County House
Conway Mews, Camden

Energy Statement

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County House, Conway Mews

Energy Statement

Client Name:

Document Reference: 20-E049-003

Project Number: 20-E049

Quality Assurance Approval Status

This document has been prepared and checked in accordance with Ensphere Group Ltd's Quality Management System.

Issue:	Version:	Prepared by:	Reviewed by:	Date:
Final	V3	Pete Jeavons	Pete Jeavons	May 2020

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1. Executive Summary

1.1 This Energy Statement presents the energy strategy for a proposed scheme at County House, Conway Mews, London, W1T 6AA.

1.2 Development proposals include the change of use of basement, ground and first floors of County House, Conway Mews, London, W1T 6AA from accountancy school (Class D1) to office (Class B1a).

1.3 Given that the Application is for a “change of use” and that the proposed physical alterations are internal and largely limited to the allocation of space for office use, opportunities for incorporating technologies are reduced.

1.4 Nevertheless, it is proposed to upgrade lighting to LED tubes, incorporation of sensors and controls to further reduce lightly and heating requirements.

1.5 Overall, the proposed energy strategy is considered consistent with the National Planning Policy Framework, London Plan and policies of the Council. When implemented, the scheme will provide an efficient and low carbon development.

2. Introduction

2.1 Ensphere Group Ltd was commissioned to produce an Energy Statement for a proposed change of use at County House, Conway Mews, London, W1T 6AA.

Site and Surroundings

2.2 This report has been prepared in support of a land use swap comprising:

- A planning and listed building consent application for the change of use of Boston House, 36-38 Fitzroy Square, London, W1T 6EY from office (Class B1a) to a non-residential education institution (Class D1) including internal alterations, and
- A planning application for the change of use of basement, ground and first floors of County House, Conway Mews, London, W1T 6AA from accountancy school (Class D1) to office (Class B1a)

Boston House Site Description

2.3 Boston House is located on the south side of Fitzroy Square which is a virtually intact Georgian square fronted by terraced townhouses forming a single formal composition and with a large central private garden.

2.4 It consists of a mid-terrace building which is centrally located to the south of Fitzroy Square, in between the junctions with Fitzroy Street to the east and Conway Street to the west. The building is part of a symmetrical terrace formerly known as the London Foot Hospital and is formed of four storeys plus basement to provide a total of five levels of accommodation.

2.5 The building has an established B1 use comprising 2131 sqm of floorspace. It is currently vacant but was most recently occupied (January 2019) by an architect's firm on the lower ground to first floors and the University College of London to the second and third floors. It is understood that when occupied the building employed approximately 200 people within the building.

2.6 Surrounding buildings on the square are predominantly office use with a range of other uses including residential. The immediate neighbouring buildings include a single residential dwelling at no 34-35 Fitzroy Square (Swiss House) whilst the property on the opposite side at no.39 (Kenana House) is occupied by James Lewis and Co, a property land agent and valuers. Further along the terrace at no.40 is an advanced hair studio clinic.

2.7 Boston House, along with the terraces on the south and east side of Fitzroy Square are Grade I listed. However, to give further background to Boston House, the building was reconstructed as a replica in terms of its street façade with modern offices constructed behind the façade following extensive bomb damage during World War II. Therefore, whilst the façade of Boston

House is of exceptional historic and architectural special interest, the interior of Boston House is now completely modern redevelopment. The terraces to the west and north side of the square are grade II* listed.

2.8 The application site is also located within the Fitzroy Square Conservation area which lies to the south west of the Borough of Camden. The Fitzroy Square Conservation Area Appraisal describes the built environment of the Conservation Area as 'an area of urban character that is consistent with its central London location. The street pattern of the area is composed of a broadly north-south and east-west orientated grid of relatively narrow streets. The main focus of the area is Fitzroy Square'. Regarding the prevailing uses the appraisal identifies that the area was originally developed as a residential district, but that its status as a residential area diminished during the later 19th century leading to a creation of a mix of uses including offices, flats, shops and commercial uses.

2.9 The site is located within 500 metres of Kings Cross and is situated in an area identified by the Camden Local Plan as 'The Knowledge Quarter', a cluster of academic, cultural, research, scientific and media organisations large and small, all within a one mile radius of King's Cross, which falls partly in Central London. The site is also located within the Fitzrovia Area Action Plan which seeks to help shape the future of Fitzrovia and the western part of Bloomsbury Ward, in which the site is located.

2.10 The application site has a PTAL rating of 6B (Best) and is in close proximity to Euston Road and Tottenham Court Road with excellent access to public transport. This includes several bus routes along these roads as well as the London Underground Stations of Warren Street, Great Portland Street and Goodge Street all within a short walking distance from the site

County House Site Description

2.11 County House is a 1960's basement plus five storey building located within an urban block formed by terraced buildings on the south side of Fitzroy Square, and those on Conway Street, Maple Street and Fitzroy Street. The site is located immediately to the rear (south) of Boston House. The building is currently accessed via a narrow archway on the east side of Conway Street.

2.12 Subject of this application are the basement, ground and first floors which have a floorspace of 680.7 sqm. The basement (171.1sqm), ground (264.3) and first (245.3 sqm) floors are currently occupied by First Intuition, an accountancy school (Class D1) offering a range of accountancy and leadership & management programmes. It is understood that the accountancy school has a maximum of 175 students enrolled on courses at any one time, although students are not present at the building at one time due to the courses being run at different times of the day and 7 days a week.

2.13 The second floor is currently occupied by Marie Stopes UK as an administration office as part of a reproductive health option clinic. The third and fourth floors of the building are in use as residential flats (Class C3). These floorspaces are not subject of the proposal.

2.14 The site is surrounded by a mix of development which backs onto the site including residential properties and a range of commercial uses which occupy both individual sites and/or are located to the ground floors beneath residential properties.

