Floor - 01:65 Lounge Room	NO (-16.2%)	NO
First Floor - 01:66 Hobbies Room	NO (-60.4%)	NO
First Floor - 01:01 Lounge Room	NO (-34.4%)	NO
Third Floor - 03:01 Staff Common Room	NO (-87.7%)	NO
Ground floor - 00:24 Cafe 01	YES (+5.6%)	NO
Ground floor - 00:06 Bedroom G-01	NO (-28.5%)	NO
Ground floor - 00:07 Bedroom G-02	NO (-25%)	NO
Ground floor - 00:19 Bedroom G-18	YES (+3.7%)	NO
Ground floor - 00:17 Bedroom G-17	YES (+5.5%)	NO
Ground floor - 00:16 Bedroom G-16	YES (+4.7%)	NO
Ground floor - 00:15 Bedroom G-15	YES (+4.7%)	NO
Ground floor - 00:14 Bedroom G-14	NO (-4.4%)	NO
Ground floor - 00:52 Hairdressers 01	NO (-15.3%)	NO
Ground floor - 00:58 Reception 01	N/A	N/A
Ground floor - 00:04 Admin Office- 01	NO (-32.6%)	NO
Ground floor - 00:57 Office 02	YES (+97.5%)	NO
Ground floor - 00:38 En-suite G-07	N/A	N/A
Ground floor - 00:03 Bedroom G-07	NO (-3.4%)	NO
Ground floor - 00:40 En-suite G-08	N/A	N/A
Ground floor - 00:39 Bedroom G-08	NO (-3.8%)	NO
Ground floor - 00:23 Bedroom- G-06	NO (-38.3%)	NO
Ground floor - 00:37 En-suite G-06	N/A	N/A
Ground floor - 00:09 Bedroom G-05	NO (-40.9%)	NO
Ground floor - 00:36 En-suite G-05	N/A	N/A
Ground floor - 00:10 En Suite G-09	NO (-2.2%)	NO
Ground floor - 00:43 En-suite G-12	N/A	N/A
Ground floor - 00:13 Bedroom G-12	YES (+28.3%)	NO
Ground floor - 00:22 Bedroom G-13	YES (+6.4%)	NO
Ground floor - 00:44 En-suite G-13	N/A	N/A
Ground floor - 00:50 En-suite G-14	N/A	N/A
Ground floor - 00:45 En-suite G-15	N/A	N/A
Ground floor - 00:46 En-suite G-16	N/A	N/A
Ground floor - 00:18 En-suite G-18	N/A	N/A
Ground floor - 00:31 En Suite G-17	N/A	N/A
Ground floor - 00:20 Bedroom G-19	YES (+1.3%)	NO
Ground floor - 00:47 En-suite G-19	N/A	N/A
Ground floor - 00:21 Bedroom G-20	YES (+58.4%)	NO
Ground floor - 00:48 En-suite G-20	N/A	N/A
Ground floor - 00:33 En-suite G-01	N/A	N/A
Ground floor - 00:01 Bedroom G-03	NO (-23.8%)	NO
Ground floor - 00:32 En-suite G-03	N/A	N/A
Ground floor - 00:34 En-suite G-02	N/A	N/A
Ground floor - 00:56 Office 01	NO (-6.5%)	NO
Ground floor - 00:55 Nurse Station 01	N/A	N/A
Ground floor - 00:11 Bedroom G-10	YES (+65.8%)	NO
Ground floor - 00:41 En-suite G-10	N/A	N/A
Ground floor - 00:12 Bedroom G-11	YES (+8.6%)	NO
Ground floor - 00:42 En-suite G-11	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Ground floor - 00:08 Bedroom- G-04	NO (-65.1%)	NO
Ground floor - 00:35 En-suite G-04	N/A	N/A
Ground floor - 00:49 En-suite G-09	N/A	N/A
Second Floor - 02:54 Bedroom S-23	NO (-38.7%)	NO
Second Floor - 02:52 En-suite S-23	N/A	N/A
Second Floor - 02:49 En-suite S-20	N/A	N/A
Second Floor - 02:50 Bedroom S-20	YES (+0.6%)	NO
Second Floor - 02:44 Bedroom S-01	NO (-28.6%)	NO
Second Floor - 02:47 En-suite S-19	N/A	N/A
Second Floor - 02:32 Bedroom S-19	NO (-0.1%)	NO
Second Floor - 02:85 Bedroom S-02	NO (-21.3%)	NO
Second Floor - 02:53 Bedroom S-22	NO (-65.5%)	NO
Second Floor - 02:51 Bedroom S-21	NO (-41.5%)	NO
