



HODKINSON



Energy Statement

Highgate Care Ltd

Former Mary Feilding Guild Care Home

Final

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November 2021

DOCUMENT CONTROL RECORD

REPORT STATUS: FINAL

Version	Date	Reason for issue	Author	Checked by	Approved for Issue by Project Manager
v.1	05.11.2021	Draft	N. Ali	N. Doshi	C. Fratter
v.2	19.11.2021	Final	N. Ali	N. Doshi	C. Fratter
v.3	22.11.2021	Final	N. Ali	N. Doshi	C. Fratter

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Executive Summary

The proposed development is to redevelop the Former Mary Feilding Guild Care Home to provide a new nursing and well-being and physiotherapy centre . The development is located in the London Borough of Haringey.

The Energy Strategy for the development has been formulated following The London Plan Energy Hierarchy: *Be Lean, Be Clean, Be Green* and *Be Seen*. The overriding objective in the formulation of the strategy is to maximise the reductions in CO₂ emissions through the application of this Hierarchy with a cost-effective, viable and technically appropriate approach and to minimise the emission of other pollutants. The energy strategy has been developed in consultation with London Borough of Haringey throughout the pre-application process.

The proposed development has been assessed under Part L 2013, utilising the SAP 10 carbon factors.

The development has achieved a 29.3% reduction in regulated CO₂ emissions through energy efficiency measures at the *Be Lean* stage.

In line with The London Plan, the feasibility of decentralised energy production as a *Be Clean* measure has been assessed. There are no existing or proposed heat networks for the development to connect to. A heat network has been proposed for the development, supplying heat from air source heat pumps and gas boilers. The specification of communal air source heat pump led heating system was agreed in principle with the Council's Climate Change Officer in pre-application discussions.

The full spectrum of *Be Green* renewable energy generating technologies has been considered. Solar photovoltaics and air source heat pumps are considered the most appropriate technologies. The development achieves a further 32.8% reduction in regulated CO₂ emission through the application of air source heat pumps and photovoltaics at the *Be Clean* and *Be Green* stages.

The proposed development is predicted to achieve an overall reduction of onsite regulated CO₂ emissions of 62.2%. This exceeds the 35% reduction in regulated CO₂ emissions required by the London Plan policy. This represents a high level of sustainable design and construction.

Summary Table i: Mary Feilding Guild Care Home Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy

	Regulated CO ₂ Emissions (kg/yr)	Unregulated CO ₂ Emissions (kg/yr)	Savings Regulated CO ₂ Emissions (kg/yr)	Reduction in CO ₂ Emissions Achieved (%)
Baseline	375,468	69,074	-	-
After <i>Be Lean</i> Measures	265,270	69,074	110,198	29.3 %
After <i>Be Clean</i> Measures	144,280	69,074	120,990	32.2%
After <i>Be Green</i> Measures	142,008	69,074	2,272	0.6%
Cumulative On-Site	-	-	233,460	62.2%

In line with the GLA guidelines, a carbon offset payment is required achieve the Zero Carbon target. A regulated CO₂ emission of 142 tCO₂ emission will need to be offset over a 30-year period. The table below shows the estimated carbon offset payment for the development is expected to be £404,721

Table ii: Carbon Offset	
Residual CO₂ (tCO₂/year)	142.0
Carbon Price (£/t)	£95
Carbon Offset Payment (£)	£404,721

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1. INTRODUCTION

- 1.1** This Energy Statement has been prepared by Hodkinson Consultancy, a specialist energy and environmental consultancy for planning and development, appointed by Highgate Care Ltd.
- 1.2** The Energy Strategy for the development has been formulated following The London Plan Energy Hierarchy: *Be Lean*, *Be Clean*, *Be Green* and *Be Seen*. The overriding objective in the formulation of the strategy is to maximise the reductions in CO₂ emissions through the application of this hierarchy with a cost-effective, viable and technically appropriate approach and to minimise the emission of other pollutants. This includes:
- > A *Be Lean* reduction with improved building fabric efficiency and M&E services;
 - > Considering *Be Clean* options;
 - > Providing renewable energy generation for the *Be Green* measures.
- 1.3** This statement first establishes a baseline assessment of the energy demands and associated CO₂ emissions for the development based on current Building Regulations Part L 2013. The report will then address sustainable energy measures that help achieve the project targets. The proposed measures are considered appropriate at this stage of the design, it would be expected that through detailed design subtle variations could be implemented to achieve the same goal.

2. DEVELOPMENT OVERVIEW

- 2.1 The proposed development site at 103-107 North Hill in the London Borough of Haringey is located at Highgate, London N6 4DP, as shown in Figure 1 below.



Figure 1: Site Location – Map data © 2021 Google

- 2.2 The site measures 0.374 hectares and it is occupied by a series of five interlinked buildings which wrap around the site in an L shape. The current Mary Feilding Guid Care Home is a registered care home for the elderly. The building has the main frontage on to North Hill to the east and a back entrance with parking spaces on to View Road to the south-east.

Proposed Development

2.3 The proposed development is described as follows:

"Demolition of existing buildings and redevelopment to provide a new care home (Class C2 - Residential Institution), together with a well-being and physiotherapy centre. The proposed care home includes up to 70 bedrooms, a hydrotherapy pool, steam room, sauna, gym, treatment/medical rooms, hairdressing and beauty salon, restaurant, cafe, lounge, bar, well-being shop, general shop, car and cycle parking, refuse/recycling storage, mechanical and electrical plant, landscaping and associated works."



Figure 2: Proposed Ground Floor Layout (DWA Architects, 2021)

3. RELEVANT PLANNING POLICY

- 3.1 The following planning policies and requirements have informed the sustainable design of the proposed development.

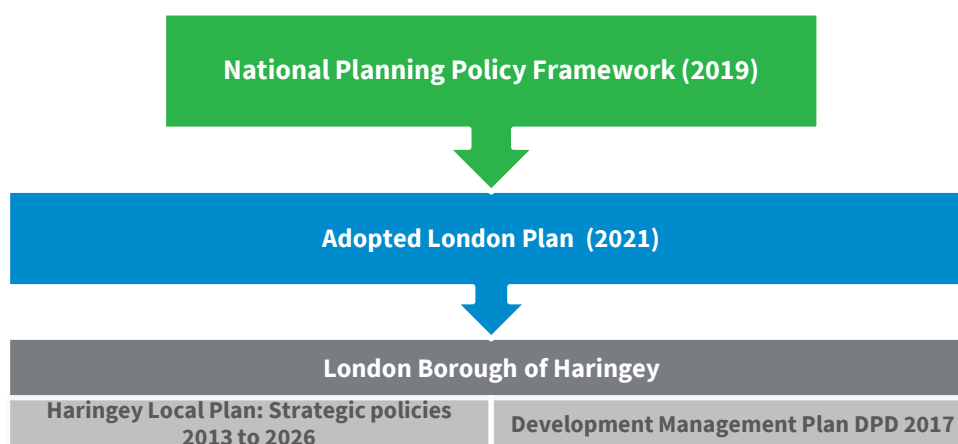


Figure 3: Relevant Planning Policy Documents

National Policy: NPPF

- 3.2 The revised National Planning Policy Framework (NPPF) was published on the 20th July 2021 and sets out the Government's planning policies for England.
- 3.3 The NPPF provides a framework for achieving sustainable development, which has been summarised as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Resolution 42/187 of the United National General Assembly). At the heart of the framework is a presumption in favour of sustainable development.
- 3.4 The document states that the planning system has three overarching objectives which are interdependent and need to be pursued in mutually supportive ways:
- a) **An economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
 - b) **A social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with

accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and

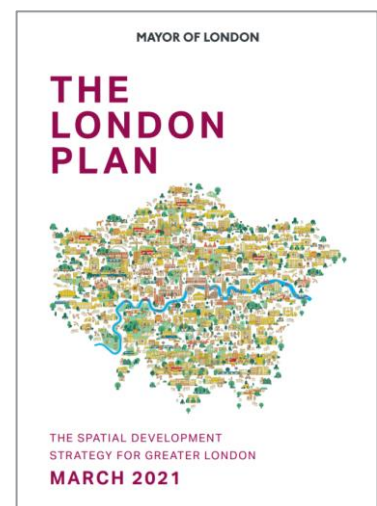
- c) **An environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

Regional Policy: The London Plan

The London Plan (2021)

- 3.5 The London Plan sets out an integrated economic, environmental, transport and social framework for the development of London. The following policies are considered relevant to the proposed development and this Statement:
- 3.6 Policy SI1 Improving Air Quality states that development should seek opportunities to identify and deliver further improvements to air quality. Where emissions need to be reduced to meet the requirements of Air Quality Neutral or to make the impact of development on local air quality acceptable, this is done on-site.
- 3.7 Policy SI2 Minimising Greenhouse Gas Emissions states that major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand. 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 and manage demand during operation;
 - > *Be Clean*: Exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly;
 - > *Be Green*: Maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.
 - > *Be Seen*: Monitoring and reporting of the actual operational energy performance of major developments for at least five years.

A minimum on-site reduction of at least 35% beyond Building Regulations is required for major development. Residential development should achieve 10%, and non-residential development should achieve 15% through energy efficiency measures.'



3.8 Policy SI3 Energy Infrastructure states major development proposals within Heat Network Priority Areas should have a communal low-temperature heating system. The heat source for the communal heating system should be selected in accordance with the following heating hierarchy:

- a) Connect to local existing or planned heat networks;
- b) Use zero-emission or local secondary heat sources (in conjunction with heat pump, if required);
- c) Use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network);
- d) Use ultra-low NOx gas boilers.

3.9 Policy SI4 Managing Heat Risk states that major development proposals should demonstrate through an energy strategy how they will reduce the potential for internal overheating and reliance on air conditioning systems in accordance with the cooling hierarchy.

GLA Energy Assessment Guidance

3.10 The GLA Energy Assessment Guidance published April 2020 provides advice on how the energy statement can demonstrate compliance with the London Plan. The following key points have been taken from the document:

- > The GLA requires the use of SAP 10 carbon factors for referable schemes;
- > The London Plan, and requires the reduction in regulated CO₂ emissions of 10% for residential development and 15% for non-domestic development to be achieved at the *Be Lean* stage;
- > There is a requirement to report energy demands and improvements in carbon emissions.

Local Policy: London Borough of Haringey

Strategic Policies

3.11 The London Borough of Haringey's Local Plan was adopted in 2013. The following policies are considered relevant to this Statement:

3.12 Policy SP4- Working towards a low carbon Haringey indicates that the following measures will be promoted to reduce carbon emissions from new and existing buildings.

- > All new residential development will achieve a minimum 25% reduction in total (regulated) CO₂ emissions. All new residential development shall be zero carbon from 2016 onwards;

- > From 2011 onwards all new non-residential development shall be built to at least BREEAM “very good” standard and should aim to achieve BREEAM “excellent”. All new non-residential development shall be zero carbon from 2019;
- > All developments should identify and implement, where viable, site-wide and area-wide decentralised energy facilities including the potential to link into a wider network;
- > Establish local networks of decentralised heat and energy facilities by requiring developers to prioritise connection to existing or planned networks where feasible;
- > All new developments are required, where viable, to achieve a reduction in predicted carbon dioxide emissions of 20% from on-site renewable energy generation, which can include connections to local sources of decentralised renewable energy.

Development Management DPD

- 3.13** This document gives effect to Haringey’s spatial strategy and the key objectives of the Strategic Policies Local Plan by supporting proposals that contribute to the delivery of sustainable development in accordance with the strategy. The following are the relevant policies:
- 3.14 Policy DM21- Sustainable Design, Layout and Construction** states that all new development will be expected to consider and implement sustainable design, layout and construction techniques. Proposal should apply the energy and cooling hierarchies to minimize energy use; maximise opportunities to enhance biodiversity on-site including via SuDS, living roofs and green walls; use building materials with high environmental performance ratings; and seek opportunities for locally sourced labour. Consideration will be given to the use of carbon offset payments.
- 3.15 Policy DM22- Decentralised Energy** states that subject to other policy requirements, proposals that contribute to the provision and use of Decentralised Energy network infrastructure will be supported.

New Local Plan

- 3.16** The council has begun the process of preparing a New Local Plan which will replace the existing Local Plan documents adopted in July 2017. However, this plan is still in the early stages of consultation and a structured framework of guidance policies is yet to be developed.

Summary of Planning Targets

- 3.17** The non-residential areas will aim to achieve a 15% reduction in regulated CO₂ emissions over Part L 2013, through energy efficiency measures in accordance with the New London Plan. This is calculated using SAP 10 carbon factor.
 - 3.18** The Development will target a 35% reduction in regulated CO₂ emissions over Part L 2013 for the residential and non-residential areas. In line with the energy hierarchy depicted in the London Plan.
 - 3.19** If possible the development will aim to achieve a 20% reduction in regulated CO₂ emissions with onsite renewable technologies, in line with the London Borough of Haringey policy.
 - 3.20** In line with the GLA guidelines, the development will need meet the zero carbon target. The shortfall in achieving the zero carbon target will be met through a cash-in-lieu payment. The London Borough of Haringey increased the carbon offset payment to £95 per tonne of CO₂ in January 2020.
 - 3.21** The BREEAM Very Good energy credits will be targeted.
-

4. BUILDING REGULATIONS BASELINE

Methodology

- 4.1** This statement first establishes a baseline assessment of the energy demands and associated CO₂ emissions for the development based on Part L Building Regulations (2013). The London Plan Energy Hierarchy (Be Lean, Be Clean and Be Green) has been followed to demonstrate compliance with the planning requirement.
- 4.2** There are no self-contained dwellings in this development, therefore it will be assessed as non-domestic building using the Simplified Building Energy Model (SBEM) software. This approach has been approved by planning officer from London Borough of Haringey.
- 4.3** The estimated annual energy demand of the development has been calculated using Simplified Building Energy Model (SBEM) software, developed using the National Calculation Method (NCM 2013 Edition). SBEM calculates the Regulated energy demands associated with hot water, space heating and fixed electrical items, as well as the unregulated energy demands.
- 4.4** The results from the SBEM calculations are entered in the GLA's Carbon Emissions Reporting Spreadsheet, to convert the energy demands from current carbon factors into SAP 10.0 carbon factors. This approach is in line with the GLA Energy Assessment Guidance.