2.15 The building is not listed but is located within the Fitzroy Square Conservation Area where the building is identified as making a neutral contribution (neither positive contributor or a detractor) to the character and appearance of the Conservation Area. The terrace to the north west on Fitzroy Square, part terraces to the south west on Conway Street and north east on Fitzroy Square are all listed.

2.16 Similar to that of Boston House, the site has a high accessibility to public transport with a PTAL rating of 6B (Best) and has excellent access to bus routes and the London Underground Stations of Warren Street, Great Portland Street and Goodge Street.

Proposed Development

2.17 A planning application for the change of use of basement, ground and first floors of County House, Conway Mews, London, W1T 6AA from accountancy school (Class D1) to office (Class B1a).

Report Objective

2.18 The objective of the Energy Statement is to outline how energy efficiency, low carbon and renewable technologies have been considered as part of the energy strategy.

3. Assessment Methodology

3.1 The assessment methodology follows the Energy Hierarchy, on the basis that it is preferable to firstly minimise carbon dioxide emissions through reduced energy demand; prior to considering low carbon and renewable energy supply options.

3.2 The tiers of the Energy Hierarchy are:

- Be Lean Demand Reduction
- Be Clean Use Energy More Efficiently
- Be Green Use Renewable Energy

3.3 Where opportunities to improve the efficiency of the design have been maximised, consideration is then given to the second principle whereby priority is given to the efficient use of energy. This is on the basis that low carbon technologies can be cost-effective and provide significant carbon savings when compared to conventional technologies.

3.4 The third principle of the hierarchy promotes the use of renewable technologies. Whilst these technologies can be relatively expensive to install, they do offer the potential to significantly reduce carbon emissions.

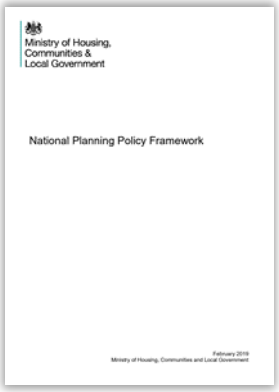
3.5 The following sections of the report review the planning policy requirements prior to establishing a baseline from which the principles of the Energy Hierarchy are applied.

4. Planning Context

4.1 Local planning policy relevant to sustainable development is considered below:

National Context

National Planning Policy Framework (2019)



4.2 The National Planning Policy Framework (NPPF) was updated in February 2019. Paragraph 7 of the revised NPPF states that:

"the purpose of the planning system is to contribute to the achievement of sustainable development"

4.3 Chapter 14 of the NPPF includes consideration of climate change and the use and supply of renewable and low carbon energy. Paragraph 148 states:

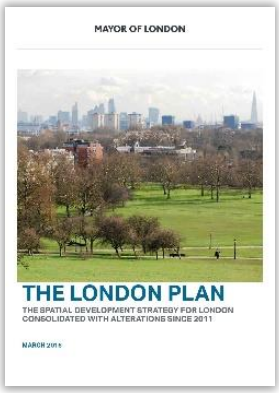
"The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience;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

Planning Practice Guidance (2016; updated 2018)

- Climate Change - Advises how planning can identify suitable mitigation and adaption measures in plan-making and the application process to address the potential for climate change.
- Renewable and Low Carbon Energy - The guidance is intended to assist local councils in developing policies for renewable energy in local plans, and identifies the planning considerations for a range of renewable sources.

London Context

The London Plan Consolidated with Alterations Since 2011 (2016)



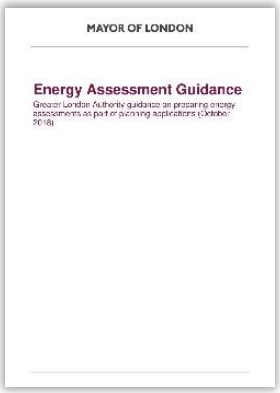
4.4 The London Plan was further updated in March 2016. The Plan is the overall strategic plan for London. Chapter five of the Plan details London's Response to Climate Change. The following policies are considered pertinent to this Statement:

- Policy 5.2 (*Minimising Carbon Dioxide Emissions*) – includes:

- An Energy Hierarchy: Be Lean; Be Clean; Be Green;
- Carbon reduction targets for major developments; including a “zero carbon” target for 2019;
- Sets out the information requirements for energy assessments.

- Policy 5.3 (*Sustainable Design & Construction*) – encourages consideration of sustainability as part of the design and construction;
- Policy 5.5 (*Decentralised Energy Networks*) – requires planning authorities to require developers prioritise connection to existing or planned decentralised energy networks where feasible;
- Policy 5.6 (*Decentralised Energy in Development Proposals*) – encourages development to establish or connect to energy networks;
- Policy 5.7 (*Renewable Energy*) – within the framework of the Energy Hierarchy, major development proposals should provide a reduction in expected carbon dioxide through the use of on-site renewable energy generation, where feasible;
- Policy 5.9 (*Overheating and Cooling*) – major development proposals should reduce potential overheating and reliance on air conditioning systems in accordance with a Cooling Hierarchy;

Energy Assessment Guidance (2018)



4.5 This guidance document explains how to prepare an energy assessment to accompany strategic planning applications referred to the Mayor as set out in London Plan Policy 5.2. It states that the purpose of an energy assessment is to demonstrate that the proposed climate change mitigation measures comply with London Plan energy policies, including the energy hierarchy.

4.6 Although primarily aimed at strategic planning applications, London boroughs are encouraged to apply the same structure for energy assessments related to non-referable applications and adapt it for relevant scales of development.