Second Floor - 02:33 En-suite S-01	N/A	N/A
Second Floor - 02:73 Bedroom S-30	YES (+45.2%)	NO
Second Floor - 02:66 En-suite S-30	N/A	N/A
Second Floor - 02:65 En-suite S-29	N/A	N/A
Second Floor - 02:72 Bedroom S-29	YES (+6.6%)	NO
Second Floor - 02:71 Bedroom S-28	YES (+4.2%)	NO
Second Floor - 02:64 En-suite S-28	N/A	N/A
Second Floor - 02:63 En-suite S-27	N/A	N/A
Second Floor - 02:70 Bedroom S-27	YES (+4.2%)	NO
Second Floor - 02:62 Bedroom S-26	YES (+4.7%)	NO
Second Floor - 02:69 En-suite S-26	N/A	N/A
Second Floor - 02:67 En-suite S-25	N/A	N/A
Second Floor - 02:61 Bedroom S-25	YES (+5.2%)	NO
Second Floor - 02:60 Bedroom S-24	NO (-11.7%)	NO
Second Floor - 02:36 En-suite S-24	N/A	N/A
Second Floor - 02:45 En-suite S-18	N/A	N/A
Second Floor - 02:46 Bedroom S-18	NO (-28.4%)	NO
Second Floor - 02:02 En-suite S-02	N/A	N/A
Second Floor - 02:80 En-suite S-03	N/A	N/A
Second Floor - 02:05 Bedroom S-03	NO (-20.1%)	NO
Second Floor - 02:06 Office 01	NO (-1.8%)	NO
Second Floor - 02:43 En-suite S-17	N/A	N/A
Second Floor - 02:41 Bedroom S-17	NO (-27.7%)	NO
Second Floor - 02:10 Nurse Station 01	N/A	N/A
Second Floor - 02:77 Bedroom S-10	YES (+57.8%)	NO
Second Floor - 02:76 En-suite S-10	N/A	N/A
Second Floor - 02:79 Bedroom S-11	YES (+8.6%)	NO
Second Floor - 02:78 En-suite S-11	N/A	N/A
Second Floor - 02:81 En-suite S-12	N/A	N/A
Second Floor - 02:82 Bedroom S-12	YES (+29%)	NO
Second Floor - 02:84 Bedroom S-13	YES (+8.8%)	NO
Second Floor - 02:88 En-suite S-13	N/A	N/A
Second Floor - 02:07 Bedroom S-04	NO (-66%)	NO
Second Floor - 02:28 Nurse Station 01	N/A	N/A
Second Floor - 02:42 En-suite S-16	N/A	N/A
Second Floor - 02:40 Bedroom S-16	NO (-8.3%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Second Floor - 02:03 En-suite S-04	N/A	N/A
Second Floor - 02:16 Bedroom S-05	NO (-42.2%)	NO
Second Floor - 02:26 En-suite S-09	N/A	N/A
Second Floor - 02:25 Bedroom S-09	NO (-4.7%)	NO
Second Floor - 02:38 Bedroom S-14	NO (-40.5%)	NO
Second Floor - 02:37 En-suite S-14	N/A	N/A
Second Floor - 02:15 En-suite S-05	N/A	N/A
Second Floor - 02:17 En-suite S-06	N/A	N/A
Second Floor - 02:23 Bedroom S-08	YES (+0.4%)	NO
Second Floor - 02:39 Bedroom S-15	NO (-66.6%)	NO
Second Floor - 02:18 Bedroom S-06	NO (-38%)	NO
Second Floor - 02:21 En-suite S-08	N/A	N/A
Second Floor - 02:35 En-suite S-15	N/A	N/A
Second Floor - 02:19 En-suite S-07	N/A	N/A
Second Floor - 02:20 Bedroom S-08	NO (-10.6%)	NO
Second Floor - 02:31 En-suite S-22	N/A	N/A
Second Floor - 02:48 En-suite S-21	N/A	N/A
First Floor - 01:02 Bedroom F-07	NO (-2.9%)	NO
First Floor - 01:03 En-Suite F-07	N/A	N/A
First Floor - 01:84 Bedroom F-06	NO (-39%)	NO
First Floor - 01:04 En-Suite F-08	N/A	N/A
First Floor - 01:05 Bedroom F-08	NO (-0.6%)	NO
First Floor - 01:23 Bedroom F-15	NO (-65.2%)	NO
First Floor - 01:24 En-Suite F-15	N/A	N/A
First Floor - 01:83 En-Suite F-06	N/A	N/A
First Floor - 01:82 En-Suite F-05	N/A	N/A