Building Regulations Baseline

- 4.5 Table 1 shows the regulated CO₂ emissions for the baseline model of the development using the SAP 10 carbon factors.

Table 1: Part L (2013) Baseline Regulated and unregulated CO₂ Emissions for the development.

	Regulated (kg CO ₂ /year)	Unregulated (kg CO ₂ /year)
Mary Feilding Guild Care Home	375,468	69,074

- 4.6 The BRUKL and the GLA Carbon Emissions Spreadsheet for the baseline case are presented in Appendix A and Appendix B respectively.

5. BE LEAN : ENERGY EFFICIENCY MEASURES

- 5.1 The first stage of the London Plan Energy Hierarchy is demand reduction through energy efficiency measures. The energy efficiency strategy will aim to go above and beyond baseline Part L 2013 CO₂ emission reduction requirements and aim for the London Plan target of 15% CO₂ reduction through energy efficiency measures.
- 5.2 This section outlines the currently proposed strategies for achieving these targets. These measures, or alternatives, can be provided to achieve the policy requirements.
- 5.3 The energy efficiency strategy should be reviewed at each detailed stage of the development, to ensure the most recent policy targets are being achieved.

Building Envelope

- 5.4 This development will incorporate enhanced insulation in the building envelope (walls, roofs, floors and windows) with aims to achieve average U-values better than those required by Part L2A (2013) of the Building Regulations. These are likely to include the following targets which will be further refined at detailed design stage:
- > High Performance Double Glazing with a U-value of 1.3 W/m².K (soft low E-coating, G-value of 0.30 and light transmittance of 0.60) .
 - > Solid door U-value of 1.80W/m²K;
 - > External walls with a U-value of 0.18W/m².K;
 - > Wall to car park U value of 0.25W/m²K;

- > Basement floor U-value of 0.10 W/m².K;
- > Ground floor above car park u-value of 0.15W/m².K;
- > Pitched and flat roof U-value of 0.15 W/m².K

Air Tightness and Ventilation

- 5.5 All the bedrooms, circulation spaces, store rooms and nurse station will be naturally ventilated.
- 5.6 Intermittent extract fans are expected to be specified for the wet rooms such as ensuites, WCs, laundry, and changing rooms. Extract fans will achieve a specific fan power of 0.3W/l/s, or lower as specified in the Non-Domestic Building Services Compliance Guide.
- 5.7 The kitchen located in the basement will have a dedicated supply and extract fans which will achieve specific fan powers of 1.0W/l/s and 0.80 respectively.
- 5.8 A mechanical ventilation unit with heat recovery is proposed for all areas excluding transitory areas and spaces mentioned above. The assessment has considered a specific fan power of no more than 1.0 W/l/s and heat recovery efficiency greater than 85%, with the inclusion of a summer bypass. Ventilation is expected to be demand controlled using variable speed control and CO₂ sensors.
- 5.9 The proposed development is expected to achieve an air permeability of 5 m³/hr.m² or less, thus further reducing space heating demands.

Space Heating

- 5.10 The space heating requirement will be reduced by the fabric and air tightness measures detailed above. A gas boiler with an efficiency of 96% is utilised for space heating at the *Be Lean* stage.
- 5.11 Further details of the proposed heating strategy are presented in *Be Clean*.
- 5.12 It is expected that underfloor heating and ducted ceiling cassettes emitters will be specified.

Hot Water

- 5.13 The hot water provisions will be provided by the communal air source heat pumps and gas boilers. A low heat loss storage cylinder will cover will be specified to cover the required hot water demand.
- 5.14 A gas boiler with an efficiency of 96% is utilised for hot water provisions at the *Be Lean* stage.

- 5.15** Hot water is contributing to most of the energy demand of the development, this is due the large number of shower rooms. Therefore, the use of wastewater heat recovery system will benefit the development, as it will reduce energy usage and running costs.
- 5.16** A wastewater heat recovery system (WWHR) extracts heat from wastewater from showers through a heat exchanger. This process provides free heat to the system reducing the requirement from the heating system.
- 5.17** WWHR has been specified for the 70 ensuite, assisted bathroom and further 4 shower rooms in the changing rooms and spas located on the first and second floors.
- 5.18** The WWHR will be installed on individual shower cubicle and be gravity feed system. The WWHR is expected to achieve an efficiency of 54% based on 8 litres/minute flow rate. This flow rate is in line with the requirements of the WAT 01 BREEAM credits.

Lighting

- 5.19** Energy efficient LED light fittings are to be installed for all areas. Lighting in all areas is expected to exceed 110 lamp lumens per circuit-watt with light output ratio of 1. The light output ratio is the percentage of light emitted from the light source.
- 5.20** Appropriate demand reducing light controls are to be installed in most areas. This will be achieved through the use of occupancy sensors and photoelectric controls for the highly glazed areas.

Metering

- 5.21** Lighting, heating, hot water and cooling are to be separately sub-metered.

BREEAM

- 5.22** The proposed energy strategy above is expected some energy credits to enable the development to achieve the BREEAM Very Good requirement.

Limiting the Risk of Summer Overheating & Cooling

- 5.23** Minimising the risk of summer overheating is important so as to ensure that buildings are adapted to climate change and remains comfortable to the occupants in the future.
- 5.24** All principal spaces, such as bedrooms and communal spaces have been assessed against CIBSE TM59 overheating criteria as per the Haringey request. The risk of overheating has been minimized as much as possible using passive design measures (from the London Plan Cooling Hierarchy) and by prioritizing natural ventilation in order to avoid the need for active cooling in those spaces. The details of the assessment are presented in a dedicated overheating report (Dynamic Overheating Assessment, Hodkinson Consultancy, November 2021).

- 5.25** It is anticipated that a G-Value of 0.30 will be required to comply with the Part L Criterion 3 limiting the effects of heat gains in summer. The initial SBEM calculation showing compliance with the Part L Criterion 3.
- 5.26** Cooling has not been specified for majority of the development, this includes bedrooms, transitory spaces and generally unoccupied spaces. Where cooling is specified is for specialist rooms which require controlled indoor temperatures.
- 5.27** Cooling will be provided by a dedicated air source heat pump. The air source heat pump will have a cooling Energy Efficiency Ratio (EER) of 4.0 and Seasonal Energy Efficiency Ratio SEER of 6.5.
- 5.28** Table 2 below shows the cooling demand for the development is small and significantly less than the notional cooling demand.

Table 2: Cooling Demands

	Area weighted cooling demand (MJ/m ²)	Total area weighted cooling demand (MJ/year)
Actual	12	69,936
Notional	21	119,014

CO₂ Emissions Following *Be Lean* Measures

- 5.29** Table 3 shows the development achieves a 29.3% reduction in CO₂ emissions through the application of energy efficiency measures, the development exceeds the required 15% reduction in regulated CO₂ at the *Be Lean* stage.

Table 3: Reduction in regulated CO₂ emissions using SAP 10 carbon factors following *Be Lean* measures.

Part L 2013	Baseline (kg CO ₂ /year)	<i>Be Lean</i> (kg CO ₂ /year)	Reduction in CO ₂ Emissions Achieved Over the Baseline (%)
Mary Feilding Guild Care Home	375,468	265,274	29.3%

- 5.30** The GLA Carbon Emissions Spreadsheet for the *Be Lean* are shown in Appendix C. The other supporting documents are shown in Appendix D.

6. BE CLEAN : DECENTRALISED ENERGY

- 6.1 In line with the London Plan Policy SI3 Energy Infrastructure, the heat source for the onsite communal heat network has been considered in line with the following hierarchy:
- connect to local existing or planned heat networks;*
 - use zero-emission or local secondary heat sources (in conjunction with heat pump, if required);*
 - use low-emission combined heat and power (CHP) (only where there is a case for CHP to enable the delivery of an area-wide heat network, meet the development's electricity demand and provide demand response to the local electricity network);*
 - use ultra-low NOx gas boilers.*

Connect to Local Existing or Planned Heat Networks

- 6.2 Figure, 3 below, shows the development (green) on the London Heat Map. Figure 3 shows there are no current or proposed networks in place for the development to connect to.

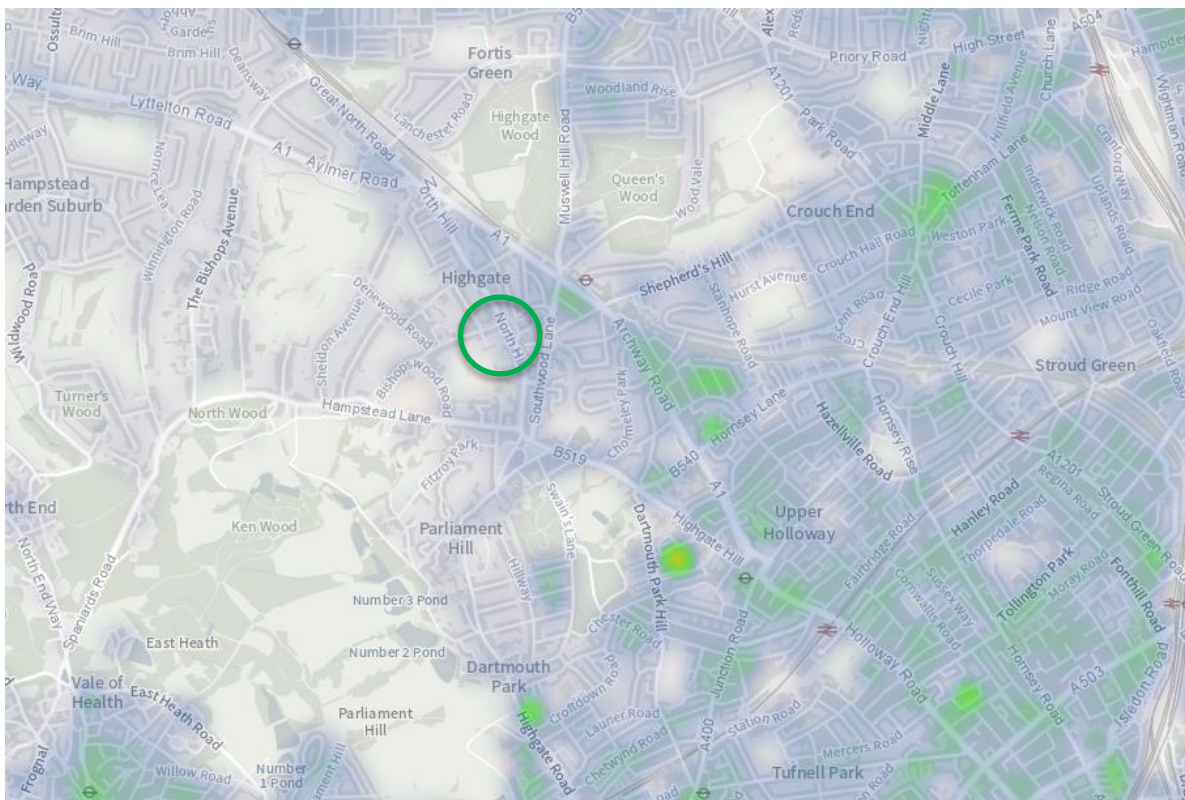


Figure 3: London Heat Map

Zero-Emission or Local Secondary Heat Sources (with Heat Pumps)

- 6.3** A low carbon heat network is proposed for the development. This will consist of air source heat pumps which will act as the lead heat source for the network. Gas boilers will assist in providing hot water provisions during periods of high demand, such as weekday mornings and evenings.
- 6.4** It is expected that across a given year the proportion of hot water delivered from each technology would be as follows:
- > Air source heat pumps: 70% (primary source, baseload supply);
 - > Gas boilers: 30% (delivery of peak and backup supply).
- 6.5** The use of ground source heat pumps was considered for this development, further information is provided in the *Be Green* chapter.
- 6.6** The air source heat pumps will have Seasonal Coefficient of Performance (SCOP) of 3.15 and the gas boilers are to have an efficiency of 96%.
- 6.7** The heat network is expected to run on a primary operating temperatures of 55/47°C.
- 6.8** The development will adhere to the requirements CIBSE Heat Networks Code of Practice for design and construction.
- 6.9** A roof plan indicating where the external heat pumps could be located is shown in Appendix E. It is anticipated that the heat pump units are to be installed on the second floor roof. The rooftop heat pump units will be connected to the plant room and where the heat distribution will be led from.
- 6.10** In addition to the heat pump internal units and gas boilers, the plant room will also contain thermal stores and other ancillary plant. The plant room has been sized at 102 m², with a floor to ceiling height of 3.96m. An indicative plant room layout is shown in the Appendix F.
- 6.11** To achieve the required annual contribution for space heating and hot water, the following installed plant capacities are currently estimated to be:
- > 204kW of Air Source Heat Pumps;
 - > 102kW of Gas Boilers;
 - > Appropriate Thermal storage.

CO₂ Emissions Following *Be Clean* Measures

6.12 Table 4 below, shows there is a further 32.2% reduction in CO₂ emissions following the *Be Clean* stage of the energy hierarchy.

Table 4: Reduction in regulated CO₂ emissions using SAP 10 carbon factors following *Be Clean* measures.

Part L 2013	Baseline (kg CO ₂ /year)	<i>Be Lean</i> (kg CO ₂ /year)	<i>Be Clean</i> (kg CO ₂ /year)	Reduction in CO ₂ Emissions Achieved Over the <i>Be Lean</i> (%)
Mary Feilding Guild Care Home	375,468	265,270	144,280	32.2%

6.13 BRUKL and the GLA Carbon Emissions Reporting Spreadsheet following the *Be Clean* measures are shown in Appendix G. The other supporting documents are shown in Appendix H.