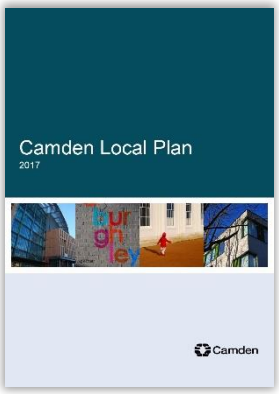
Emerging London Plan (2019)

4.7 The draft New London Plan is a broad plan to shape the way London develops over the next 20-25 years. Energy issues are discussed in Chapter 3 (Design), Chapter 8 (Green Infrastructure and Natural Environment) and Chapter 9 (Sustainable Infrastructure). The following draft policies are considered important to this report:

- Draft Policy D1 *(London's Form and Characteristics)* – Development should aim for high sustainability standards (with reference to the policies within London Plan Chapter's 8 and 9);
- Draft Policy SI1 *(Improving Air Quality)* – Development should not lead to further deterioration of existing poor air quality;
- Draft Policy SI2 (*Minimising GHG Emissions*) – Encourages major development to be zero-carbon and minimise annual and peak energy demand in accordance to 'Be Lean, Be Clean, Be Green, Be Seen' energy hierarchy.
- Draft Policy SI3 *(Energy Infrastructure)* – Major development proposals in Heat Network Priority Areas should have a communal low-temperatures heating system and the heating source should be selected in accordance to the Heating Hierarchy;
- Draft Policy SI4 *(Managing Heat Risk)* – Encourages development to minimise adverse impacts on the urban heat island and to assess the risk of internal overheating and reduce reliance on air conditioning.

Local Context

Camden Local Plan (June 2017)

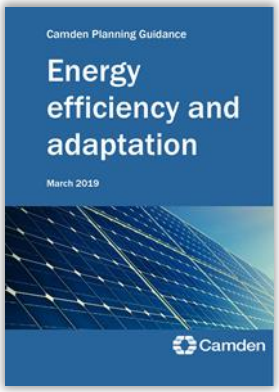


4.8 The Local Plan sets out the planning policies, site allocations and land designations Borough-wide and is the central document in the Borough's Development Plan.

4.9 The following policies are considered relevant to this report:

- Policy CC1 (*Climate Change Mitigation*) – promotes zero carbon development, consideration of the Energy Hierarchy (encouraging connection to District Energy Networks), reduced reliance on transport by car and resource efficiency;
- Policy CC2 (*Adapting to Climate Change*) – requires consideration of overheating risks, encourages the use of the Home Quality Mark and Passivhaus Standards along with BREEAM "excellent" for non-domestic and refurbishment developments >500sqm;

Camden Planning Guidance – Energy Efficiency & Adaptation (March 2019)



4.10 This guidance provides information on key energy and resource issues within the borough and supports Local Plan Policies CC1 Climate change mitigation and CC2 Adapting to climate change.

4.11 Includes requirements concerning credits under certain BREEAM categories (60% energy, 60% water and 40% materials); and reference the 20% renewables target.

5. Baseline Emissions

5.1 This section establishes the baseline position from which carbon savings are to be achieved. For the purposes of this assessment, and in line with GLA and local authority policies and guidance, the baseline position equates to regulated carbon dioxide emissions, assuming that the existing building is the same as the proposed end use.

5.2 A site visit has been conducted during the time of the assessment and the following systems have been identified:

- Gas boiler for space heating and hot water;
- Air conditioning throughout;

5.3 Regulated emissions are emissions which are covered by the Building Regulations and include the energy consumed in the operation of the space heating / cooling and hot-water systems, ventilation and internal lighting.

5.4 Unregulated emissions (i.e. those associated with cooking and all electrical appliances and other small power) have been separately calculated.

5.5 All emissions have been assessed using the SAP10 carbon factors. Non-domestic unregulated emissions have been taken from the unregulated emissions values generated by the SBEM models.

Table 5.1 Carbon Dioxide Emissions (SAP10) – Baseline (Non-Domestic)

Step	Carbon Dioxide Emissions (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2013	56	7

6. Demand Reduction (Be Lean)

6.1 As a “change of use” application, the proposed physical alterations are internal only. Nevertheless, the following outlines the status of the site and (where applicable) energy efficiency proposals.

Passive Design

6.2 Passive design seeks to maximise the use of natural sources of heating, cooling and ventilation to maintain thermal comfort levels within the building.

Building Massing & Orientation

6.3 Building massing and orientation will remain unchanged.

Daylighting

6.4 Access to daylight is from all orientations, however the building is surrounded by a number of adjacent properties, meaning that lower elevations may experience shading during the day.

Fabric Efficiency

6.5 Fabric efficiency concerns the thermal properties associated with the building fabric and construction.

Insulation

6.6 Heat Transfer Coefficients, otherwise referred to as U-Values, are a measure of the rate of heat transfer through a building element over a given area, under standardised conditions (i.e. the rate at which heat is lost or gained through a fabric).

6.7 Given that the building is extensively glazed and the application site is part of a larger structure, opportunities to enhance the fabric are limited. Where additional fabric is required, these will exceed the requirements of Part L2B of the Building Regulations.

Lighting

6.8 Whilst the existing lightly is relatively efficient (T5 fluorescent tubes), switching to LED tubes would further reduce energy demand.

System Efficiencies

Controls

6.9 Control system (optimum start-stop, local time and temperature) could be used to reduce demand for heating / cooling.

Domestic Appliances

6.10 Within the kitchen areas, domestic appliances such as fridges may be included. It is proposed that the EU energy label of these appliances shall be A+ or greater.

7. Heating Infrastructure (Be Clean)

District Energy Networks (DEN)

7.1 The term “district energy” applies to the energy distribution network, rather than the origins of the energy and the extent of any carbon savings will be largely determined by the energy source and heat losses on the network.

7.2 The London Heat Map is a tool provided by the Mayor of London to identify opportunities for decentralised energy projects in London and it builds on the 2005 London Community Heating Development Study.