First Floor - 01:06 Bedroom F-09	NO (-5.8%)	NO
First Floor - 01:22 Bedroom F-14	NO (-39.9%)	NO
First Floor - 01:81 Bedroom F-05	NO (-42.6%)	NO
First Floor - 01:07 En-Suite F-09	N/A	N/A
First Floor - 01:21 En-Suite F-14	N/A	N/A
First Floor - 01:10 Bedroom F-10	YES (+67.3%)	NO
First Floor - 01:12 Bedroom F-11	YES (+8.3%)	NO
First Floor - 01:15 Bedoom F-12	YES (+28.3%)	NO
First Floor - 01:16 Bedroom F-13	YES (+6.1%)	NO
First Floor - 01:26 Bedroom F-16	NO (-8.3%)	NO
First Floor - 01:75 En-Suite F-04	N/A	N/A
First Floor - 01:74 Bedroom F-04	NO (-65.1%)	NO
First Floor - 01:78 Nurse Station	N/A	N/A
First Floor - 01:18 Nurse Station	N/A	N/A
First Floor - 01:27 En-Suite F-16	N/A	N/A
First Floor - 01:73 Office	NO (-12.3%)	NO
First Floor - 01:11 En-Suite F-10	N/A	N/A
First Floor - 01:13 En-Suite F-11	N/A	N/A
First Floor - 01:14 En-Suite F-12	N/A	N/A
First Floor - 01:17 En-Suite F-13	N/A	N/A
First Floor - 01:28 Bedroom F-17	NO (-28%)	NO
First Floor - 01:60 Bedroom F-30	YES (+58.4%)	NO
First Floor - 01:59 En-Suite F-30	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
First Floor - 01:58 En-Suite F-29	N/A	N/A
First Floor - 01:57 Bedroom F-29	YES (+4.7%)	NO
First Floor - 01:56 Bedroom F-28	YES (+3.9%)	NO
First Floor - 01:55 En-Suite F-28	N/A	N/A
First Floor - 01:54 En-Suite F-27	N/A	N/A
First Floor - 01:53 Bedroom F-27	YES (+4.7%)	NO
First Floor - 01:52 Bedroom F-26	YES (+4.4%)	NO
First Floor - 01:51 En-Suite F-26	N/A	N/A
First Floor - 01:50 En-Suite F-25	N/A	N/A
First Floor - 01:49 Bedroom F-25	YES (+4.7%)	NO
First Floor - 01:48 Bedroom F-24	YES (+4.4%)	NO
First Floor - 01:47 En-Suite F-24	N/A	N/A
First Floor - 01:31 En-Suite F-18	N/A	N/A
First Floor - 01:32 Bedroom F-18	NO (-28.5%)	NO
First Floor - 01:29 En-Suite F-17	N/A	N/A
First Floor - 01:33 Bedroom F-19	YES (+0.1%)	NO
First Floor - 01:34 En-Suite F-19	N/A	N/A
First Floor - 01:41 Bedroom F-23	NO (-39.2%)	NO
First Floor - 01:42 En-Suite F-23	N/A	N/A
First Floor - 01:35 En-Suite F-20	N/A	N/A
First Floor - 01:36 Bedroom F-20	YES (+0.4%)	NO
First Floor - 01:67 En-Suite F-01	N/A	N/A
First Floor - 01:40 Bedroom F-22	NO (-65.4%)	NO
First Floor - 01:37 Bedroom F-21	NO (-43%)	NO
First Floor - 01:68 Bedroom F-01	NO (-28.5%)	NO
First Floor - 01:69 Bedroom F-02	NO (-24.8%)	NO
First Floor - 01:70 En-Suite F-02	N/A	N/A
First Floor - 01:71 En-Suite F-03	N/A	N/A
First Floor - 01:72 Bedroom F-03	NO (-23.9%)	NO
First Floor - 01:38 En-Suite F-21	N/A	N/A
First Floor - 01:39 En-Suite F-22	N/A	N/A
Third Floor - 03:06 En-Suite 2	NO (-63.3%)	NO
Third Floor - 03:21 Ironing Room	N/A	N/A
Third Floor - 03:09 En-Suite 3	NO (-64.2%)	NO
Third Floor - 03:18 Kitchen Office	NO (-72.9%)	NO
Third Floor - 03:08 Sleep-over Room 3	NO (-82.9%)	NO
Third Floor - 03:07 Sleep-over Room 2	NO (-82.3%)	NO
Third Floor - 03:04 En-Suite 1	N/A	N/A
Third Floor - 03:03 Sleep-over Room 1	NO (-67.6%)	NO