BE GREEN: RENEWABLE ENERGY TECHNOLOGIES

6.14 The third part of the London Plan Energy Hierarchy is *Be Green* which examines the feasibility of renewable energy technologies.

6.15 In line with the Energy Hierarchy and the planning requirement to achieve a 20% reduction in CO₂ emissions from onsite renewable energy technologies, an assessment of the feasibility of renewable energy technologies is undertaken and presented in this section.

6.16 The results of the feasibility study of low carbon and renewable energy technologies are summarised in Appendix I.

Wind Turbines

6.17 Small rooftop wind turbines are designed to generate electricity from the wind.

6.18 Urban rooftop wind turbines do not generally perform sufficiently well to warrant their installation, due to the low and turbulent wind conditions present. They are therefore likely to remain technically unfeasible.

6.19 It has therefore been concluded that wind turbines are not a suitable technology for this site.

Ground Source Heat Pumps (GSHPs)

6.20 Heat Pumps upgrade energy from the ground and utilise it for space heating and hot water.

- 6.21** Ground Source Heat Pumps (GSHPs) are able to provide substantial reductions in energy. However, it will require extensive work on the current site to carry out ground excavation works to bury coils, or boreholes. This will be very difficult and expensive to undertake.
- 6.22** It has therefore been concluded that ground source heat pumps are not a suitable technology for this development.

Air Source Heat Pumps (ASHPs)

- 6.23** Air Source Heat Pumps are a more economical alternative to GSHPs as they do not require ground works.
- 6.24** Air source heat pump utilise the ambient air temperature to generate heat. Communal air source heat pumps are proposed for the development and have been considered in the *Be Clean* section of the report.
- 6.25** In cases where cooling is required it is more efficient for the heat pump to simultaneously to provide heating. A dedicated air source heat pump will be provided for the areas that require cooling. The unit which is specified is expected to have SCOP of 4.2.

Solar Thermal Panels

- 6.26** Solar thermal panels use the sun's energy to generate hot water. Solar thermal panels are generally installed on the roofs, with panels facing as close to south as possible to maximise their efficiency.
- 6.27** Whilst there is adequate hot water demand, wastewater heat recovery system and photovoltaics have been determined to be more suitable technologies to enable the development to comply with the planning requirements. This is due to the lack roof space available for sufficient solar thermal system to be specified because large proportion roof available space has been allocated to house the external heat pump units.

Photovoltaics (PV)

- 6.28** PV panels generate electricity from solar radiation. The generating potential of PV panels is not dependent on development demand, but only on available roof space for installation and ensuring that they are not over shaded. PV panels have the potential to offset a considerable amount of CO₂ emissions they represent a suitable measure for generating renewable energy.
- 6.29** It is estimated that a total PV output of 14kWp, with a south-east/south-west orientation and a pitch of 15 degrees would be required for the development.
- 6.30** It is expected that the PV will be installed on the 3rd floor flat roof, this roof has been determined to be the most suitable location for the PV panels. The PV has been maximised on the roof space

available. PV could not be allocated to the second-floor flat roof because the external heat pump units will be located there and because of shading from the 3rd floor above. In addition, PV could not be specified on the pitched roof because the development is located in a conservation area.

6.31 An indicative roof plan showing the PV layout is shown in the Appendix J.

CO₂ Emissions Following *Be Green* Measures

6.32 Table 5, below, outlines there is further 0.6% reduction in CO₂ emissions following the inclusion of PV for the proposed development.

Table 5: Reduction in regulated CO₂ emissions using SAP 10 carbon factors, following *Be Green* measures

	Baseline (kg CO₂/year)	<i>Be Lean</i> (kgCO₂/year)	<i>Be Clean</i> (kg CO₂/year)	<i>Be Green</i> (kgCO₂/year)	Reduction in CO₂ Emissions Achieved Over the <i>Be Clean</i> (%)
Mary Feilding Guild Care Home	375,468	265,270	144,280	142,008	0.6%

6.33 The development achieves a 32.8% reduction in regulated CO₂ emission through the use of onsite renewable energy technologies of air source heat pumps and PV at the *Be Clean* and *Be Green* stages.

6.34 BRUKL and the GLA Carbon Emissions Reporting Spreadsheet following the *Be Green* measures are shown in Appendix K. The other supporting documents are shown in Appendix L.

7. *BE SEEN* : ENERGY MONITORING

- 7.1** The London Plan introduces a fourth stage to the energy hierarchy; the ‘be seen’ stage, which requires monitoring and reporting of the actual operational energy performance of major developments for at least five years.
- 7.2** An effectively implemented post-construction monitoring regime can have a number of benefits including environmental (e.g. reduced grid infrastructure strain, carbon emissions reduction) and socio-economic (e.g. reduced occupants’ bills, raised awareness around energy usage).
- 7.3** It is widely accepted that a gap exists between the estimated performance of a building at design stage and the actual building performance post-construction. The aim is to bridge the gap to ensure buildings are operating as efficiently as they are designed to.

Planning Stage

- 7.4** In line with the policy requirements for this stage. The following tasks shall be undertaken:
- > The necessary data will be uploaded to the 'be seen' portal when it becomes available.
 - > Following planning approval, the different reporting stages and target dates for submission will be reviewed and agreed with the design team.
 - > All affected parties (e.g. developer, building owner, landlord, or occupier) will be made aware of their responsibilities at subsequent reporting stages.
 - > The metering and controls strategy is to be developed in the detail design but is expected to include the information listed in the next section.

Metering and Controls

- 7.5** Meters are to be installed in accordance with the requirements of the Heat Networks (Metering and Billing) Regulations 2014. This includes meters measuring fuel input and heat output of plant, block/building level meters and final customers meters
- 7.6** Standard monitoring of the plant room and heat network will be undertaken during operation. As a minimum, the following will be metered:
- > Gas, electricity, and water used in the plant room;
 - > Heat and electricity leaving the plant room;
 - > Heat entering each building;

> Final customer heat consumption.

8. ZERO CARBON

- 8.1** In line with the GLA guidelines, non-residential areas will need achieve the zero carbon target. Therefore, the development is subject to an additional offset payment to meet a 100% reduction in Regulated CO₂ emissions to achieve zero carbon target. This offset payment to the London borough of Haringey is expected to be allocated to carbon reductions savings elsewhere in the borough
- 8.2** After the inclusion of *Be Lean*, *Be Clean* and *Be Green* measures as specified above, it is estimated that the remaining regulated CO₂ emissions are expected to be 142.0 Tonnes CO₂ per annum.
- 8.3** In line with the London Borough of Haringey's carbon offsetting policy, a carbon offset fee of £95 per tonne of Regulated CO₂ per year, for a period of 30 years, has been used to calculate the "Zero Carbon" contribution
- 8.4** Table 6 below shows the calculation for the carbon offset payment, which is estimated to be £404,721 for the development.

Table 6: Carbon Offset Payment Required to Achieve Zero Carbon

Carbon Offset	
Residual CO ₂ (tCO ₂ /year)	142.0
Carbon Price (£/t)	£95
Carbon Offset Payment (£)	£404,721

9. SUMMARY

- 9.1 The proposed development is to redevelop the Former Mary Feilding Guild Care Home to provide a new nursing and well-being and physiotherapy centre. The development is located in the London Borough of Haringey.
- 9.2 The Energy Strategy for the development has been formulated following The London Plan Energy Hierarchy: *Be Lean*, *Be Clean*, *Be Green* and *Be Seen*. The overriding objective in the formulation of the strategy is to maximise the reductions in CO₂ emissions through the application of this Hierarchy with a cost-effective, viable and technically appropriate approach and to minimise the emission of other pollutants. The energy strategy has been developed in consultation with London Borough of Haringey throughout the pre-application process.
- 9.3 The proposed development has been assessed under Part L 2013, utilising the SAP 10 carbon factors.
- 9.4 The development has achieved a 29.3% reduction in regulated CO₂ emissions through the use of energy efficiency measures at the *Be Lean* stage.
- 9.5 In line with The London Plan, the feasibility of decentralised energy production as a *Be Clean* measure has been assessed. There are no existing or proposed heat networks for the development to connect to. A heat network has been proposed for the development, supplying heat from air source heat pumps and gas boilers. The specification of communal air source heat pump led heating system was agreed in principle with the Council's Climate Change Officer in pre-application discussions.
- 9.6 The full spectrum of *Be Green* renewable energy generating technologies has been considered. Solar photovoltaics and air source heat pumps are considered the most appropriate technologies. The development achieves a 32.8% reduction in regulated CO₂ emission through the application of air source heat pumps and photovoltaics at the *Be Clean* and *Be Green* stages.
- 9.7 The proposed development is predicted to achieve an overall reduction of onsite regulated CO₂ emissions of 62.2%. This exceeds the 35% reduction in regulated CO₂ emissions required by the London Plan policy. This represents a high level of sustainable design and construction.

Summary Table 7 Mary Feilding Guild Care Home Carbon Dioxide Emissions and Savings after each stage of the Energy Hierarchy

	Regulated CO ₂ Emissions (kg/yr)	Unregulated CO ₂ Emissions (kg/yr)	Savings Regulated CO ₂ Emissions (kg/yr)	Reduction in Regulated CO ₂ Emissions Achieved (%)
Baseline	375,468	69,074	-	-
After <i>Be Lean</i> Measures	265,270	69,074	110,198	29.3%
After <i>Be Clean</i> Measures	144,280	69,074	120,990	32.2
After <i>Be Green</i> Measures	142,008	69,074	2,272	0.6%
Cumulative On-Site	-	-	233,460	62.2%

- 9.8** In line with the GLA guidelines, a carbon offset payment is required achieve the Zero Carbon target. A regulated CO₂ emission of 127.8 tCO₂ emission will need to be offset over a 30-year period. The table below shows the estimated carbon offset payment for the development is expected to be £404,721.

Table 8: Carbon Offset	
Residual CO₂ (tCO₂/year)	142.0
Carbon Price (£/t)	£95
Carbon Offset Payment (£)	£404,721

APPENDICES

Appendix A

BRUKL – *Be Lean*

Appendix B

GLA Carbon Emission Reporting - *Baseline*

Appendix C

GLA Carbon Emission Reporting – *Be Lean*

Appendix D

CO₂ Emissions Summary – *Be Lean*

Appendix E

Roof Layout Showing Heat Pumps

Appendix F

Plant Room Layout

Appendix G

BRUKL – *Be Clean* & GLA Carbon Emission Reporting

Appendix H

CO₂ Emissions Summary – *Be Clean*

Appendix I

Renewable and Low Carbon Technology Feasibility

Appendix J

PV Layout

Appendix K

BRUKL – *Be Green* & GLA Carbon Emission Reporting

Appendix L

CO₂ Emissions Summary – *Be Green*

APPENDIX A: BRUKL – *BE LEAN*

Project name

Highgate Care Home**As designed****Date:** Thu Nov 18 13:59:34 2021**Administrative information****Building Details****Address:** N6, London**Certification tool****Calculation engine:** SBEM**Calculation engine version:** v5.6.b.0**Interface to calculation engine:** DesignBuilder SBEM**Interface to calculation engine version:** v6.1.8**BRUKL compliance check version:** v5.6.b.0**Certifier details****Name:****Telephone number:****Address:** , ,**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	77.3
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	77.3
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	55.3
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	0.19	0.25	"00 Basement - Hair & Beauty Salon_P_7"
Floor	0.25	0.12	0.12	"00 Basement - Gym_S_3"
Roof	0.25	0.15	0.15	"04 Second Floor - Lounge_R_5"
Windows***, roof windows, and rooflights	2.2	1.3	1.3	"00 Basement - Gym_G_11"
Personnel doors	2.2	1.8	1.8	"01 Ground Floor - Corridor_D_18"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
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	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	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- Gas Boiler & Heat Pump

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	4	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
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.					

2- Gas Boiler

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.96	-	-	-	-
Standard value	0.91*	N/A	N/A	N/A	N/A
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.					