Figure 7.1 Extract from the London Heat Map

7.3 The above extract from The London Heat Map shows the site located in an area of high heat density. The wider area, as with much of central London, is defined as being a Heat Network Priority Area. However, the Site is not within a zone defined as Heat Mapping Decentralised Energy Potential.

7.4 No existing District Energy Networks (DEN) have been identified in close proximity to the site. The nearest potential network runs along Euston Road (orange lines on the above image), circa 350m to the north.

District Energy Appraisal

7.5 In the absence of a DEN in close proximity to the Site, it is not proposed to accommodate DEN as part of the energy strategy.

Combined Heat & Power (CHP)

7.6 Combined Heat & Power (CHP) systems generate electrical energy and provide the waste heat from the process to be used on site. They are typically gas-fired but can be run off alternative

fuel sources. CHP has been considered an efficient means of supplying heat in developments, providing significant carbon savings and wider environmental benefits (the power generation has historically been lower carbon emitting compared to grid electricity from the average UK power station). Savings from CHP are; however, reducing on the basis that grid electricity is decarbonising; meaning that carbon reductions associated with not using grid electricity are becoming marginal (or non-existent).

CHP Appraisal

7.7 Whilst the site has a heating demand, it is modest and likely subject to daily / weekly / yearly fluctuation due to occupancy patterns. At this scale, it is generally not economic to install CHP as smaller CHPs tend to have lower electrical efficiencies and therefore higher carbon emissions. CHP also tends to emit higher levels of NO_x than other heating systems; potentially adversely impacting local air quality.

7.8 A centralised CHP plant would create complex managerial arrangements and the administrative burden of managing CHP electricity sales to grid when the power is not required on site; combined with the relatively low unit price for small volumes of exported CHP electricity can create incentives for the CHP to be installed but not operated. CHP is therefore not proposed.

8. Renewable Energy (Be Green)

8.1 Renewable technologies are those which take their energy from sources which are considered to be inexhaustible (e.g. sunlight, wind etc.). Emissions associated with renewables are generally considered to be negligible and the technologies are frequently referred to as “zero carbon”.

Biomass Systems

8.2 Biomass systems are heating systems that use agricultural, forest, urban and industrial residues and waste to produce heat and (depending on the system) electricity. At the building scale, biomass boilers using wood pellets or woodchips are the norm. Biomass should be sourced locally to limit “embodied carbon” associated with transport and ideally be derived from waste wood products to limit the take-up of agricultural land for fuel crops.

Biomass Appraisal

8.3 Whilst technically feasible, the site is in an urban setting and the absence of a readily available and diverse local fuel source creates risk associated with security of fuel supply. This has implications for operational viability.

8.4 Carbon emissions associated with cultivation, processing and transport of biomass are not normally considered in the context of planning or Building Regulations meaning that total carbon emissions are likely to be significantly higher than estimated. Biomass is also likely to cause other air quality impacts (e.g. particulates), which have implications for local air quality.

8.5 Biomass is therefore not a preferred technology for the scheme.

Heat Pumps

8.6 Heat pumps draw thermal energy from the air, water or ground (“source”) and upgrade it to be used as useful heat at another location (“sink”). Heat pumps require electricity to operate (or gas in the case of Gas Absorption Heat Pumps) as mechanical input is required to convert harvested energy to useful heat and complete its transport to the “sink”.

8.7 Heat pumps are generally considered as renewable (despite an electrical or gas requirement) because the source of the heat is the ambient temperature in the exterior environment, which is ultimately heated via the sun.

8.8 Reversible systems can provide air conditioning comfort cooling; however, when in cooling mode, the system is not considered renewable as it is not taking advantage of a renewable source of energy.

Heat Pump Appraisal

8.9 The absence of nearby water body and relatively small footprint of the site rule out the options of Water Source and Ground Source Heat Pumps.

8.10 Whilst Air Source Heat Pumps (ASHPs) would represent a viable option for any refurbishment work to the building as a whole, because the Application Site only represents the basement, ground and first floors; it is not feasible to replace the communal heating system.

Micro Hydro Power

8.11 Micro hydro power systems harness energy from flowing water by using height differences (called “head”); the minimum allowable head is 1.5m and ideally not lower than 10m.

Micro Hydro Appraisal

8.12 No surface water courses are located in close proximity to the site. Micro hydro is therefore not considered an option.

Micro Wind Power

8.13 Wind turbines are used to generate electricity; with power production determined by the rotation of the blades and being proportionate to the speed of their rotation. The technology is most efficient for constant, low turbulence wind profiles.

Micro Wind Appraisal

8.14 Given the central London location and uncertainty over performance, the fact that any contribution will likely be quite minor, and that the application type (change of use) and heritage considerations would prohibit any external plant, wind turbines are rejected as an option.

Solar Systems

8.15 Both solar thermal and photovoltaic (PV) systems convert energy from the sun into a form which can be applied within the building. Solar thermal generates energy for heating (usually for hot water) and PV generates electricity. Hybrid photovoltaic / solar thermal collectors are also available and co-generate heat and power.

Solar System Appraisal

8.16 Whilst an area of flat roof is available on the existing building, this is outside of the application boundary and therefore solar technology cannot feasibly be installed without refurbishment works to the building as a whole.

9. Summary

9.1 This Energy Statement provides an overview of the energy strategy in consideration of the site context, anticipated energy requirements and local priorities and initiatives.

9.2 A review of Camden Council's planning policies has identified a number of requirements relating to energy. Of these, Local Plan policy CC1 (*Climate Change Mitigation*) is considered most pertinent along with Camden Planning Guidance – *Energy Efficiency and Adaptation*. Consideration has also been given to the NPPF and GLA's London Plan and the targets contained therein.

9.3 Given that the Application is for a "change of use" and that the proposed physical alterations are internal and largely limited to the allocation of space for office use, opportunities for incorporating technologies are reduced.