## Regulation 25A: Consideration of high efficiency alternative energy systems

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

# Technical Data Sheet (Actual vs. Notional Building)

## Building Global Parameters

	Actual	Notional
Floor area [m <sup>2</sup> ]	4517	4517
External area [m <sup>2</sup> ]	5167.2	5167.2
Weather	NOT	NOT
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	5	3
Average conductance [W/K]	1863.8	1893.93
Average U-value [W/m <sup>2</sup> K]	0.36	0.37
Alpha value* [%]	22.21	22.71

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

## Building Use

### % Area Building Type

	Retail/Financial and Professional Services
	Restaurants and Cafes/Drinking Establishments/Takeaways
	Offices and Workshop Businesses
	General Industrial and Special Industrial Groups
	Storage or Distribution
	Hotels
<b>88</b>	<b>Residential Institutions: Hospitals and Care Homes</b>
<b>12</b>	<b>Residential Institutions: Residential Schools</b>
	Residential Institutions: Universities and Colleges
	Secure Residential Institutions
	Residential Spaces
	Non-residential Institutions: Community/Day Centre
	Non-residential Institutions: Libraries, Museums, and Galleries
	Non-residential Institutions: Education
	Non-residential Institutions: Primary Health Care Building
	Non-residential Institutions: Crown and County Courts
	General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger Terminals
	Others: Emergency Services
	Others: Miscellaneous 24hr Activities
	Others: Car Parks 24 hrs
	Others: Stand Alone Utility Block

## Energy Consumption by End Use [kWh/m<sup>2</sup>]

	Actual	Notional
Heating	10.44	11.32
Cooling	0.71	0.54
Auxiliary	8.91	8.37
Lighting	9.55	8.02
Hot water	26.55	28.82
Equipment*	37.6	37.6
<b>TOTAL**</b>	<b>56.17</b>	<b>57.06</b>

\* 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/m<sup>2</sup>]

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

## Energy & CO<sub>2</sub> Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	226.99	243.59
Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ]	83.51	84.81
Total emissions [kg/m <sup>2</sup> ]	7.77	7.89

## HVAC Systems Performance

System Type	Heat dem MJ/m <sup>2</sup>	Cool dem MJ/m <sup>2</sup>	Heat con kWh/m <sup>2</sup>	Cool con kWh/m <sup>2</sup>	Aux con kWh/m <sup>2</sup>	Heat SSEFF	Cool SSEER	Heat gen SEFF	Cool gen SEER
<b>[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	240.7	86.7	23.1	6.2	0	2.89	3.91	3.1	5.5
<b>Notional</b>	239.7	73.9	25.2	4.7	0	2.64	4.4	----	----
<b>[ST] Central heating using water: radiators, [HS] ASHP, [HFT] Electricity, [CFT] Electricity</b>									
<b>Actual</b>	88	116.6	8.8	0	10.1	2.77	0	3.1	0
<b>Notional</b>	90.9	134.5	9.6	0	9.1	2.64	0	----	----
<b>[ST] No Heating or Cooling</b>									
<b>Actual</b>	0	1659.8	0	0	0	0	0	0	0
<b>Notional</b>	0	1652.3	0	0	0	0	0	----	----

### Key to terms

Heat dem [MJ/m <sup>2</sup> ]	= Heating energy demand
Cool dem [MJ/m <sup>2</sup> ]	= Cooling energy demand
Heat con [kWh/m <sup>2</sup> ]	= Heating energy consumption
Cool con [kWh/m <sup>2</sup> ]	= Cooling energy consumption
Aux con [kWh/m <sup>2</sup> ]	= 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



## Project name

Apartments

As designed

Date: Thu Nov 30 17:58:11 2023

## Administrative information

## Building Details

**Address:** Apartments, Bushloe House, Station Road,  
Wigston, Leicestershire, LE18 2DR

## Certifier details

**Name:** Daniel Towns

**Telephone number:** 0115 7270599

**Address:** EPS Group 3C Pelham Court Pelham Road,  
Nottingham, NG5 1AP

## Certification tool

**Calculation engine:** SBEM

**Calculation engine version:** v6.1.e.0

**Interface to calculation engine:** DesignBuilder SBEM

**Interface to calculation engine version:** v7.2.0

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

**Foundation area [m<sup>2</sup>]:** 639.74

The CO<sub>2</sub> emission and primary energy rates of the building must not exceed the targets

Target CO <sub>2</sub> emission rate (TER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	5.16
Building CO <sub>2</sub> emission rate (BER), kgCO <sub>2</sub> /m <sup>2</sup> .annum	4.34
Target primary energy rate (TPER), kWh <sub>PE</sub> /m <sup>2</sup> .annum	54.86
Building primary energy rate (BPER), kWh <sub>PE</sub> /m <sup>2</sup> .annum	46.02
Do the building's emission and primary energy rates exceed the targets?	BER =< TER   BPER =< TPER