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	0
Standard value	N/A	N/A

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			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard	
00 Basement - Gym	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Chefs Office	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Consult	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Cinema room	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Office	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Hair & Beauty Salon	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Barbers	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Wellness Shop	-	-	-	1	-	-	-	-	-	0.85	0.5	

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard	
02 First Floor - Treatment & Medical Room	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Rooms	2	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Rooms	1	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Staff Room	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Lounge	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Dinning	-	-	-	1	-	-	-	-	-	0.85	0.5	
04 Second Floor - Lounge	-	-	-	1	-	-	-	-	-	0.85	0.5	
04 Second Floor - Dining	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Meet & Greet	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Cafe	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Admin	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Restaurant	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Manager	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Male Changing room	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Female Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Reception	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Laundry	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - Kitchen	-	-	-	-	-	-	-	-	1	-	N/A	
00 Basement - Kitchen Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - WC	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Change	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - WC	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Change	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - Kosher Kitchen	-	-	-	-	-	-	-	-	1	-	N/A	
00 Basement - Reception	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Ensuite 1	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 2	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 3	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - WC 1	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 4	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Spa	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 6	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 7	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 8	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 9	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 10	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 11	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 12	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 13	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 14	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 15	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite	0.3	-	-	-	-	-	-	-	-	-	N/A	

[illegible]

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
00 Basement - Gym		-	110	-	381
00 Basement - Chefs Office		110	-	-	63
00 Basement - Consult		110	-	-	445
00 Basement - Cinema room		-	110	-	185
00 Basement - Office		110	-	-	107
00 Basement - Comms		110	-	-	39
00 Basement - Hair & Beauty Salon		-	110	110	286
00 Basement - Barbers		-	110	110	284
00 Basement - Wellness Shop		-	110	110	215
02 First Floor - Treatment & Medical Room		110	-	-	127
02 First Floor - Treatment & Medical Rooms 2		110	-	-	221
02 First Floor - Treatment & Medical Rooms 1		110	-	-	152
02 First Floor - Staff Room		-	110	-	57
02 First Floor - Lounge		-	110	-	238
02 First Floor - Dinning		-	110	-	105
04 Second Floor - Lounge		-	110	-	181
04 Second Floor - Dining		-	110	-	118
01 Ground Floor - Meet & Greet		110	-	-	81
01 Ground Floor - Cafe		-	110	-	122
01 Ground Floor - Admin		110	-	-	151
01 Ground Floor - Restaurant		-	110	-	198
01 Ground Floor - Servery		-	110	110	44
01 Ground Floor - Manager		110	-	-	102
00 Basement - Corridor		-	110	-	252
00 Basement - Lift & Stairs		-	110	-	58
00 Basement - Male Changing room		-	110	-	30
00 Basement - Female Change		-	110	-	40
00 Basement - Stairs & Lobby		-	110	-	73
00 Basement - Corridor		-	110	-	89
00 Basement - Lobby		-	110	-	120
00 Basement - Maintenance Store		110	-	-	36
00 Basement - Hydro plant room		110	-	-	54
00 Basement - Sauna		110	-	-	118
00 Basement - Hydro Pool		-	110	-	214
00 Basement - Reception		-	110	110	132
00 Basement - Plant Room		110	-	-	168
00 Basement - Handyman		110	-	-	135
00 Basement - Stair & Lift		-	110	-	62
00 Basement - Laundry		-	110	-	330
00 Basement - Kitchen		-	110	-	293
00 Basement - Kitchen Staff Change		-	110	-	28
00 Basement - WC		-	110	-	33

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
00 Basement - Lobby		-	100	-	38
00 Basement - Change		-	110	-	31
00 Basement - WC		-	110	-	30
00 Basement - Change		-	110	-	32
00 Basement - Equipment Store		110	-	-	46
00 Basement - Kosher Kitchen		-	110	-	111
00 Basement - Kitchen Store		110	-	-	37
00 Basement - Reception		-	110	110	85
02 First Floor - Corridor		-	110	-	479
02 First Floor - Bedroom		-	110	-	316
02 First Floor - Ensuite 1		-	110	-	37
02 First Floor - Ensuite 2		-	110	-	37
02 First Floor - Ensuite 3		-	110	-	40
02 First Floor - Linen		110	-	-	11
02 First Floor - Linen		110	-	-	11
02 First Floor - Store		110	-	-	49
02 First Floor - WC 1		-	110	-	34
02 First Floor - Nurse Station		110	-	-	81
02 First Floor - Stairs & Lift		-	110	-	56
02 First Floor - Ensuite 4		-	110	-	24
02 First Floor - Medication Store		110	-	-	27
02 First Floor - Spa		-	110	-	52
02 First Floor - Hoist		110	-	-	31
02 First Floor - Staff Change		-	110	-	32
02 First Floor - Bedrooms 2		-	110	-	189
02 First Floor - Bedrooms 3		-	110	-	37
02 First Floor - Ensuite 6		-	110	-	37
02 First Floor - Bedrooms 4		-	110	-	216
02 First Floor - Ensuite 7		-	110	-	20
02 First Floor - Ensuite 8		-	110	-	24
02 First Floor - Store & Linen		110	-	-	35
02 First Floor - Ensuite 9		-	110	-	26
02 First Floor - Bedrooms 5		-	110	-	140
02 First Floor - Ensuite 10		-	110	-	37
02 First Floor - Bedrooms 6		-	110	-	129
02 First Floor - Bedrooms 7		-	110	-	43
02 First Floor - Ensuite 11		-	110	-	30
02 First Floor - Ensuite 12		-	110	-	22
02 First Floor - Ensuite 13		-	110	-	23
02 First Floor - Bedrooms 8		-	110	-	51
02 First Floor - Ensuite 14		-	110	-	34
02 First Floor - Bedrooms 9		-	110	-	50
02 First Floor - Bedrooms		-	110	-	62

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name	Standard value	Luminaire	Lamp	Display lamp	
		60	60	22	
02 First Floor - Ensuite 15		-	110	-	21
02 First Floor - Stairs & Lift		-	110	-	58
02 First Floor - Ensuite		-	110	-	37
02 First Floor - WC 2		-	110	-	29
02 First Floor - WC		-	110	-	29
03 Second Floor - Bedroom		-	110	-	99
03 Second Floor - Stairs & Lift		-	110	-	64
03 Second Floor - Corridor		-	110	-	29
03 Second Floor - Bedroom		-	110	-	54
03 Second Floor - Ensuite		-	110	-	26
03 Second Floor - Ensuite		-	110	-	26
03 Second Floor - Bedroom		-	110	-	91
03 Second Floor - Ensuite		-	110	-	23
05 Third Floor - Stair & Lift		-	110	-	60
05 Third Floor - Lobby		-	110	-	28
05 Third Floor - Bedroom		-	110	-	63
05 Third Floor - Bedroom		-	110	-	41
05 Third Floor - Ensuite		-	110	-	19
05 Third Floor - Bedroom		-	110	-	71
05 Third Floor - Ensuite		-	110	-	20
05 Third Floor - Ensuite		-	110	-	19
04 Second Floor - Bedroom		-	110	-	142
04 Second Floor - Corridor		-	110	-	365
04 Second Floor - Bedrooms		-	110	-	166
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Stair & Lift		-	110	-	58
04 Second Floor - Nurse station		110	-	-	89
04 Second Floor - Medical Store		110	-	-	30
04 Second Floor - Spa		-	110	-	62
04 Second Floor - Hoist		110	-	-	33
04 Second Floor - Bedrooms		-	110	-	423
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	23
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Store		110	-	-	15
04 Second Floor - WC		-	110	-	35
04 Second Floor - Ensuite		-	110	-	28
04 Second Floor - Bedrooms		-	110	-	153
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Stair & Lift		-	110	-	59

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
04 Second Floor - Ensuite		-	110	-	24
04 Second Floor - Bedroom		-	110	-	73
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Ensuite		-	110	-	33
04 Second Floor - Bedroom		-	110	-	49
04 Second Floor - WC		-	110	-	35
04 Second Floor - Ensuite		-	110	-	38
04 Second Floor - Bedrooms		-	110	-	56
04 Second Floor - Ensuite		-	110	-	53
01 Ground Floor - Cafe Store		110	-	-	10
01 Ground Floor - Reception		-	110	110	148
01 Ground Floor - Foyer & Central Hub 1		-	110	-	86
01 Ground Floor - Bedroom 1		-	110	-	310
01 Ground Floor - Ensuite 1		-	110	-	24
01 Ground Floor - Stair & lift 1		-	110	-	64
01 Ground Floor - Ensuite 2		-	110	-	40
01 Ground Floor - Linen		110	-	-	12
01 Ground Floor - Corridor		-	110	-	352
01 Ground Floor - Linen		110	-	-	11
01 Ground Floor - WC 1		-	110	-	35
01 Ground Floor - Foyer & Central Hub 2		-	110	-	232
01 Ground Floor - Lobby		-	110	-	16
01 Ground Floor - Bedrooms 1		-	110	-	193
01 Ground Floor - Ensuite 3		-	110	-	37
01 Ground Floor - Bin Store		110	-	-	52
01 Ground Floor - Medication Store		110	-	-	26
01 Ground Floor - Stair & lift 2		-	110	-	61
01 Ground Floor - Nurse		110	-	-	81
01 Ground Floor - Ensuite 4		-	110	-	37
01 Ground Floor - Ensuite 5		-	110	-	37
01 Ground Floor - Store		110	-	-	33
01 Ground Floor - WCs 2		-	110	-	68
01 Ground Floor - Ensuite 6		-	110	-	32
01 Ground Floor - Bedrooms 2		-	110	-	43
01 Ground Floor - Bedrooms 3		-	110	-	219
01 Ground Floor - Ensuite 7		-	110	-	23
01 Ground Floor - Ensuite 8		-	110	-	37
01 Ground Floor - Ensuite 9		-	110	-	23
01 Ground Floor - Ensuite 10		-	110	-	26
01 Ground Floor - Ensuite		-	110	-	38
01 Ground Floor - Stair & Lift		-	110	-	57
01 Ground Floor - WC		-	110	-	28

General lighting and display lighting		Luminous efficacy [lm/W]		
Zone name		Luminaire	Lamp	Display lamp
	Standard value	60	60	22
01 Ground Floor - Bedroom		-	110	-
				52

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 Basement - Gym	NO (-58.2%)	NO
00 Basement - Chefs Office	N/A	N/A
00 Basement - Consult	N/A	N/A
00 Basement - Cinema room	N/A	N/A
00 Basement - Office	N/A	N/A
00 Basement - Comms	N/A	N/A
00 Basement - Hair & Beauty Salon	N/A	N/A
00 Basement - Barbers	N/A	N/A
00 Basement - Wellness Shop	N/A	N/A
02 First Floor - Treatment & Medical Room	NO (-70.8%)	NO
02 First Floor - Treatment & Medical Rooms 2	NO (-71.8%)	NO
02 First Floor - Treatment & Medical Rooms 1	NO (-64.6%)	NO
02 First Floor - Staff Room	NO (-76.7%)	NO
02 First Floor - Lounge	NO (-50.6%)	NO
02 First Floor - Dinning	NO (-65.1%)	NO
04 Second Floor - Lounge	NO (-39.4%)	NO
04 Second Floor - Dining	NO (-83.7%)	NO
01 Ground Floor - Meet & Greet	NO (-87%)	NO
01 Ground Floor - Cafe	NO (-72.8%)	NO
01 Ground Floor - Admin	NO (-61.5%)	NO
01 Ground Floor - Restaurant	NO (-53%)	NO
01 Ground Floor - Servery	N/A	N/A
01 Ground Floor - Manager	NO (-12.3%)	NO
00 Basement - Sauna	N/A	N/A
00 Basement - Hydro Pool	N/A	N/A
00 Basement - Reception	N/A	N/A
00 Basement - Handyman	N/A	N/A
00 Basement - Reception	N/A	N/A
02 First Floor - Bedroom	NO (-66.7%)	NO
02 First Floor - Ensuite 1	N/A	N/A
02 First Floor - Ensuite 2	N/A	N/A
02 First Floor - Ensuite 3	N/A	N/A
02 First Floor - Nurse Station	N/A	N/A
02 First Floor - Ensuite 4	N/A	N/A
02 First Floor - Bedrooms 2	NO (-74%)	NO
02 First Floor - Bedrooms 3	N/A	N/A
02 First Floor - Ensuite 6	N/A	N/A
02 First Floor - Bedrooms 4	NO (-68.9%)	NO
02 First Floor - Ensuite 7	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
02 First Floor - Ensuite 8	N/A	N/A
02 First Floor - Ensuite 9	N/A	N/A
02 First Floor - Bedrooms 5	NO (-52.1%)	NO
02 First Floor - Ensuite 10	N/A	N/A
02 First Floor - Bedrooms 6	NO (-67.9%)	NO
02 First Floor - Bedrooms 7	NO (-86%)	NO
02 First Floor - Ensuite 11	NO (-87.3%)	NO
02 First Floor - Ensuite 12	N/A	N/A
02 First Floor - Ensuite 13	N/A	N/A
02 First Floor - Bedrooms 8	NO (-53.8%)	NO
02 First Floor - Ensuite 14	NO (-85.7%)	NO
02 First Floor - Bedrooms 9	NO (-80.3%)	NO
02 First Floor - Bedrooms	NO (-70.7%)	NO
02 First Floor - Ensuite 15	N/A	N/A
02 First Floor - Ensuite	N/A	N/A
03 Second Floor - Bedroom	NO (-71.7%)	NO
03 Second Floor - Bedroom	NO (-70.7%)	NO
03 Second Floor - Ensuite	N/A	N/A
03 Second Floor - Ensuite	N/A	N/A
03 Second Floor - Bedroom	NO (-83%)	NO
03 Second Floor - Ensuite	N/A	N/A
05 Third Floor - Bedroom	NO (-83%)	NO
05 Third Floor - Bedroom	NO (-86.2%)	NO
05 Third Floor - Ensuite	NO (-73.9%)	NO
05 Third Floor - Bedroom	NO (-76.7%)	NO
05 Third Floor - Ensuite	NO (-72%)	NO
05 Third Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-78.5%)	NO
04 Second Floor - Bedrooms	NO (-83%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Nurse station	N/A	N/A
04 Second Floor - Bedrooms	NO (-77%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedrooms	NO (-79%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-82.4%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-90.1%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedrooms	NO (-81.2%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
04 Second Floor - Ensuite	NO (-90.7%)	NO
01 Ground Floor - Reception	NO (-71%)	NO
01 Ground Floor - Bedroom 1	NO (-42.4%)	NO
01 Ground Floor - Ensuite 1	N/A	N/A
01 Ground Floor - Ensuite 2	N/A	N/A
01 Ground Floor - Bedrooms 1	NO (-75.4%)	NO
01 Ground Floor - Ensuite 3	N/A	N/A
01 Ground Floor - Nurse	N/A	N/A
01 Ground Floor - Ensuite 4	N/A	N/A
01 Ground Floor - Ensuite 5	N/A	N/A
01 Ground Floor - Ensuite 6	NO (-82.6%)	NO
01 Ground Floor - Bedrooms 2	NO (-92.1%)	NO
01 Ground Floor - Bedrooms 3	NO (-62.4%)	NO
01 Ground Floor - Ensuite 7	N/A	N/A
01 Ground Floor - Ensuite 8	N/A	N/A
01 Ground Floor - Ensuite 9	N/A	N/A
01 Ground Floor - Ensuite 10	N/A	N/A
01 Ground Floor - Ensuite	N/A	N/A
01 Ground Floor - Bedroom	NO (-52.4%)	NO