9.4 Nevertheless, it is proposed to upgrade lighting to LED tubes, incorporation of sensors and controls to reduce heating requirements.

Carbon Savings

9.5 Energy modelling has been undertaken using SBEM and the carbon savings delivered by each of the three steps of the Energy Hierarchy have been estimated (indicative outputs are included in the appendices).

Table 9.1 CO_2 Emissions after Each Stage of the Energy Hierarchy (SAP10)

Step	Carbon Dioxide Emissions (Tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline	56	7
After energy demand reduction	55	7
After CHP	55	7
After renewable energy	55	7

Table 9.2 Regulated CO_2 Savings from Each Stage of the Energy Hierarchy

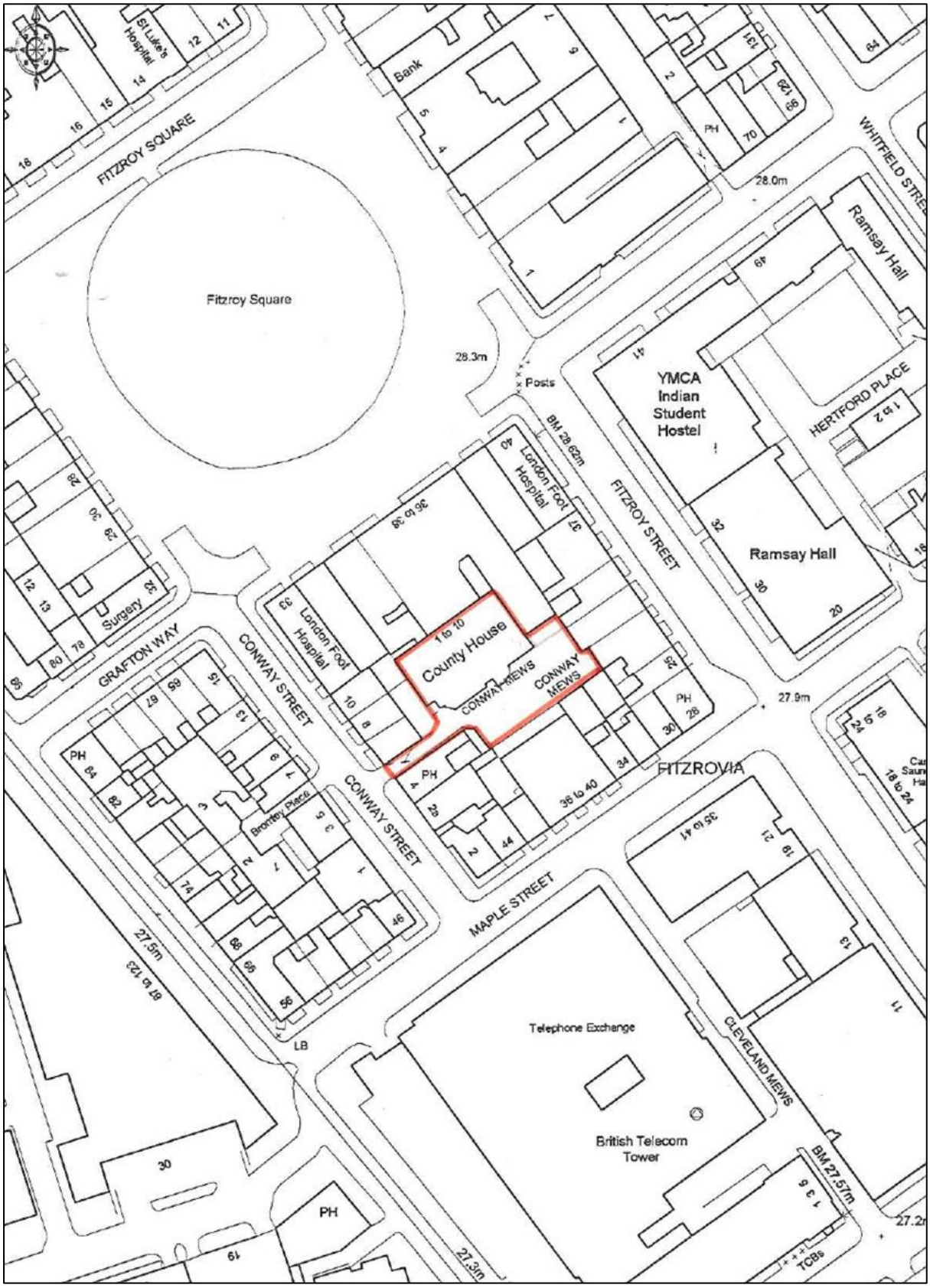
	Regulated Carbon Dioxide Savings	
	(Tonnes CO_2 per annum)	**%**
Savings from energy demand reduction	1	2
Savings from CHP	0	0%
Savings from renewable energy	0	0%
Total Cumulative Savings	1	2%

9.6 A copy of the GLA Carbon Emission Reporting Spreadsheet is appended to this report outlining the savings at each stage of the Energy Hierarchy.

9.7 Overall, the proposed energy strategy is considered consistent with the National Planning Policy Framework, London Plan and policies of the Council. When implemented, the scheme will provide an efficient and low carbon development.