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

Fabric element	U <sub>a</sub> -Limit	U <sub>a</sub> -Calc	U <sub>i</sub> -Calc	First surface with maximum value
Walls*	0.26	0.25	0.26	Basement Floor - B-02 APT 8 Bathroom_W_6
Floors	0.18	0.2	0.25	Basement Floor - B-02 APT 8 Bathroom_S_3
Pitched roofs	0.16	0.11	0.18	Second Floor - 02-26 APT 21 Lounge-Kitchen_R_10
Flat roofs	0.18	0.18	0.18	Second Floor - 02-04 APT 18 Bathroom_R_3
Windows** and roof windows	1.6	1.4	1.4	Second Floor - 02-24 APT 21 Bedroom_1_G_7
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	-	-	No external personnel doors
Vehicle access & similar large doors	1.3	-	-	No external vehicle access doors
High usage entrance doors	3	-	-	No external high usage entrance doors

U<sub>a</sub>-Limit = Limiting area-weighted average U-values [W/(m<sup>2</sup>K)]  
U<sub>a</sub>-Calc = Calculated area-weighted average U-values [W/(m<sup>2</sup>K)]  
U<sub>i</sub>-Calc = Calculated maximum individual element U-values [W/(m<sup>2</sup>K)]

\* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.  
\*\* Display windows and similar glazing are excluded from the U-value check. \*\*\* Values for rooflights refer to the horizontal position.  
^ For fire doors, limiting U-value is 1.8 W/m<sup>2</sup>K  
NB: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m <sup>3</sup> /(h.m <sup>2</sup> ) at 50 Pa	8	5

## Building services

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

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

1- ASHP (Radiators)

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
<b>This system</b>	3.1	-	-	-	-
<b>Standard value</b>	2.5*	N/A	N/A	N/A	N/A
<b>Automatic monitoring &amp; targeting with alarms for out-of-range values for this HVAC system</b>					NO
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- Hot Water Cylinder via ASHP

	Water heating efficiency	Storage loss factor [kWh/litre per day]
<b>This building</b>	Hot water provided by HVAC system	0.012
<b>Standard value</b>	N/A	N/A

### Zone-level mechanical ventilation, exhaust, and terminal units

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

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

Zone name	SFP [W/(l/s)]										HR efficiency	
	ID of system type	A	B	C	D	E	F	G	H	I	Zone	Standard
	<b>Standard value</b>	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
Basement Floor - B-02 APT 8 Bathroom		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-26 APT 21 Lounge-Kitchen		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-25 APT 21 Bathroom		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-01 APT 18 Lounge-Kitchen		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-04 APT 18 Bathroom		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-19 APT 20 Bathroom		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-06 APT 17 Lounge-Kitchen		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-10 APT 17 Bathroom		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-17 APT 20 Lounge-Kitchen		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-13 APT 19 Bathroom		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-14 APT 19 Lounge-Kitchen		-	0.3	-	-	-	-	-	-	-	-	N/A
Second Floor - 02-15 APT 19 Circulation		-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-31 APT 14 En-Suite		-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-35 APT 15 Bathroom		-	0.3	-	-	-	-	-	-	-	-	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
	<b>Standard value</b>	0.3	1.1	0.5	2.3	2	0.5	0.5	0.4	1		
First Floor - 01-40 APT 16 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-29 APT 14 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-38 APT 15 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-27 APT 14 Lounge-Kitchen	-	-	-	-	-	-	-	-	-	-	-	N/A
First Floor - 01-32 APT 14 Corridor	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-01 APT 10 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-10 APT 9 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-04 APT 10 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-42 APT 16 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-06 APT 9 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-17 APT 12 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-16 APT 11 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-18 APT 12 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-15 APT 11 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-26 APT 13 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
First Floor - 01-22 APT 13 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-01 APT 2 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-05 APT 2 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-06 APT 1 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-08 APT 1 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-16 APT 3 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-15 APT 3 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-18 APT 4 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-17 APT 4 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-35 APT 7 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-30 APT 6 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-33 APT 7 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-37 APT 8 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-29 APT 6 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-25 APT 5 Bathroom	-	-	0.3	-	-	-	-	-	-	-	-	N/A
Ground Floor - 00-22 APT 5 Lounge-Kitchen	-	-	0.3	-	-	-	-	-	-	-	-	N/A