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?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	5680.3	5680.3
External area [m ²]	6680.4	6680.4
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	1852.68	3500.88
Average U-value [W/m ² K]	0.28	0.52
Alpha value* [%]	17.79	14

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

Building Use

% Area	Building Type
2	A1/A2 Retail/Financial and Professional services A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups B8 Storage or Distribution C1 Hotels
90	C2 Residential Institutions: Hospitals and Care Homes
3	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
4	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	29.18	44.4
Cooling	3.42	5.82
Auxiliary	11.24	9.89
Lighting	12.03	18.3
Hot water	164.17	233.65
Equipment*	52.48	52.48
TOTAL **	220.05	312.06

* 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]	258.24	381.3
Primary energy* [kWh/m ²]	315.79	441.02
Total emissions [kg/m ²]	55.3	77.3

* 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] Split or multi-split system, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity									
Actual	9	308.9	2.7	17.7	11.6	0.94	4.86	0.96	6.5
Notional	25	389.6	8.5	30.1	10.5	0.82	3.6	----	----
[ST] Central heating using water: radiators, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Natural Gas									
Actual	115.4	128.5	35.6	0	11.1	0.9	0	0.96	0
Notional	156.3	217	53	0	9.8	0.82	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	"00 Basement - Gym_W_10"
Floor	0.2	0.12	"00 Basement - Gym_S_3"
Roof	0.15	0.15	"04 Second Floor - Lounge_R_5"
Windows, roof windows, and rooflights	1.5	1.3	"00 Basement - Gym_G_11"
Personnel doors	1.5	1.8	"01 Ground Floor - Corridor_D_18"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m²K)]		U _{i-Min} = Minimum individual element U-values [W/(m²K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	5

APPENDIX B: GLA CARBON EMISSION REPORTING - BASELINE

SITE-WIDE ENERGY CONSUMPTION AND CO ₂ ANALYSIS																									
Sim#	S.706	1	S.800	76.9	-	253.864	253.864	0	0	0	0	0	278	33	N/A	N/A	N/A	426.851	278	33	N/A	N/A	N/A	373.530	65.8
Use	Total Area (m²)	Calculated TRS SdP10 [(kCD / m²) -		Space Heating (kWn p.a.)	Domestic Hot Water (kWn p.a.)	Lighting (kWn p.a.)	Auxiliary (kWn p.a.)	Cooling (kWn p.a.)	REGULATED CO ₂ EMISSIONS		REGULATED CO ₂ EMISSIONS PER UNIT														
											Calculated TRS SdP10 [(kCD / m²) -														
Sim#	S.600	77.3	-	253.864	0	0	0	0			426.851		278	33	N/A	N/A	N/A						373.530	66.1	

APPENDIX C: GLA CARBON EMISSION REPORTING – *BE LEAN*

APPENDIX D: CO₂ EMISSIONS SUMMARY – *BE LEAN*

CO₂ Emissions at Be Lean StageTable 1: Regulated CO₂ Emissions Using SAP 2012 Carbon Factors

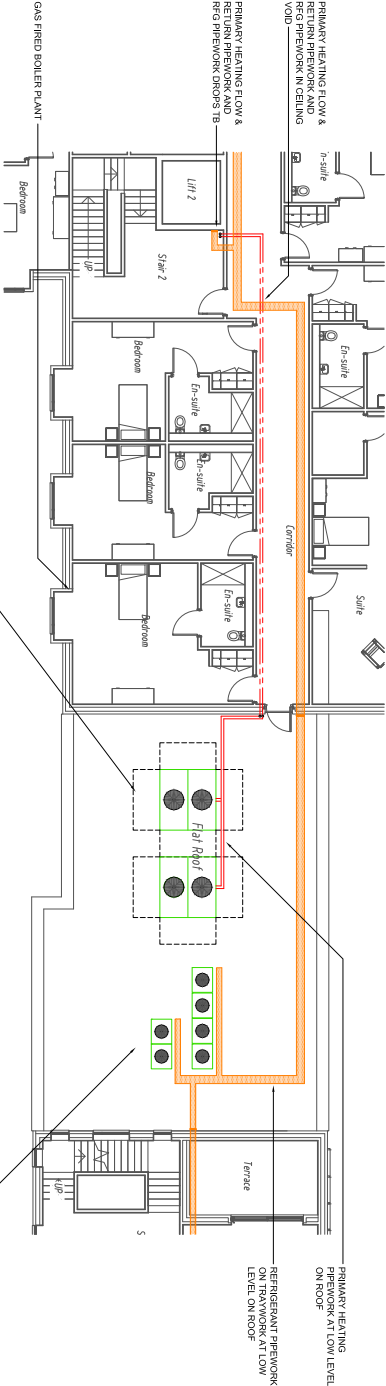
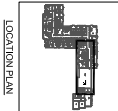
Unit Type Description	Unit Floor Area	Dwelling/Building Emissions Rate	Target Emissions Rate	Dwelling/Building Emissions Rate	Target Emissions Rate	Emissions Rate Improvement Over the Baseline
Non-Domestic	m ²	kg CO ₂ /m ² /year	kg CO ₂ /m ² /year	kg CO ₂ /year	kg CO ₂ /year	
Mary Feilding Guild Care Home	5,680	55.3	77.3	314,121	439,087	28.5%

Table 2: Regulated CO₂ Emissions Using SAP 10 Carbon Factors

Unit Type Description	Unit Floor Area	Dwelling/Building Emissions Rate	Target Emissions Rate	Dwelling/Building Emissions Rate	Target Emissions Rate	Emissions Rate Improvement Over the Baseline
Non-Domestic	m ²	kg CO ₂ /m ² /year	kg CO ₂ /m ² /year	kg CO ₂ /year	kg CO ₂ /year	
Mary Feilding Guild Care Home	5,680	46.70	66.10	265,270	375,468	29.3%

APPENDIX E: ROOF LAYOUT SHOWING HEAT PUMPS

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2 IN AIR COOLED AIR SOURCE HEAT PLUMS PROVIDING PRIMARY HEATING TO RESIDENTS AND BACK OF HOUSE AREAS AND HOT WATER GENERATION
EACH UNIT:
2228L x 2100D x 1230H
1620kg



EXTERNAL AIR COOLED VERY CONDENSERS PROVIDING HEATING AND COOLING TO COMMUNAL AND STAFF AREAS
EACH CONDENSER:
1988H x 650W x 765D
230kg

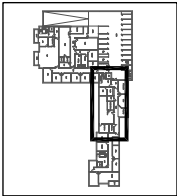
Revision P	AMW	16/10/21
Preliminary Issue, Issued for Information		
 No 10, Newmarket Road, Cambridge CB2 7TH T: 01223 326000 F: 01223 326001 E: info@hmm.co.uk W: www.hmm.co.uk		
CLIENT		
HIGHGATE CARE LTD		
PROJECT		
HIGHGATE CARE HOME		
DRAWING TITLE		
SECOND FLOOR ROOF PLANT LAYOUT		
DRAWN BY	CHECKED BY	DATE
OSB	AMW	16/10/21
SCALE	JOB No.	SIZE
1:100	C1629	A1
STATUS		
PRELIMINARY		
DRAWING No.	REVISION	
SKM004	P	

APPENDIX F: PLANT ROOM LAYOUT

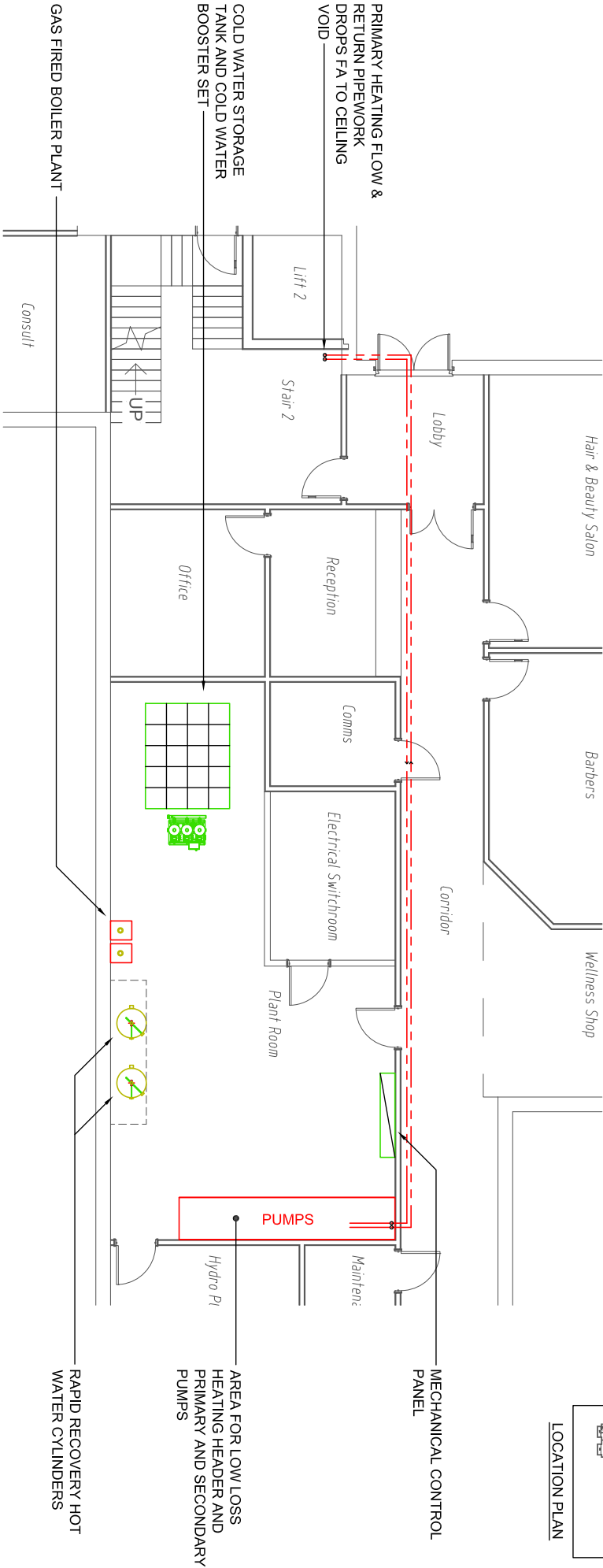
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Notes:

- 1. This drawing is for information only. The plant room design and layout is subject to further detailed design.



LOCATION PLAN



CLIENT		PROJECT		DETAIL	
 No 1 Whiteway Court, Cirencester, Gloucestershire, GL7 7BN T: 01285 640204 F: 01285 641567 E: info@hwmbuildingsservices.co.uk W: www.hwmbuildingsservices.co.uk HIGHGATE CARE LTD HIGHGATE CARE HOME		PRELIMINARY BASEMENT PLANT ROOM LAYOUT			
DRAWN BY		CHECKED BY		DATE	
OSB		AJW		15/10/21	
SCALE		JOB No		DRAWING No	
1:100		C1629		REV	
A3		SKM001		P	

APPENDIX G: BRUKL – *BE CLEAN* & GLA CARBON EMISSION REPORTING

Project name

Highgate Care Home**As designed****Date:** Thu Nov 18 13:53:51 2021**Administrative information****Building Details****Address:** N6, London**Certification tool****Calculation engine:** SBEM**Calculation engine version:** v5.6.b.0**Interface to calculation engine:** DesignBuilder SBEM**Interface to calculation engine version:** v6.1.8**BRUKL compliance check version:** v5.6.b.0**Certifier details****Name:****Telephone number:****Address:** , ,**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	67.8
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	67.8
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	44.9
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	0.19	0.25	"00 Basement - Hair & Beauty Salon_P_7"
Floor	0.25	0.12	0.12	"00 Basement - Gym_S_3"
Roof	0.25	0.15	0.15	"04 Second Floor - Lounge_R_5"
Windows***, roof windows, and rooflights	2.2	1.3	1.3	"00 Basement - Gym_G_11"
Personnel doors	2.2	1.8	1.8	"01 Ground Floor - Corridor_D_18"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
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	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	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.2	4	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

2- Communal ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.15	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1.87	0
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

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			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		Zone	Standard
00 Basement - Gym	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Chefs Office	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Consult	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Cinema room	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Office	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Hair & Beauty Salon	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Barbers	-	-	-	1	-	-	-	-	-		0.85	0.5

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard	
00 Basement - Wellness Shop	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Room	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Rooms 2	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Rooms 1	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Staff Room	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Lounge	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Dinning	-	-	-	1	-	-	-	-	-	0.85	0.5	
04 Second Floor - Lounge	-	-	-	1	-	-	-	-	-	0.85	0.5	
04 Second Floor - Dining	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Meet & Greet	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Cafe	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Admin	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Restaurant	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Manager	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Male Changing room	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Female Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Reception	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Laundry	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - Kitchen	-	-	-	-	-	-	-	-	1	-	N/A	
00 Basement - Kitchen Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - WC	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Change	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - WC	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Change	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - Kosher Kitchen	-	-	-	-	-	-	-	-	1	-	N/A	
00 Basement - Reception	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Ensuite 1	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 2	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 3	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - WC 1	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 4	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Spa	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 6	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 7	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 8	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 9	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 10	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 11	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 12	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 13	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 14	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 15	0.3	-	-	-	-	-	-	-	-	-	N/A	

[illegible]