Appendices

A. Site Plans


FITZROY SQUARE
Fitzroy Square
St Luke's Hospital
Bank
PH
28.0m
WHITFIELD STREET
Ramsay Hall
YMCA Indian Student Hostel
HERTFORD PLACE
28.3m
Posts
BM 28.62m
London Foot Hospital
FITZROY STREET
Ramsay Hall
1 to 10 County House
CONWAY MEWS
CONWAY MEWS
Surgery
GRAFTON WAY
CONWAY STREET
CONWAY STREET
Bromley Place
27.9m
FITZROVIA
MAPLE STREET
Telephone Exchange
British Telecom Tower
CLEVELAND MEWS
BM 27.57m
TCBs
27.3m
27.5m
LB
PH

B. Key Local Planning Policy Requirements

London Planning Policy Framework

Key London Plan planning policy is detailed below:

The London Plan as Altered (2016)

The London Plan is the overall strategic plan for London. Chapter five details London's Response to Climate Change and includes a number of policies that set the overarching principles for reducing carbon emissions in the built environment:

Policy 5.2 – Minimising Carbon Dioxide Emissions

Planning Decisions

A) Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1) Be lean: use less energy;

2) Be clean: supply energy efficiently;

3) Be green: use renewable energy.

B) The Mayor will work with boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading to zero carbon residential buildings from 2016 and zero carbon non-domestic buildings from 2019.

Residential Buildings:

Year	Improvement in 2010 Building Regs
2010-2013	25% (Code Level 4)
2013-2016	40%
2016-2031	Zero Carbon

Non-Residential Buildings:

Year	Improvement in 2010 Building Regs
2010-2013	25%
2013-2016	40%
2016-2019	As per building regulations requirements
2019-2031	Zero Carbon

C) Major development proposals should include a detailed energy assessment to demonstrate how the targets for carbon dioxide emission reduction outlined above are to be met within the framework of the energy hierarchy.

D) As a minimum, energy assessments should include the following details:

a) Calculations of the energy demand and carbon dioxide emissions covered by the Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including

plant or equipment, that are not covered by the Building Regulations (see paragraph 5.22) at each stage of the hierarchy;

b) Proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services;

c) Proposals to reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP);

d) Proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.

The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.

Policy 5.3 – Sustainable Design & Construction [extract]

Planning Decisions

B) Development proposals should demonstrate that sustainable design standards are integral to the proposals, including its construction and operation, and ensure that they are considered at the beginning of the design process.

C) Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles apply:

a) Minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems);

b) Avoiding internal overheating and contributing to the urban heat island effect;

c) Efficient use of natural resources (including water), including making the most of natural systems both within and around buildings;

d) Minimising pollution (including noise, air and urban run-off);

Policy 5.5 – Decentralised Energy Networks

Strategic

A) The Mayor expects 25 per cent of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025. In order to achieve this target the Mayor prioritises the development of decentralised heating and cooling networks at the development and area wide levels, including larger scale heat transmission networks.

LDF Preparation

B) Within LDFs boroughs should developer policies and proposals to identify and establish decentralised energy network opportunities. Boroughs may choose to develop this as a supplementary planning document and work jointly with neighbouring boroughs to realise wider decentralised energy network opportunities. As a minimum, boroughs should:

a) Identify and safeguard existing heating and cooling networks;

b) Identify opportunities for expanding existing networks and establishing new networks. Boroughs should use the London Heat Map tool and consider any new developments, planned major infrastructure works and energy supply opportunities which may arise;

c) Developer energy master plans for specific decentralised energy opportunities which identify;

- Major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals and social housing);
- Major heat supply plant;
- Possible opportunities to utilise energy from waste;
- Possible heating and cooling network routes;
- Implementation options for delivering feasible projects, considering issues of procurement, finding and risk in the role of the public sector.

Require developers to prioritise connection to existing or planned decentralised energy networks where feasible.

Policy 5.6 – Decentralised Energy in Development Proposals

Planning Decisions

A) Development proposals should evaluate the feasibility of Combined Heat and Power (CHP) systems, and where a new CHP system is appropriate also examine opportunities to extend the system beyond the site boundary to adjacent sites.

B) Major development proposals should select energy systems in accordance with the following hierarchy:

1) Connection to existing heating or cooling networks;

2) Site wide CHP network;

3) Communal heating and cooling.

Potential opportunities to meet the first priority in this hierarchy are outlined in the London Heat Map tool. Where future network opportunities are identified, proposals should be designed to connect to these networks.

Policy 5.7 – Renewable Energy

Strategic

A) The Mayor seeks to increase the proportion of energy generated from renewable sources, and expects that the projections for installed renewable energy capacity outlined in the Climate Change Mitigation and Energy Strategy and in supplementary planning guidance will be achieved in London.

Planning Decisions

B) Within the framework of the energy hierarchy (see Policy 5.2), major development proposals should provide a reduction in expected carbon dioxide through the use of on-site renewable energy generation, where feasible.

LDF Preparation

C) Within LDFs boroughs should, and other agencies may wish to development more detailed policies and proposals to support the development of renewable energy in London – in particular, to identify broad areas where specific renewable

energy technologies, including large scale systems and the large scale deployment of small scale systems, are appropriate. The identification of areas should be consistent with any guidelines and criteria outlined by the Mayor.

All renewable energy systems should be located and designed to minimise any potential adverse impacts on biodiversity, the natural environment and historical assets, and to avoid any adverse impacts on air quality.

Policy 5.9 – Overheating and Cooling

Strategic

A) The Mayor seeks to reduce the impact of the urban heat island effect in London and encourages the design of places and spaces to avoid overheating and excessive heat generation, and to reduce overheating due to the impacts of climate change and the urban heat island effect on an area wide basis.

Planning Decisions

B) Major development proposals should reduce potential overheating and reliance on air conditioning systems and demonstrate this is in accordance with the following cooling hierarchy:

1) Minimise internal heat generation through energy efficient design;

2) Reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls;

3) Manage the heat within the building through exposed internal thermal mass and high ceilings;

4) Passive ventilation;

5) Mechanical ventilation;

6) Active cooling.

C) Major development proposals should demonstrate how the design, materials, construction and operation of the development would minimise overheating and also meet its cooling needs. New development in London should also be designed to avoid the need for energy intensive air conditioning systems as much as possible. Further details and guidance regarding overheating and cooling are outlined in the London Climate Change Adaptation Strategy.