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
Basement Floor - B-02 APT 8 Bathroom		105	-	-
Basement Floor - B-01 APT 8 Bedroom 1		105	-	-
Basement Floor - B-03 APT 8 Circulation		105	-	-
Second Floor - 02-24 APT 21 Bedroom 1		105	-	-
Second Floor - 02-26 APT 21 Lounge-Kitchen		105	-	-
Second Floor - 02-25 APT 21 Bathroom		105	-	-
Second Floor - 02-22 APT 21 Circulation		105	-	-
Second Floor - 02-23 APT 21 Store		105	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
Second Floor - 02-21 Stairwell		105	-	-
Second Floor - 02-02 APT 18 Bedroom 2		105	-	-
Second Floor - 02-01 APT 18 Lounge-Kitchen		105	-	-
Second Floor - 02-05 APT 18 Bedroom 1		105	-	-
Second Floor - 02-04 APT 18 Bathroom		105	-	-
Second Floor - 02-03 APT 18 Circulation		105	-	-
Second Floor - 02-20 APT 20 Circulation		105	-	-
Second Floor - 02-19 APT 20 Bathroom		105	-	-
Second Floor - 02-18 APT 20 Bedrooms		105	-	-
Second Floor - 02-06 APT 17 Lounge-Kitchen		105	-	-
Second Floor - 02-10 APT 17 Bathroom		105	-	-
Second Floor - 02-07 APT 17 Bedroom 1		105	-	-
Second Floor - 02-17 APT 20 Lounge-Kitchen		105	-	-
Second Floor - 02-11 Second Floor Landing		105	-	-
Second Floor - 02-08 APT 17 Store		105	-	-
Second Floor - 02-09 APT 17 Circulation		105	-	-
Second Floor - 02-12 APT 19 Store		105	-	-
Second Floor - 02-13 APT 19 Bathroom		105	-	-
Second Floor - 02-14 APT 19 Lounge-Kitchen		105	-	-
Second Floor - 02-16 APT 19 Bedrooms		105	-	-
Second Floor - 02-15 APT 19 Circulation		105	-	-
First Floor - 01-31 APT 14 En-Suite		105	-	-
First Floor - 01-30 APT 14 Bedroom 1		105	-	-
First Floor - 01-35 APT 15 Bathroom		105	-	-
First Floor - 01-28 APT 14 Bedroom 2		105	-	-
First Floor - 01-41 APT 16 Corridor		105	-	-
First Floor - 01-36 APT 15 Bedroom 1		105	-	-
First Floor - 01-37 APT 15 Circulation		105	-	-
First Floor - 01-40 APT 16 Bathroom		105	-	-
First Floor - 01-29 APT 14 Bathroom		105	-	-
First Floor - 01-38 APT 15 Lounge-Kitchen		105	-	-
First Floor - 01-39 APT 16 Bedroom 1		105	-	-
First Floor - 01-02 APT 10 Bedroom 2		105	-	-
First Floor - 01-03 APT 10 Circulation		105	-	-
First Floor - 01-27 APT 14 Lounge-Kitchen		105	-	-
First Floor - 01-32 APT 14 Corridor		105	-	-
First Floor - 01-01 APT 10 Lounge-Kitchen		105	-	-
First Floor - 01-10 APT 9 Bathroom		105	-	-
First Floor - 01-09 APT 9 Circulation		105	-	-
First Floor - 01-04 APT 10 Bathroom		105	-	-
First Floor - 01-42 APT 16 Lounge-Kitchen		105	-	-
First Floor - 01-06 APT 9 Lounge-Kitchen		105	-	-
First Floor - 01-05 APT 10 Bedroom 1		105	-	-

General lighting and display lighting	General luminaire	Display light source	
Zone name	Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
<b>Standard value</b>	95	80	0.3
First Floor - 01-07 APT 9 Bedroom 1	105	-	-
First Floor - 01-25 APT 13 Store	105	-	-
First Floor - 01-08 APT 9 Store	105	-	-
First Floor - 01-12 APT 11 Bedrooms	105	-	-
First Floor - 01-13 APT 11 Circulation	105	-	-
First Floor - 01-17 APT 12 Lounge-Kitchen	105	-	-
First Floor - 01-16 APT 11 Lounge-Kitchen	105	-	-
First Floor - 01-18 APT 12 Bathroom	105	-	-
First Floor - 01-15 APT 11 Bathroom	105	-	-
First Floor - 01-21 APT 12 Bedrooms	105	-	-
First Floor - 01-20 APT 12 Circulation	105	-	-
First Floor - 01-19 APT 12 Store	105	-	-
First Floor - 01-14 APT 11 Store	105	-	-
First Floor - 01-26 APT 13 Bathroom	105	-	-
First Floor - 01-33 Stairwell	105	-	-
First Floor - 01-34 Corridor	105	-	-
First Floor - 01-24 APT 13 Bedrooms	105	-	-
First Floor - 01-23 APT 13 Circulation	105	-	-
First Floor - 01-22 APT 13 Lounge-Kitchen	105	-	-
First Floor - 01-11 First Floor Landing	105	-	-
Ground Floor - 00-03 APT 2 Bedroom 2	105	-	-
Ground Floor - 00-01 APT 2 Lounge-Kitchen	105	-	-
Ground Floor - 00-02 APT 2 Bedroom 1	105	-	-
Ground Floor - 00-05 APT 2 Bathroom	105	-	-
Ground Floor - 00-04 APT 2 Circulation	105	-	-
Ground Floor - 00-06 APT 1 Lounge-Kitchen	105	-	-
Ground Floor - 00-07 APT 1 Bedroom 1	105	-	-
Ground Floor - 00-10 APT 1 Store	105	-	-
Ground Floor - 00-09 APT 1 Circulation	105	-	-
Ground Floor - 00-08 APT 1 Bathroom	105	-	-
Ground Floor - 00-12 APT 3 Bedrooms	105	-	-
Ground Floor - 00-16 APT 3 Lounge-Kitchen	105	-	-
Ground Floor - 00-15 APT 3 Bathroom	105	-	-
Ground Floor - 00-14 APT 3 Store	105	-	-
Ground Floor - 00-13 APT 3 Circulation	105	-	-
Ground Floor - 00-19 APT 4 Store	105	-	-
Ground Floor - 00-18 APT 4 Bathroom	105	-	-
Ground Floor - 00-17 APT 4 Lounge-Kitchen	105	-	-
Ground Floor - 00-21 APT 4 Bedrooms	105	-	-
Ground Floor - 00-20 APT 4 Circulation	105	-	-
Ground Floor - 00-35 APT 7 Lounge-Kitchen	105	-	-
Ground Floor - 00-30 APT 6 Lounge-Kitchen	105	-	-
Ground Floor - 00-33 APT 7 Bathroom	105	-	-