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
00 Basement - Gym		-	110	-	381
00 Basement - Chefs Office		110	-	-	63
00 Basement - Consult		110	-	-	445
00 Basement - Cinema room		-	110	-	185
00 Basement - Office		110	-	-	107
00 Basement - Comms		110	-	-	39
00 Basement - Hair & Beauty Salon		-	110	110	286
00 Basement - Barbers		-	110	110	284
00 Basement - Wellness Shop		-	110	110	215
02 First Floor - Treatment & Medical Room		110	-	-	127
02 First Floor - Treatment & Medical Rooms 2		110	-	-	221
02 First Floor - Treatment & Medical Rooms 1		110	-	-	152
02 First Floor - Staff Room		-	110	-	57
02 First Floor - Lounge		-	110	-	238
02 First Floor - Dinning		-	110	-	105
04 Second Floor - Lounge		-	110	-	181
04 Second Floor - Dining		-	110	-	118
01 Ground Floor - Meet & Greet		110	-	-	81
01 Ground Floor - Cafe		-	110	-	122
01 Ground Floor - Admin		110	-	-	151
01 Ground Floor - Restaurant		-	110	-	198
01 Ground Floor - Servery		-	110	110	44
01 Ground Floor - Manager		110	-	-	102
00 Basement - Corridor		-	110	-	252
00 Basement - Lift & Stairs		-	110	-	58
00 Basement - Male Changing room		-	110	-	30
00 Basement - Female Change		-	110	-	40
00 Basement - Stairs & Lobby		-	110	-	73
00 Basement - Corridor		-	110	-	89
00 Basement - Lobby		-	110	-	120
00 Basement - Maintenance Store		110	-	-	36
00 Basement - Hydro plant room		110	-	-	54
00 Basement - Sauna		110	-	-	118
00 Basement - Hydro Pool		-	110	-	214
00 Basement - Reception		-	110	110	132
00 Basement - Plant Room		110	-	-	168
00 Basement - Handyman		110	-	-	135
00 Basement - Stair & Lift		-	110	-	62
00 Basement - Laundry		-	110	-	330
00 Basement - Kitchen		-	110	-	293
00 Basement - Kitchen Staff Change		-	110	-	28
00 Basement - WC		-	110	-	33

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
00 Basement - Lobby		-	100	-	38
00 Basement - Change		-	110	-	31
00 Basement - WC		-	110	-	30
00 Basement - Change		-	110	-	32
00 Basement - Equipment Store		110	-	-	46
00 Basement - Kosher Kitchen		-	110	-	111
00 Basement - Kitchen Store		110	-	-	37
00 Basement - Reception		-	110	110	85
02 First Floor - Corridor		-	110	-	479
02 First Floor - Bedroom		-	110	-	316
02 First Floor - Ensuite 1		-	110	-	37
02 First Floor - Ensuite 2		-	110	-	37
02 First Floor - Ensuite 3		-	110	-	40
02 First Floor - Linen		110	-	-	11
02 First Floor - Linen		110	-	-	11
02 First Floor - Store		110	-	-	49
02 First Floor - WC 1		-	110	-	34
02 First Floor - Nurse Station		110	-	-	81
02 First Floor - Stairs & Lift		-	110	-	56
02 First Floor - Ensuite 4		-	110	-	24
02 First Floor - Medication Store		110	-	-	27
02 First Floor - Spa		-	110	-	52
02 First Floor - Hoist		110	-	-	31
02 First Floor - Staff Change		-	110	-	32
02 First Floor - Bedrooms 2		-	110	-	189
02 First Floor - Bedrooms 3		-	110	-	37
02 First Floor - Ensuite 6		-	110	-	37
02 First Floor - Bedrooms 4		-	110	-	216
02 First Floor - Ensuite 7		-	110	-	20
02 First Floor - Ensuite 8		-	110	-	24
02 First Floor - Store & Linen		110	-	-	35
02 First Floor - Ensuite 9		-	110	-	26
02 First Floor - Bedrooms 5		-	110	-	140
02 First Floor - Ensuite 10		-	110	-	37
02 First Floor - Bedrooms 6		-	110	-	129
02 First Floor - Bedrooms 7		-	110	-	43
02 First Floor - Ensuite 11		-	110	-	30
02 First Floor - Ensuite 12		-	110	-	22
02 First Floor - Ensuite 13		-	110	-	23
02 First Floor - Bedrooms 8		-	110	-	51
02 First Floor - Ensuite 14		-	110	-	34
02 First Floor - Bedrooms 9		-	110	-	50
02 First Floor - Bedrooms		-	110	-	62

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name	Standard value	Luminaire	Lamp	Display lamp	
		60	60	22	
02 First Floor - Ensuite 15		-	110	-	21
02 First Floor - Stairs & Lift		-	110	-	58
02 First Floor - Ensuite		-	110	-	37
02 First Floor - WC 2		-	110	-	29
02 First Floor - WC		-	110	-	29
03 Second Floor - Bedroom		-	110	-	99
03 Second Floor - Stairs & Lift		-	110	-	64
03 Second Floor - Corridor		-	110	-	29
03 Second Floor - Bedroom		-	110	-	54
03 Second Floor - Ensuite		-	110	-	26
03 Second Floor - Ensuite		-	110	-	26
03 Second Floor - Bedroom		-	110	-	91
03 Second Floor - Ensuite		-	110	-	23
05 Third Floor - Stair & Lift		-	110	-	60
05 Third Floor - Lobby		-	110	-	28
05 Third Floor - Bedroom		-	110	-	63
05 Third Floor - Bedroom		-	110	-	41
05 Third Floor - Ensuite		-	110	-	19
05 Third Floor - Bedroom		-	110	-	71
05 Third Floor - Ensuite		-	110	-	20
05 Third Floor - Ensuite		-	110	-	19
04 Second Floor - Bedroom		-	110	-	142
04 Second Floor - Corridor		-	110	-	365
04 Second Floor - Bedrooms		-	110	-	166
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Stair & Lift		-	110	-	58
04 Second Floor - Nurse station		110	-	-	89
04 Second Floor - Medical Store		110	-	-	30
04 Second Floor - Spa		-	110	-	62
04 Second Floor - Hoist		110	-	-	33
04 Second Floor - Bedrooms		-	110	-	423
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	23
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Store		110	-	-	15
04 Second Floor - WC		-	110	-	35
04 Second Floor - Ensuite		-	110	-	28
04 Second Floor - Bedrooms		-	110	-	153
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Stair & Lift		-	110	-	59

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
04 Second Floor - Ensuite		-	110	-	24
04 Second Floor - Bedroom		-	110	-	73
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Ensuite		-	110	-	33
04 Second Floor - Bedroom		-	110	-	49
04 Second Floor - WC		-	110	-	35
04 Second Floor - Ensuite		-	110	-	38
04 Second Floor - Bedrooms		-	110	-	56
04 Second Floor - Ensuite		-	110	-	53
01 Ground Floor - Cafe Store		110	-	-	10
01 Ground Floor - Reception		-	110	110	148
01 Ground Floor - Foyer & Central Hub 1		-	110	-	86
01 Ground Floor - Bedroom 1		-	110	-	310
01 Ground Floor - Ensuite 1		-	110	-	24
01 Ground Floor - Stair & lift 1		-	110	-	64
01 Ground Floor - Ensuite 2		-	110	-	40
01 Ground Floor - Linen 1		110	-	-	12
01 Ground Floor - Corridor		-	110	-	352
01 Ground Floor - Linen		110	-	-	11
01 Ground Floor - WC 1		-	110	-	35
01 Ground Floor - Foyer & Central Hub 2		-	110	-	232
01 Ground Floor - Lobby		-	110	-	16
01 Ground Floor - Bedrooms 1		-	110	-	193
01 Ground Floor - Ensuite 3		-	110	-	37
01 Ground Floor - Bin Store		110	-	-	52
01 Ground Floor - Medication Store		110	-	-	26
01 Ground Floor - Stair & lift 2		-	110	-	61
01 Ground Floor - Nurse		110	-	-	81
01 Ground Floor - Ensuite 4		-	110	-	37
01 Ground Floor - Ensuite 5		-	110	-	37
01 Ground Floor - Store		110	-	-	33
01 Ground Floor - WCs 2		-	110	-	68
01 Ground Floor - Ensuite 6		-	110	-	32
01 Ground Floor - Bedrooms 2		-	110	-	43
01 Ground Floor - Bedrooms 3		-	110	-	219
01 Ground Floor - Ensuite 7		-	110	-	23
01 Ground Floor - Ensuite 8		-	110	-	37
01 Ground Floor - Ensuite 9		-	110	-	23
01 Ground Floor - Ensuite 10		-	110	-	26
01 Ground Floor - Ensuite		-	110	-	38
01 Ground Floor - Stair & Lift		-	110	-	57
01 Ground Floor - WC		-	110	-	28

General lighting and display lighting		Luminous efficacy [lm/W]		
Zone name		Luminaire	Lamp	Display lamp
	Standard value	60	60	22
01 Ground Floor - Bedroom		-	110	-
				52

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 Basement - Gym	NO (-58.2%)	NO
00 Basement - Chefs Office	N/A	N/A
00 Basement - Consult	N/A	N/A
00 Basement - Cinema room	N/A	N/A
00 Basement - Office	N/A	N/A
00 Basement - Comms	N/A	N/A
00 Basement - Hair & Beauty Salon	N/A	N/A
00 Basement - Barbers	N/A	N/A
00 Basement - Wellness Shop	N/A	N/A
02 First Floor - Treatment & Medical Room	NO (-70.8%)	NO
02 First Floor - Treatment & Medical Rooms 2	NO (-71.8%)	NO
02 First Floor - Treatment & Medical Rooms 1	NO (-64.6%)	NO
02 First Floor - Staff Room	NO (-76.7%)	NO
02 First Floor - Lounge	NO (-50.6%)	NO
02 First Floor - Dinning	NO (-65.1%)	NO
04 Second Floor - Lounge	NO (-39.4%)	NO
04 Second Floor - Dining	NO (-83.7%)	NO
01 Ground Floor - Meet & Greet	NO (-87%)	NO
01 Ground Floor - Cafe	NO (-72.8%)	NO
01 Ground Floor - Admin	NO (-61.5%)	NO
01 Ground Floor - Restaurant	NO (-53%)	NO
01 Ground Floor - Servery	N/A	N/A
01 Ground Floor - Manager	NO (-12.3%)	NO
00 Basement - Sauna	N/A	N/A
00 Basement - Hydro Pool	N/A	N/A
00 Basement - Reception	N/A	N/A
00 Basement - Handyman	N/A	N/A
00 Basement - Reception	N/A	N/A
02 First Floor - Bedroom	NO (-66.7%)	NO
02 First Floor - Ensuite 1	N/A	N/A
02 First Floor - Ensuite 2	N/A	N/A
02 First Floor - Ensuite 3	N/A	N/A
02 First Floor - Nurse Station	N/A	N/A
02 First Floor - Ensuite 4	N/A	N/A
02 First Floor - Bedrooms 2	NO (-74%)	NO
02 First Floor - Bedrooms 3	N/A	N/A
02 First Floor - Ensuite 6	N/A	N/A
02 First Floor - Bedrooms 4	NO (-68.9%)	NO
02 First Floor - Ensuite 7	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
02 First Floor - Ensuite 8	N/A	N/A
02 First Floor - Ensuite 9	N/A	N/A
02 First Floor - Bedrooms 5	NO (-52.1%)	NO
02 First Floor - Ensuite 10	N/A	N/A
02 First Floor - Bedrooms 6	NO (-67.9%)	NO
02 First Floor - Bedrooms 7	NO (-86%)	NO
02 First Floor - Ensuite 11	NO (-87.3%)	NO
02 First Floor - Ensuite 12	N/A	N/A
02 First Floor - Ensuite 13	N/A	N/A
02 First Floor - Bedrooms 8	NO (-53.8%)	NO
02 First Floor - Ensuite 14	NO (-85.7%)	NO
02 First Floor - Bedrooms 9	NO (-80.3%)	NO
02 First Floor - Bedrooms	NO (-70.7%)	NO
02 First Floor - Ensuite 15	N/A	N/A
02 First Floor - Ensuite	N/A	N/A
03 Second Floor - Bedroom	NO (-71.7%)	NO
03 Second Floor - Bedroom	NO (-70.7%)	NO
03 Second Floor - Ensuite	N/A	N/A
03 Second Floor - Ensuite	N/A	N/A
03 Second Floor - Bedroom	NO (-83%)	NO
03 Second Floor - Ensuite	N/A	N/A
05 Third Floor - Bedroom	NO (-83%)	NO
05 Third Floor - Bedroom	NO (-86.2%)	NO
05 Third Floor - Ensuite	NO (-73.9%)	NO
05 Third Floor - Bedroom	NO (-76.7%)	NO
05 Third Floor - Ensuite	NO (-72%)	NO
05 Third Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-78.5%)	NO
04 Second Floor - Bedrooms	NO (-83%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Nurse station	N/A	N/A
04 Second Floor - Bedrooms	NO (-77%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedrooms	NO (-79%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-82.4%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-90.1%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedrooms	NO (-81.2%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
04 Second Floor - Ensuite	NO (-90.7%)	NO
01 Ground Floor - Reception	NO (-71%)	NO
01 Ground Floor - Bedroom 1	NO (-42.4%)	NO
01 Ground Floor - Ensuite 1	N/A	N/A
01 Ground Floor - Ensuite 2	N/A	N/A
01 Ground Floor - Bedrooms 1	NO (-75.4%)	NO
01 Ground Floor - Ensuite 3	N/A	N/A
01 Ground Floor - Nurse	N/A	N/A
01 Ground Floor - Ensuite 4	N/A	N/A
01 Ground Floor - Ensuite 5	N/A	N/A
01 Ground Floor - Ensuite 6	NO (-82.6%)	NO
01 Ground Floor - Bedrooms 2	NO (-92.1%)	NO
01 Ground Floor - Bedrooms 3	NO (-62.4%)	NO
01 Ground Floor - Ensuite 7	N/A	N/A
01 Ground Floor - Ensuite 8	N/A	N/A
01 Ground Floor - Ensuite 9	N/A	N/A
01 Ground Floor - Ensuite 10	N/A	N/A
01 Ground Floor - Ensuite	N/A	N/A
01 Ground Floor - Bedroom	NO (-52.4%)	NO