LDF Preparations

Within LDFs boroughs should develop more detailed policies and proposals to support the avoidance of overheating and to support the cooling hierarchy.

Local Planning Policy Framework

Camden Local Plan (June 2017)

The Local Plan was adopted by Council on 3 July 2017 and has replaced the Core Strategy and Camden Development Policies documents as the basis for planning decisions and future development in the borough. Policies relevant to this report are presented below:

Policy CC1 Climate Change Mitigation

The Council will require all development to minimise the effects of climate change and encourage all developments to meet the highest feasible environmental standards that are financially viable during construction and occupation.

We will:

a) Promote zero carbon development and require all development to reduce carbon dioxide emissions through following the steps in the energy hierarchy;

b) Require all major development to demonstrate how London Plan targets for carbon dioxide have been met;

c) Ensure that the location of the development and mix of land uses minimise the need to travel by car and help to support decentralised energy networks;

d) Support and encourage sensitive energy efficiency improvements to existing buildings;

e) Require all proposals that involve substantial demolition to demonstrate that it is not possible to retain and improve the existing building; and

f) Expect all developments to optimise resource efficiency.

For decentralised energy networks, we will promote decentralised energy by:

g) Working with local organisations and developers to implement decentralised energy networks in the parts of Camden most likely to support them;

h) Protecting existing decentralised energy networks (e.g. at Gower Street Bloomsbury, Kings Cross, Gospel Oak, and Somers Town) and safeguarding potential network routes; and

i) Requiring all major developments to assess the feasibility of connecting to an existing decentralised energy network, or where this is not possible establishing a new network.

To ensure that the Council can monitor the effectiveness of renewable and low carbon technologies, major developments will be required to install appropriate monitoring equipment.

Policy CC2 Adapting to Climate Change [extract]The Council will require development to be resilient to climate change.

All development should adopt appropriate climate change adaptation measures such as:

[…]

a) Measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

[…]

C. GLA Carbon Emissions Reporting Spreadsheet

NON-DOMESTIC

Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-domestic buildings

	Carbon Dioxide Emissions for non-domestic buildings (Tonnes CO2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	87	9
After energy demand reduction	82	9
After heat network / CHP	82	9
After renewable energy	82	9

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-domestic buildings

	Regulated non-domestic carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Savings from energy demand reduction	5	5%
Savings from heat network / CHP	0	0%
Savings from renewable energy	0	0%
Total Cumulative Savings	**5**	**5%**

Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-domestic buildings

	Carbon Dioxide Emissions for non-domestic buildings (Tonnes CO2 per annum)	
	Regulated	Unregulated
Baseline: Part L 2013 of the Building Regulations Compliant Development	56	7
After energy demand reduction	55	7
After heat network / CHP	55	7
After renewable energy	55	7

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-domestic buildings

	Regulated non-domestic carbon dioxide savings	
	(Tonnes CO_2 per annum)	(%)
Savings from energy demand reduction	1	2%
Savings from heat network / CHP	0	0%
Savings from renewable energy	0	0%
Total Cumulative Savings	**1**	**2%**

Table 5: Shortfall in regulated carbon dioxide savings

	Annual Shortfall (Tonnes CO_2)	Cumulative Shortfall (Tonnes CO_2)
Total Target Savings	**31**	-
Shortfall	26	773
Cash in-lieu contribution (£)	**46,367**	-

Table 5: Shortfall in regulated carbon dioxide savings

	Annual Shortfall (Tonnes CO_2)	Cumulative Shortfall (Tonnes CO_2)
Total Target Savings	20	-
Shortfall	19	557
Cash in-lieu contribution (£)	**33,395**	-

D. Indicative Energy Model Outputs (Be Lean)

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2013

Project name

County House_Proposed

As built

Date: Thu May 07 18:30:06 2020

Administrative information

Building Details

Address: Address 1, Address 2, London, Postcode

Certification tool

Calculation engine: SBEM

Calculation engine version: v5.6.a.2

Interface to calculation engine: Virtual Environment

Interface to calculation engine version: v7.0.12

BRUKL compliance check version: v5.6.a.1

Owner Details

Name: Name

Telephone number: Phone

Address: Street Address, City, Postcode

Certifier details

Name: Pete Jeavons

Telephone number: Phone

Address: Street Address, City, Postcode

Criterion 1: The calculated CO_2 emission rate for the building must not exceed the target

The building does not comply with England Building Regulations Part L 2013

CO_2 emission rate from the notional building, kgCO_2/m^2.annum	28.8
Target CO_2 emission rate (TER), kgCO_2/m^2.annum	28.8
Building CO_2 emission rate (BER), kgCO_2/m^2.annum	111.5
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	$U_{a\text{-}Limit}$	$U_{a\text{-}Calc}$	$U_{i\text{-}Calc}$	Surface where the maximum value occurs*
Wall**	0.35	1.78	2	LW000001_W1
Floor	0.25	3.3	3.3	LW000001_F
Roof	0.25	1.7	1.7	LW000001_C
Windows***, roof windows, and rooflights	2.2	1.8	1.8	LW00000E_W1_O0
Personnel doors	2.2	2.2	2.2	LW000001_W5_O0
Vehicle access & similar large doors	1.5	-	-	"No external vehicle access doors"
High usage entrance doors	3.5	-	-	"No external high usage entrance doors"

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

* 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
m³/(h.m²) at 50 Pa	10	10

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	<0.9

1- CV

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(l/s)]	HR efficiency
This system	0.81	2.5	-	2.9	-
Standard value	0.91*	N/A	N/A	1.6^	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system					NO

* Standard shown is for gas single boiler systems <=2 MW output. For single boiler systems >2 MW or multi-boiler systems, (overall) limiting efficiency is 0.86. For any individual boiler in a multi-boiler system, limiting efficiency is 0.82.