General lighting and display lighting		General luminaire	Display light source	
Zone name		Efficacy [lm/W]	Efficacy [lm/W]	Power density [W/m <sup>2</sup> ]
	<b>Standard value</b>	95	80	0.3
Ground Floor - 00-34 APT 7 Bedroom 1		105	-	-
Ground Floor - 00-32 APT 7 Bedroom 2		105	-	-
Ground Floor - 00-36 APT 7 Circulation		105	-	-
Ground Floor - 00-37 APT 8 Lounge-Kitchen		105	-	-
Ground Floor - 00-29 APT 6 Bathroom		105	-	-
Ground Floor - 00-31 APT 6 Circulation		105	-	-
Ground Floor - 00-24 APT 5 Store		105	-	-
Ground Floor - 00-26 APT 5 Bedroom 1		105	-	-
Ground Floor - 00-25 APT 5 Bathroom		105	-	-
Ground Floor - 00-23 APT 5 Circulation		105	-	-
Ground Floor - 00-22 APT 5 Lounge-Kitchen		105	-	-
Ground Floor - 00-11 Rear Entrance Foyer		105	-	-
Ground Floor - 00-28 APT 6 Bedrooms		105	-	-
Ground Floor - 00-27 Main Entrance		105	-	-
Ground Floor - 00-38 APT 8 Circulation		105	-	-

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

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Basement Floor - B-01 APT 8 Bedroom 1	N/A	N/A
Second Floor - 02-24 APT 21 Bedroom 1	NO (-85.2%)	NO
Second Floor - 02-26 APT 21 Lounge-Kitchen	NO (-92.6%)	NO
Second Floor - 02-02 APT 18 Bedroom 2	NO (-73.8%)	NO
Second Floor - 02-01 APT 18 Lounge-Kitchen	NO (-17.7%)	NO
Second Floor - 02-05 APT 18 Bedroom 1	NO (-62.1%)	NO
Second Floor - 02-18 APT 20 Bedrooms	NO (-82.7%)	NO
Second Floor - 02-06 APT 17 Lounge-Kitchen	NO (-42.9%)	NO
Second Floor - 02-07 APT 17 Bedroom 1	NO (-70.1%)	NO
Second Floor - 02-17 APT 20 Lounge-Kitchen	NO (-86.9%)	NO
Second Floor - 02-14 APT 19 Lounge-Kitchen	NO (-1.4%)	NO
Second Floor - 02-16 APT 19 Bedrooms	NO (-32.6%)	NO
First Floor - 01-30 APT 14 Bedroom 1	NO (-81.9%)	NO
First Floor - 01-28 APT 14 Bedroom 2	NO (-34.5%)	NO
First Floor - 01-36 APT 15 Bedroom 1	NO (-80.1%)	NO
First Floor - 01-38 APT 15 Lounge-Kitchen	NO (-84.1%)	NO
First Floor - 01-39 APT 16 Bedroom 1	NO (-56.5%)	NO
First Floor - 01-02 APT 10 Bedroom 2	NO (-73.6%)	NO
First Floor - 01-27 APT 14 Lounge-Kitchen	NO (-61.9%)	NO
First Floor - 01-01 APT 10 Lounge-Kitchen	NO (-17.1%)	NO
First Floor - 01-42 APT 16 Lounge-Kitchen	NO (-27.9%)	NO
First Floor - 01-06 APT 9 Lounge-Kitchen	NO (-42.5%)	NO
First Floor - 01-05 APT 10 Bedroom 1	NO (-62.1%)	NO
First Floor - 01-07 APT 9 Bedroom 1	NO (-70.2%)	NO
First Floor - 01-12 APT 11 Bedrooms	NO (-41.8%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
First Floor - 01-17 APT 12 Lounge-Kitchen	YES (+17.4%)	NO
First Floor - 01-16 APT 11 Lounge-Kitchen	NO (-7.9%)	NO
First Floor - 01-21 APT 12 Bedrooms	NO (-32.7%)	NO
First Floor - 01-24 APT 13 Bedrooms	NO (-52.3%)	NO
First Floor - 01-22 APT 13 Lounge-Kitchen	NO (-66.4%)	NO
Ground Floor - 00-03 APT 2 Bedroom 2	NO (-73.6%)	NO
Ground Floor - 00-01 APT 2 Lounge-Kitchen	NO (-46.5%)	NO
Ground Floor - 00-02 APT 2 Bedroom 1	NO (-62.2%)	NO
Ground Floor - 00-06 APT 1 Lounge-Kitchen	NO (-42.7%)	NO
Ground Floor - 00-07 APT 1 Bedroom 1	NO (-70.1%)	NO
Ground Floor - 00-12 APT 3 Bedrooms	NO (-41.8%)	NO
Ground Floor - 00-16 APT 3 Lounge-Kitchen	NO (-10.8%)	NO
Ground Floor - 00-17 APT 4 Lounge-Kitchen	NO (-25.8%)	NO
Ground Floor - 00-21 APT 4 Bedrooms	NO (-32.7%)	NO
Ground Floor - 00-35 APT 7 Lounge-Kitchen	NO (-33.7%)	NO
Ground Floor - 00-30 APT 6 Lounge-Kitchen	NO (-57.4%)	NO
Ground Floor - 00-34 APT 7 Bedroom 1	NO (-45.7%)	NO
Ground Floor - 00-32 APT 7 Bedroom 2	NO (-82.3%)	NO
Ground Floor - 00-37 APT 8 Lounge-Kitchen	NO (-61.8%)	NO
Ground Floor - 00-26 APT 5 Bedroom 1	NO (-31.8%)	NO
Ground Floor - 00-22 APT 5 Lounge-Kitchen	NO (-11%)	NO
Ground Floor - 00-28 APT 6 Bedrooms	NO (-35.3%)	NO