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?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	5680.3	5680.3
External area [m ²]	6680.4	6680.4
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	1852.68	3500.88
Average U-value [W/m ² K]	0.28	0.52
Alpha value* [%]	17.79	14

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

Building Use

% Area	Building Type
2	A1/A2 Retail/Financial and Professional services A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups B8 Storage or Distribution C1 Hotels
90	C2 Residential Institutions: Hospitals and Care Homes
3	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
4	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	8.86	14.96
Cooling	3.42	5.82
Auxiliary	11.24	9.89
Lighting	12.03	18.3
Hot water	80.06	125.22
Equipment*	52.48	52.48
TOTAL **	115.61	174.2

* 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]	258.24	381.3
Primary energy* [kWh/m ²]	263.09	397.11
Total emissions [kg/m ²]	44.9	67.8

* 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] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	9	308.9	0.6	17.7	11.6	4.12	4.86	4.2	6.5
	Notional	25	389.6	2.9	30.1	10.5	2.43	3.6	----	----
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Natural Gas										
	Actual	115.4	128.5	10.8	0	11.1	2.96	0	3.15	0
	Notional	156.3	217	17.9	0	9.8	2.43	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	"00 Basement - Gym_W_10"
Floor	0.2	0.12	"00 Basement - Gym_S_3"
Roof	0.15	0.15	"04 Second Floor - Lounge_R_5"
Windows, roof windows, and rooflights	1.5	1.3	"00 Basement - Gym_G_11"
Personnel doors	1.5	1.8	"01 Ground Floor - Corridor_D_18"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m²K)]		U _{i-Min} = Minimum individual element U-values [W/(m²K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	5

APPENDIX H: CO₂ EMISSIONS SUMMARY – BE CLEAN

CO₂ Emissions at Be Clean StageTable 1: Regulated CO₂ Emissions Using SAP 2012 Carbon Factors

Unit Type Description	Unit Floor Area	Building Emissions Rate	Target Emissions Rate	Building Emissions Rate	Target Emissions Rate	Emissions Rate Improvement Over <i>Be Lean</i>
Non-Domestic	m ²	kg CO ₂ /m ² /year	kg CO ₂ /m ² /year	kg CO ₂ /year	kg CO ₂ /year	
Mary Feilding Guild Care Home	5,680	44.90	77.30	255,045	439,087	13.5%

Table 2: Regulated CO₂ Emissions Using SAP 10 Carbon Factors

Unit Type Description	Unit Floor Area	Building Emissions Rate	Target Emissions Rate	Building Emissions Rate	Target Emissions Rate	Emissions Rate Improvement Over <i>Be Lean</i>
Non-Domestic	m ²	kg CO ₂ /m ² /year	kg CO ₂ /m ² /year	kg CO ₂ /year	kg CO ₂ /year	
Mary Feilding Guild Care Home	5,680	25.40	66.10	144,280	375,468	32.2%

APPENDIX I: RENEWABLE AND LOW CARBON TECHNOLOGY FEASIBILITY

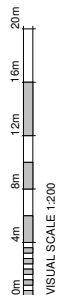
Appendix I - Low Carbon and Renewable Energy Technology Feasibility Study

Feasibility Study Table									
Technology	Sufficient Energy Generated?	Payback	Land Use Issues	Local Planning Requirements	Noise	Carbon Payback	Available Grants	Feasible	Reason not Feasible or Selected
Combined Heat & Power (CHP)	No	Medium	Air quality in residential area	Encouraged for large scale developments	In Plant Room	Yes	Tax Relief - ECA, RHI	No	Not selected because it is not policy compliant technology.
Biomass	Yes	None	Air quality in residential area	Encouraged for large scale developments	In Plant Room	Yes	RHI; Bio-energy Capital Grants Scheme	No	Not selected due to air quality concerns
Solar Thermal	Yes	High	Sufficient roof space required	Encouraged	None	~2 years	RHI	Yes	Not selected because PV has been preferred.
Solar Photovoltaic (PV)	Yes	Very High	Sufficient roof space required	Encouraged	None	2-5 years	FIT longer available since March 2019.	Yes	Selected and 14kWp specified for the development
Ground Source Heat Pumps (GSHPs)	Yes	Very High	Requires large area for coils or borehole	Encouraged	None	Low	RHI	No	Not selected due to complexity and high cost associated with the ground excavation work.
Air Source Heat Pumps (ASHPs)	Yes	Very High	Visual intrusion of external units	Encouraged	Low	Low	RHI	Yes	Selected and is providing the space heating, cooling and majority of hot water requirements.
Wind Power	No	Low	Urban Area - low and turbulent wind; Visual impact	Encouraged for large scale developments	Yes	~1 year	FIT longer available since March 2019.	No	Not selected due to insufficient wind speeds in area
Hydro Power	No	Medium	Requires suitable water resource; Visual impact	None	Low	~1 year	FIT longer available since March 2019.	No	Not selected due to high cost and insufficient water levels during some periods of the year

RHI - Renewable Heat Incentive

FIT - Feed in Tariff

APPENDIX J: PV LAYOUT



PWA
ARCHITECTS



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CLIENT
Highgate Care Ltd

PROJECT
New Build 70 Bed Nursing and Convalescent
Care Home With Well Being and
Physiotherapy Centre at: 1 View Road /
103-107 North Hill, Highgate

DRAWING TITLE
Proposed Roof Plan

ANNING

776

200 @ A1

100

A

APPENDIX K: BRUKL – *BE GREEN* & GLA CARBON EMISSION REPORTING

Project name

Highgate Care Home**As designed****Date:** Thu Nov 18 14:10:35 2021**Administrative information****Building Details****Address:** N6, London**Certification tool****Calculation engine:** SBEM**Calculation engine version:** v5.6.b.0**Interface to calculation engine:** DesignBuilder SBEM**Interface to calculation engine version:** v6.1.8**BRUKL compliance check version:** v5.6.b.0**Certifier details****Name:****Telephone number:****Address:** , ,**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	67.8
Target CO ₂ emission rate (TER), kgCO ₂ /m ² .annum	67.8
Building CO ₂ emission rate (BER), kgCO ₂ /m ² .annum	43.9
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	0.19	0.25	"00 Basement - Hair & Beauty Salon_P_7"
Floor	0.25	0.12	0.12	"00 Basement - Gym_S_3"
Roof	0.25	0.15	0.15	"04 Second Floor - Lounge_R_5"
Windows***, roof windows, and rooflights	2.2	1.3	1.3	"00 Basement - Gym_G_11"
Personnel doors	2.2	1.8	1.8	"01 Ground Floor - Corridor_D_18"
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"
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	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	NO
Whole building electric power factor achieved by power factor correction	>0.95

1- VRF

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	4.2	4	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

2- Communal ASHP

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	3.15	-	-	-	-
Standard value	2.5*	N/A	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					YES
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps. For types <=12 kW output, refer to EN 14825 for limiting standards.					

1- Project DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1.87	0
Standard value	2*	N/A
* Standard shown is for all types except absorption and gas engine heat pumps.		

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			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1		Zone	Standard
00 Basement - Gym	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Chefs Office	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Consult	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Cinema room	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Office	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Hair & Beauty Salon	-	-	-	1	-	-	-	-	-		0.85	0.5
00 Basement - Barbers	-	-	-	1	-	-	-	-	-		0.85	0.5

Zone name	SFP [W/(l/s)]										HR efficiency	
ID of system type	A	B	C	D	E	F	G	H	I			
Standard value	0.3	1.1	0.5	1.9	1.6	0.5	1.1	0.5	1	Zone	Standard	
00 Basement - Wellness Shop	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Room	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Rooms 2	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Treatment & Medical Rooms 1	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Staff Room	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Lounge	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Dinning	-	-	-	1	-	-	-	-	-	0.85	0.5	
04 Second Floor - Lounge	-	-	-	1	-	-	-	-	-	0.85	0.5	
04 Second Floor - Dining	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Meet & Greet	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Cafe	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Admin	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Restaurant	-	-	-	1	-	-	-	-	-	0.85	0.5	
01 Ground Floor - Manager	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Male Changing room	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Female Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Reception	-	-	-	1	-	-	-	-	-	0.85	0.5	
00 Basement - Laundry	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - Kitchen	-	-	-	-	-	-	-	-	1	-	N/A	
00 Basement - Kitchen Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - WC	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Change	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - WC	-	-	0.3	-	-	-	-	-	-	-	N/A	
00 Basement - Change	0.3	-	-	-	-	-	-	-	-	-	N/A	
00 Basement - Kosher Kitchen	-	-	-	-	-	-	-	-	1	-	N/A	
00 Basement - Reception	-	-	-	1	-	-	-	-	-	0.85	0.5	
02 First Floor - Ensuite 1	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 2	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 3	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - WC 1	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 4	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Spa	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Staff Change	-	-	0.3	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 6	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 7	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 8	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 9	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 10	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 11	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 12	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 13	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 14	0.3	-	-	-	-	-	-	-	-	-	N/A	
02 First Floor - Ensuite 15	0.3	-	-	-	-	-	-	-	-	-	N/A	

General lighting and display lighting		Luminous efficacy [lm/W]			
Zone name		Luminaire	Lamp	Display lamp	General lighting [W]
	Standard value	60	60	22	
00 Basement - Gym		-	110	-	381
00 Basement - Chefs Office		110	-	-	63
00 Basement - Consult		110	-	-	445
00 Basement - Cinema room		-	110	-	185
00 Basement - Office		110	-	-	107
00 Basement - Comms		110	-	-	39
00 Basement - Hair & Beauty Salon		-	110	110	286
00 Basement - Barbers		-	110	110	284
00 Basement - Wellness Shop		-	110	110	215
02 First Floor - Treatment & Medical Room		110	-	-	127
02 First Floor - Treatment & Medical Rooms 2		110	-	-	221
02 First Floor - Treatment & Medical Rooms 1		110	-	-	152
02 First Floor - Staff Room		-	110	-	57
02 First Floor - Lounge		-	110	-	238
02 First Floor - Dinning		-	110	-	105
04 Second Floor - Lounge		-	110	-	181
04 Second Floor - Dining		-	110	-	118
01 Ground Floor - Meet & Greet		110	-	-	81
01 Ground Floor - Cafe		-	110	-	122
01 Ground Floor - Admin		110	-	-	151
01 Ground Floor - Restaurant		-	110	-	198
01 Ground Floor - Servery		-	110	110	44
01 Ground Floor - Manager		110	-	-	102
00 Basement - Corridor		-	110	-	252
00 Basement - Lift & Stairs		-	110	-	58
00 Basement - Male Changing room		-	110	-	30
00 Basement - Female Change		-	110	-	40
00 Basement - Stairs & Lobby		-	110	-	73
00 Basement - Corridor		-	110	-	89
00 Basement - Lobby		-	110	-	120
00 Basement - Maintenance Store		110	-	-	36
00 Basement - Hydro plant room		110	-	-	54
00 Basement - Sauna		110	-	-	118
00 Basement - Hydro Pool		-	110	-	214
00 Basement - Reception		-	110	110	132
00 Basement - Plant Room		110	-	-	168
00 Basement - Handyman		110	-	-	135
00 Basement - Stair & Lift		-	110	-	62
00 Basement - Laundry		-	110	-	330
00 Basement - Kitchen		-	110	-	293
00 Basement - Kitchen Staff Change		-	110	-	28
00 Basement - WC		-	110	-	33

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
00 Basement - Lobby		-	100	-	38
00 Basement - Change		-	110	-	31
00 Basement - WC		-	110	-	30
00 Basement - Change		-	110	-	32
00 Basement - Equipment Store		110	-	-	46
00 Basement - Kosher Kitchen		-	110	-	111
00 Basement - Kitchen Store		110	-	-	37
00 Basement - Reception		-	110	110	85
02 First Floor - Corridor		-	110	-	479
02 First Floor - Bedroom		-	110	-	316
02 First Floor - Ensuite 1		-	110	-	37
02 First Floor - Ensuite 2		-	110	-	37
02 First Floor - Ensuite 3		-	110	-	40
02 First Floor - Linen		110	-	-	11
02 First Floor - Linen		110	-	-	11
02 First Floor - Store		110	-	-	49
02 First Floor - WC 1		-	110	-	34
02 First Floor - Nurse Station		110	-	-	81
02 First Floor - Stairs & Lift		-	110	-	56
02 First Floor - Ensuite 4		-	110	-	24
02 First Floor - Medication Store		110	-	-	27
02 First Floor - Spa		-	110	-	52
02 First Floor - Hoist		110	-	-	31
02 First Floor - Staff Change		-	110	-	32
02 First Floor - Bedrooms 2		-	110	-	189
02 First Floor - Bedrooms 3		-	110	-	37
02 First Floor - Ensuite 6		-	110	-	37
02 First Floor - Bedrooms 4		-	110	-	216
02 First Floor - Ensuite 7		-	110	-	20
02 First Floor - Ensuite 8		-	110	-	24
02 First Floor - Store & Linen		110	-	-	35
02 First Floor - Ensuite 9		-	110	-	26
02 First Floor - Bedrooms 5		-	110	-	140
02 First Floor - Ensuite 10		-	110	-	37
02 First Floor - Bedrooms 6		-	110	-	129
02 First Floor - Bedrooms 7		-	110	-	43
02 First Floor - Ensuite 11		-	110	-	30
02 First Floor - Ensuite 12		-	110	-	22
02 First Floor - Ensuite 13		-	110	-	23
02 First Floor - Bedrooms 8		-	110	-	51
02 First Floor - Ensuite 14		-	110	-	34
02 First Floor - Bedrooms 9		-	110	-	50
02 First Floor - Bedrooms		-	110	-	62