^ Limiting SFP may be extended by the amounts specified in the Non-Domestic Building Services Compliance Guide if the system includes additional components as listed in the Guide.

1- SYST0004-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	Hot water provided by HVAC system	-
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
Lw GrFL_Office 01	-	-	-	-	-	-	-	0.5	-	-	N/A
GrFL_Lobby	-	-	-	-	-	-	-	0.5	-	-	N/A
GrFL_DDA WC	0.3	-	-	-	-	-	-	0.5	-	-	N/A
GrFL_Tea Point	-	-	-	-	-	-	-	0.5	-	-	N/A
Lw GrFL_Lobby	-	-	-	-	-	-	-	0.5	-	-	N/A
Lw GrFL_Office	-	-	-	-	-	-	-	0.5	-	-	N/A
Lw GrFL_Lobby	-	-	-	-	-	-	-	0.5	-	-	N/A
Lw GrFL_Lift Office	-	-	-	-	-	-	-	0.5	-	-	N/A
GrFL_Office	-	-	-	-	-	-	-	0.5	-	-	N/A
Lw GrFL_Office 02	-	-	-	-	-	-	-	0.5	-	-	N/A
Lw GrFL_Office 02	-	-	-	-	-	-	-	0.5	-	-	N/A

General lighting and display lighting

Zone name	Luminous efficacy [lm/W]			
	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
Lw GrFL_Office 01	50	-	-	2627

General lighting and display lighting	Luminous efficacy [lm/W]			
Zone name	Luminaire	Lamp	Display lamp	General lighting [W]
Standard value	60	60	22	
GrFL_Lobby	-	100	-	51
GrFL_DDA WC	-	100	-	53
GrFL_Tea Point	-	100	-	45
Lw GrFL_Lobby	-	100	-	37
Lw GrFL_Office	50	-	-	3505
Lw GrFL_Lobby	-	100	-	63
Lw GrFL_Lift Office	-	100	-	24
GrFL_Office	50	-	-	1097
Lw GrFL_Office 02	50	-	-	91
Lw GrFL_Office 02	50	-	-	1208

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?
Lw GrFL_Office 01	NO (-67.1%)	NO
GrFL_Lobby	N/A	N/A
GrFL_DDA WC	N/A	N/A
GrFL_Tea Point	N/A	N/A
Lw GrFL_Lobby	N/A	N/A
Lw GrFL_Office	NO (-20.7%)	NO
Lw GrFL_Lobby	NO (-25.2%)	NO
Lw GrFL_Lift Office	N/A	N/A
GrFL_Office	NO (-87.9%)	NO
Lw GrFL_Office 02	N/A	N/A
Lw GrFL_Office 02	N/A	N/A

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

Separate submission

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

Separate submission

EPBD (Recast): Consideration of alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	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 [m²]	739.5	739.5
External area [m²]	1578.1	1578.1
Weather	LON	LON
Infiltration [m³/hm²@ 50Pa]	10	3
Average conductance [W/K]	3642.41	791.17
Average U-value [W/m²K]	2.31	0.5
Alpha value* [%]	4.08	19.67

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

Building Use

% Area	Building Type
	A1/A2 Retail/Financial and Professional services
	A3/A4/A5 Restaurants and Cafes/Drinking Est./Takeaways
100	**B1 Offices and Workshop businesses**
	B2 to B7 General Industrial and Special Industrial Groups
	B8 Storage or Distribution
	C1 Hotels
	C2 Residential Institutions: Hospitals and Care Homes
	C2 Residential Institutions: Residential schools
	C2 Residential Institutions: Universities and colleges
	C2A Secure Residential Institutions
	Residential spaces
	D1 Non-residential Institutions: Community/Day Centre
	D1 Non-residential Institutions: Libraries, Museums, and Galleries
	D1 Non-residential Institutions: Education
	D1 Non-residential Institutions: Primary Health Care Building
	D1 Non-residential Institutions: Crown and County Courts
	D2 General Assembly and Leisure, Night Clubs, and Theatres
	Others: Passenger terminals
	Others: Emergency services
	Others: Miscellaneous 24hr activities
	Others: Car Parks 24 hrs
	Others: Stand alone utility block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	212.87	24.71
Cooling	30.56	11.16
Auxiliary	60.69	16.31
Lighting	33.28	17.42
Hot water	4.07	3.62
Equipment*	40.36	40.36
TOTAL**	**341.46**	**73.22**

* Energy used by equipment does not count towards the total for consumption or calculating emissions.
** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0

Energy & CO_2 Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m²]	758.57	217.54
Primary energy* [kWh/m²]	646.95	168.94
Total emissions [kg/m²]	111.5	28.8

* 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] Fan coil systems, [HS] LTHW boiler, [HFT] Natural Gas, [CFT] Electricity										
	Actual	572.4	186.1	212.9	30.6	60.7	0.75	1.69	0.81	2.5
	Notional	72.9	144.7	24.7	11.2	16.3	0.82	3.6	----	----

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	$U_{i\text{-}Typ}$	$U_{i\text{-}Min}$	Surface where the minimum value occurs*
Wall	0.23	0.26	GR00000A_W15
Floor	0.2	3.3	LW000001_F
Roof	0.15	1.7	LW000001_C
Windows, roof windows, and rooflights	1.5	1.8	LW000001_C_O0
Personnel doors	1.5	2.2	LW000001_W5_O0
Vehicle access & similar large doors	1.5	-	"No external vehicle access doors"
High usage entrance doors	1.5	-	"No external high usage entrance doors"

$U_{i\text{-}Typ}$ = Typical individual element U-values [W/(m²K)] $U_{i\text{-}Min}$ = 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	10

E. General Notes

The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Ensphere Group Ltd for inaccuracies in the data supplied by any other party.

The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.

No site visits have been carried out, unless otherwise specified.

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