## Regulation 25A: Consideration of high efficiency alternative energy systems

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

# Technical Data Sheet (Actual vs. Notional Building)

## Building Global Parameters

	Actual	Notional
Floor area [m <sup>2</sup> ]	1919.2	1919.2
External area [m <sup>2</sup> ]	3137.6	3137.6
Weather	NOT	NOT
Infiltration [m <sup>3</sup> /hm <sup>2</sup> @ 50Pa]	5	3
Average conductance [W/K]	1226.68	1239.8
Average U-value [W/m <sup>2</sup> K]	0.39	0.4
Alpha value* [%]	24.01	25.37

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

## Building Use

### % Area Building Type

Retail/Financial and Professional Services  
 Restaurants and Cafes/Drinking Establishments/Takeaways  
 Offices and Workshop Businesses  
 General Industrial and Special Industrial Groups  
 Storage or Distribution  
 Hotels

### 3 Residential Institutions: Hospitals and Care Homes

Residential Institutions: Residential Schools  
 Residential Institutions: Universities and Colleges  
 Secure Residential Institutions

### 97 Residential Spaces

Non-residential Institutions: Community/Day Centre  
 Non-residential Institutions: Libraries, Museums, and Galleries  
 Non-residential Institutions: Education  
 Non-residential Institutions: Primary Health Care Building  
 Non-residential Institutions: Crown and County Courts  
 General Assembly and Leisure, Night Clubs, and Theatres  
 Others: Passenger Terminals  
 Others: Emergency Services  
 Others: Miscellaneous 24hr Activities  
 Others: Car Parks 24 hrs  
 Others: Stand Alone Utility Block

## Energy Consumption by End Use [kWh/m<sup>2</sup>]

	Actual	Notional
Heating	10.76	11.37
Cooling	0	0
Auxiliary	7.41	11.21
Lighting	5.11	4.72
Hot water	7.43	9.39
Equipment*	10.66	10.66
<b>TOTAL**</b>	<b>30.72</b>	<b>36.69</b>

\* 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/m<sup>2</sup>]

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

## Energy & CO<sub>2</sub> Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m <sup>2</sup> ]	161.47	135.81
Primary energy [kWh <sub>PE</sub> /m <sup>2</sup> ]	46.02	54.86
Total emissions [kg/m <sup>2</sup> ]	4.34	5.16



## 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] Central heating using water: radiators, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
<b>Actual</b>	107.2	54.3	10.8	0	7.4	2.77	0	3.1	0
<b>Notional</b>	108	27.8	11.4	0	10.5	2.64	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