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
02 First Floor - Ensuite 15		-	110	-	21
02 First Floor - Stairs & Lift		-	110	-	58
02 First Floor - Ensuite		-	110	-	37
02 First Floor - WC 2		-	110	-	29
02 First Floor - WC		-	110	-	29
03 Second Floor - Bedroom		-	110	-	99
03 Second Floor - Stairs & Lift		-	110	-	64
03 Second Floor - Corridor		-	110	-	29
03 Second Floor - Bedroom		-	110	-	54
03 Second Floor - Ensuite		-	110	-	26
03 Second Floor - Ensuite		-	110	-	26
03 Second Floor - Bedroom		-	110	-	91
03 Second Floor - Ensuite		-	110	-	23
05 Third Floor - Stair & Lift		-	110	-	60
05 Third Floor - Lobby		-	110	-	28
05 Third Floor - Bedroom		-	110	-	63
05 Third Floor - Bedroom		-	110	-	41
05 Third Floor - Ensuite		-	110	-	19
05 Third Floor - Bedroom		-	110	-	71
05 Third Floor - Ensuite		-	110	-	20
05 Third Floor - Ensuite		-	110	-	19
04 Second Floor - Bedroom		-	110	-	142
04 Second Floor - Corridor		-	110	-	365
04 Second Floor - Bedrooms		-	110	-	166
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Stair & Lift		-	110	-	58
04 Second Floor - Nurse station		110	-	-	89
04 Second Floor - Medical Store		110	-	-	30
04 Second Floor - Spa		-	110	-	62
04 Second Floor - Hoist		110	-	-	33
04 Second Floor - Bedrooms		-	110	-	423
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	23
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Store		110	-	-	15
04 Second Floor - WC		-	110	-	35
04 Second Floor - Ensuite		-	110	-	28
04 Second Floor - Bedrooms		-	110	-	153
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Ensuite		-	110	-	41
04 Second Floor - Stair & Lift		-	110	-	59

General lighting and display lighting		Luminous efficacy [lm/W]			General lighting [W]
Zone name		Luminaire	Lamp	Display lamp	
	Standard value	60	60	22	
04 Second Floor - Ensuite		-	110	-	24
04 Second Floor - Bedroom		-	110	-	73
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Ensuite		-	110	-	26
04 Second Floor - Ensuite		-	110	-	33
04 Second Floor - Bedroom		-	110	-	49
04 Second Floor - WC		-	110	-	35
04 Second Floor - Ensuite		-	110	-	38
04 Second Floor - Bedrooms		-	110	-	56
04 Second Floor - Ensuite		-	110	-	53
01 Ground Floor - Cafe Store		110	-	-	10
01 Ground Floor - Reception 1		-	110	110	59
01 Ground Floor - Foyer & Central Hub 1		-	110	-	86
01 Ground Floor - Bedroom 1		-	110	-	310
01 Ground Floor - Ensuite 1		-	110	-	24
01 Ground Floor - Stair & lift 1		-	110	-	64
01 Ground Floor - Ensuite 2		-	110	-	40
01 Ground Floor - Linen 1		110	-	-	12
01 Ground Floor - Corridor		-	110	-	352
01 Ground Floor - Linen		110	-	-	11
01 Ground Floor - WC 1		-	110	-	35
01 Ground Floor - Reception		-	110	-	232
01 Ground Floor - Lobby		-	110	-	16
01 Ground Floor - Bedrooms 1		-	110	-	193
01 Ground Floor - Ensuite 3		-	110	-	37
01 Ground Floor - Bin Store		110	-	-	52
01 Ground Floor - Medication Store		110	-	-	26
01 Ground Floor - Stair & lift 2		-	110	-	61
01 Ground Floor - Nurse		110	-	-	81
01 Ground Floor - Ensuite 4		-	110	-	37
01 Ground Floor - Ensuite 5		-	110	-	37
01 Ground Floor - Store		110	-	-	33
01 Ground Floor - WCs 2		-	110	-	68
01 Ground Floor - Ensuite 6		-	110	-	32
01 Ground Floor - Bedrooms 2		-	110	-	43
01 Ground Floor - Bedrooms 3		-	110	-	219
01 Ground Floor - Ensuite 7		-	110	-	23
01 Ground Floor - Ensuite 8		-	110	-	37
01 Ground Floor - Ensuite 9		-	110	-	23
01 Ground Floor - Ensuite 10		-	110	-	26
01 Ground Floor - Ensuite		-	110	-	38
01 Ground Floor - Stair & Lift		-	110	-	57
01 Ground Floor - WC		-	110	-	28

General lighting and display lighting		Luminous efficacy [lm/W]		
Zone name		Luminaire	Lamp	Display lamp
	Standard value	60	60	22
01 Ground Floor - Bedroom		-	110	-
				52

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 Basement - Gym	NO (-58.2%)	NO
00 Basement - Chefs Office	N/A	N/A
00 Basement - Consult	N/A	N/A
00 Basement - Cinema room	N/A	N/A
00 Basement - Office	N/A	N/A
00 Basement - Comms	N/A	N/A
00 Basement - Hair & Beauty Salon	N/A	N/A
00 Basement - Barbers	N/A	N/A
00 Basement - Wellness Shop	N/A	N/A
02 First Floor - Treatment & Medical Room	NO (-70.8%)	NO
02 First Floor - Treatment & Medical Rooms 2	NO (-71.8%)	NO
02 First Floor - Treatment & Medical Rooms 1	NO (-64.6%)	NO
02 First Floor - Staff Room	NO (-76.7%)	NO
02 First Floor - Lounge	NO (-50.6%)	NO
02 First Floor - Dinning	NO (-65.1%)	NO
04 Second Floor - Lounge	NO (-39.4%)	NO
04 Second Floor - Dining	NO (-83.7%)	NO
01 Ground Floor - Meet & Greet	NO (-87%)	NO
01 Ground Floor - Cafe	NO (-72.8%)	NO
01 Ground Floor - Admin	NO (-61.5%)	NO
01 Ground Floor - Restaurant	NO (-53%)	NO
01 Ground Floor - Servery	N/A	N/A
01 Ground Floor - Manager	NO (-12.3%)	NO
00 Basement - Sauna	N/A	N/A
00 Basement - Hydro Pool	N/A	N/A
00 Basement - Reception	N/A	N/A
00 Basement - Handyman	N/A	N/A
00 Basement - Reception	N/A	N/A
02 First Floor - Bedroom	NO (-66.7%)	NO
02 First Floor - Ensuite 1	N/A	N/A
02 First Floor - Ensuite 2	N/A	N/A
02 First Floor - Ensuite 3	N/A	N/A
02 First Floor - Nurse Station	N/A	N/A
02 First Floor - Ensuite 4	N/A	N/A
02 First Floor - Bedrooms 2	NO (-74%)	NO
02 First Floor - Bedrooms 3	N/A	N/A
02 First Floor - Ensuite 6	N/A	N/A
02 First Floor - Bedrooms 4	NO (-68.9%)	NO
02 First Floor - Ensuite 7	N/A	N/A

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
02 First Floor - Ensuite 8	N/A	N/A
02 First Floor - Ensuite 9	N/A	N/A
02 First Floor - Bedrooms 5	NO (-52.1%)	NO
02 First Floor - Ensuite 10	N/A	N/A
02 First Floor - Bedrooms 6	NO (-67.9%)	NO
02 First Floor - Bedrooms 7	NO (-86%)	NO
02 First Floor - Ensuite 11	NO (-87.3%)	NO
02 First Floor - Ensuite 12	N/A	N/A
02 First Floor - Ensuite 13	N/A	N/A
02 First Floor - Bedrooms 8	NO (-53.8%)	NO
02 First Floor - Ensuite 14	NO (-85.7%)	NO
02 First Floor - Bedrooms 9	NO (-80.3%)	NO
02 First Floor - Bedrooms	NO (-70.7%)	NO
02 First Floor - Ensuite 15	N/A	N/A
02 First Floor - Ensuite	N/A	N/A
03 Second Floor - Bedroom	NO (-71.7%)	NO
03 Second Floor - Bedroom	NO (-70.7%)	NO
03 Second Floor - Ensuite	N/A	N/A
03 Second Floor - Ensuite	N/A	N/A
03 Second Floor - Bedroom	NO (-83%)	NO
03 Second Floor - Ensuite	N/A	N/A
05 Third Floor - Bedroom	NO (-83%)	NO
05 Third Floor - Bedroom	NO (-86.2%)	NO
05 Third Floor - Ensuite	NO (-73.9%)	NO
05 Third Floor - Bedroom	NO (-76.7%)	NO
05 Third Floor - Ensuite	NO (-72%)	NO
05 Third Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-78.5%)	NO
04 Second Floor - Bedrooms	NO (-83%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Nurse station	N/A	N/A
04 Second Floor - Bedrooms	NO (-77%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedrooms	NO (-79%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-82.4%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedroom	NO (-90.1%)	NO
04 Second Floor - Ensuite	N/A	N/A
04 Second Floor - Bedrooms	NO (-81.2%)	NO

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
04 Second Floor - Ensuite	NO (-90.7%)	NO
01 Ground Floor - Reception 1	NO (-71%)	NO
01 Ground Floor - Bedroom 1	NO (-42.4%)	NO
01 Ground Floor - Ensuite 1	N/A	N/A
01 Ground Floor - Ensuite 2	N/A	N/A
01 Ground Floor - Bedrooms 1	NO (-75.4%)	NO
01 Ground Floor - Ensuite 3	N/A	N/A
01 Ground Floor - Nurse	N/A	N/A
01 Ground Floor - Ensuite 4	N/A	N/A
01 Ground Floor - Ensuite 5	N/A	N/A
01 Ground Floor - Ensuite 6	NO (-82.6%)	NO
01 Ground Floor - Bedrooms 2	NO (-92.1%)	NO
01 Ground Floor - Bedrooms 3	NO (-62.4%)	NO
01 Ground Floor - Ensuite 7	N/A	N/A
01 Ground Floor - Ensuite 8	N/A	N/A
01 Ground Floor - Ensuite 9	N/A	N/A
01 Ground Floor - Ensuite 10	N/A	N/A
01 Ground Floor - Ensuite	N/A	N/A
01 Ground Floor - Bedroom	NO (-52.4%)	NO

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?	NO
Is evidence of such assessment available as a separate submission?	NO
Are any such measures included in the proposed design?	NO

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional
Area [m ²]	5680.3	5680.3
External area [m ²]	6680.4	6680.4
Weather	LON	LON
Infiltration [m ³ /hm ² @ 50Pa]	5	3
Average conductance [W/K]	1852.68	3500.88
Average U-value [W/m ² K]	0.28	0.52
Alpha value* [%]	17.79	14

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

Building Use

% Area	Building Type
2	A1/A2 Retail/Financial and Professional services A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways B1 Offices and Workshop businesses B2 to B7 General Industrial and Special Industrial Groups B8 Storage or Distribution C1 Hotels
90	C2 Residential Institutions: Hospitals and Care Homes
3	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
4	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	8.87	14.95
Cooling	3.42	5.82
Auxiliary	11.24	9.89
Lighting	11.95	18.21
Hot water	80.06	125.22
Equipment*	52.31	52.31
TOTAL **	115.55	174.09

* 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	1.86	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]	257.91	380.4
Primary energy* [kWh/m ²]	262.89	396.79
Total emissions [kg/m ²]	43.9	67.8

* 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 SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER	
[ST] Split or multi-split system, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Electricity										
	Actual	9	308.9	0.6	17.7	11.6	4.12	4.86	4.2	6.5
	Notional	25	389.6	2.9	30.1	10.5	2.43	3.6	----	----
[ST] Central heating using water: radiators, [HS] Heat pump (electric): air source, [HFT] Electricity, [CFT] Natural Gas										
	Actual	115.6	127.9	10.9	0	11.1	2.96	0	3.15	0
	Notional	156.2	216	17.9	0	9.8	2.43	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	"00 Basement - Gym_W_10"
Floor	0.2	0.12	"00 Basement - Gym_S_3"
Roof	0.15	0.15	"04 Second Floor - Lounge_R_5"
Windows, roof windows, and rooflights	1.5	1.3	"00 Basement - Gym_G_11"
Personnel doors	1.5	1.8	"01 Ground Floor - Corridor_D_18"
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"
U _{i-Typ} = Typical individual element U-values [W/(m²K)]		U _{i-Min} = Minimum individual element U-values [W/(m²K)]	
* There might be more than one surface where the minimum U-value occurs.			

Air Permeability	Typical value	This building
m³/(h.m²) at 50 Pa	5	5

The significant third component at the right illustrates the information on the 'a green' on only consumed on figures and the 'be green' DCM.

DOMESTIC ENERGY CONSUMPTION AND CO₂ ANALYSIS[illegible][illegible]NON-DOMESTIC ENERGY CONSUMPTION AND CO₂ ANALYSIS[illegible][illegible]

SITE-WIDE ENERGY CONSUMPTION AND CO 2 ANALYSIS

[illegible]

APPENDIX L: CO₂ EMISSIONS SUMMARY – *BE GREEN*

CO₂ Emissions at Be Green StageTable 1: Regulated CO₂ Emissions Using SAP 2012 Carbon Factors

Unit Type Description	Unit Floor Area	Building Emissions Rate	Target Emissions Rate	Building Emissions Rate	Target Emissions Rate	Emissions Rate Improvement Over <i>Be Green</i>
Non-Domestic	m ²	kg CO ₂ /m ² /year	kg CO ₂ /m ² /year	kg CO ₂ /year	kg CO ₂ /year	
Mary Feilding Guild Care Home	5,680	43.90	77.30	249,365	439,087	1.3%

Table 2: Regulated CO₂ Emissions Using SAP 10 Carbon Factors

Unit Type Description	Unit Floor Area	Building Emissions Rate	Target Emissions Rate	Building Emissions Rate	Target Emissions Rate	Emissions Rate Improvement Over <i>Be Green</i>
Non-Domestic	m ²	kg CO ₂ /m ² /year	kg CO ₂ /m ² /year	kg CO ₂ /year	kg CO ₂ /year	
Mary Feilding Guild Care Home	5,680	25.00	66.10	142,008	375,468	0.6%