Sabinus
Building Services Limited

Planning Application
Energy & Sustainability Statement

For

Camden Lock Hotel Extension
at
30 Jamestown Rd,
London NW1 7BY

4C Group

Report ref.: 1470 Ref 02 Rev 'F' Dated – 14th November 2023

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Rev	Date	Description	Issued to	Approved
-		Pre-Planning Report	Clients Planning Team	SASM
C	19-July-2023	Rejecting Gas CHP Option	Clients Planning Team	SASM
D	14th-Aug-23	Add Carbon Emission Table	Clients Planning Team	SASM
E	7th-Sep-23	Table-A minor correction	Clients Planning Team	SASM
F	14th Nov 23	Extension full update to Part-L 2021.	Clients Planning Team	SASM
G	23rd Nov 23	Extension Part-L 2021 Update	Clients Planning Team	SASM

Content

1.0 Development Description

This document is submitted in support of the planning application for Extension of the Existing Holiday Inn Camden Lock Hotel at 30 Jamestown Road, London NW1 7BY. A building extension development of a branded hotel incorporating key aspects of sustainable development including energy, resource usage, environmental, economy, sustainable design, and construction.

The building extension is for **11 bedrooms on the existing 5th floor.** The existing building has a basement level, ground floor, mezzanine, and floors one to five. The existing hotel has 137 bedrooms located within the 1st floor to the 5th floor.

2.0 Executive Summary

This planning Energy & Sustainability statement provides a review of the measures to be incorporated into the proposed extension at 30 Jamestown Road, London NW1 7YB, Holiday Inn Hotel, with respect to sustainability and energy.

Proposal

Use	Floorspace / Number of units
Hotel Existing 5th Floor	199m2 (Additional 11 Bedrooms)

This Energy & Sustainability Statement should be read in conjunction with the Design and Access Statement report.

The Camden Planning Guidance "Energy Efficiency and Adaptation" January 2021 Table 1b does not require a full Energy Statement as this refurbishment is less than 500m2.

However, the planning energy officer has requested quantification of carbon emissions and for the extension to be linked to Part-L 2021 due to the final date this application was registered.

Hence this is the revision F, and the tables below concentrates on the extension, and we also highlight some additional measures the client has incorporated to improve the energy efficiency of the existing building.

Note the extension has a carbon dioxide saving of 74%.

2.1 Carbon dioxide emissions

This extension is less than 500 m2 but the planners have requested quantification of carbon emissions and reductions with reference to the application of the Energy.

- The orientation of the building has been fixed.
- The bedroom window glazing on the 5th floor have been upgraded to provide a 'g' value of 019 with additional insulated partitioning to help improve on the 'U' Value.
- The roof 'U' value has been enhanced with additional insulation.
- 75m2 of PV panels have been added to the existing roof east profile.
- Mitsubishi heat pump and buffer vessel has been added to the for the partial load of the Domestic Hot Water Services (DHWS). We are restricted with the heat pump size due to restricted roof space and we also have VRF System for the whole hotel.

We have used the GLA Part-L-2021 Carbon Emission tables to assist in producing the Non-Residential Tables below.

Please see below the Carbon dioxide emissions tables- 'A' for non-domestic building.

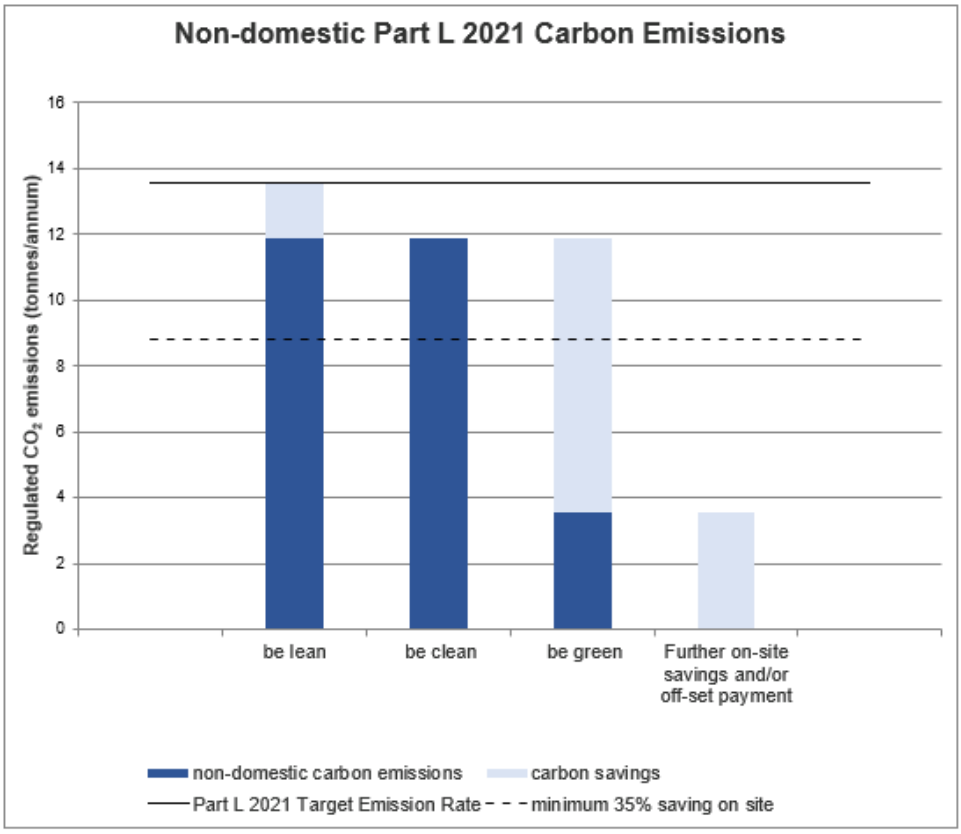
Table-A: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-residential buildings		
	Carbon Dioxide Emissions for non-residential buildings (Tonnes CO_2 per annum)	
	Regulated	**Unregulated**
Baseline Part-L 2021 of the Building Regulations Compliant Development	13.5	
After energy demand reduction (be lean)	11.9	
After heat network connection (be clean)	11.9	
After renewable energy (be green)	3.6	

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

Table: B	**Regulated non-residential carbon dioxide savings**	
	(Tonnes CO_2 per annum)	**%**
Be Lean: savings from energy demand reduction	1.7	12%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	8.3	61%
Total Cumulative Savings	***10.0***	***74%***
Annual savings from off-set payment	3.6	-
	(Tonnes CO_2)	
Cumulative savings for off-set payment	**108**	-
Cash in-lieu contribution (£)	**£10,214.00**	
* Carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is input in the Development.		

The London Plan 2021 Policy S1 2 Minimising greenhouse gas emissions requires a minimum reduction of at least 35 per cent beyond Building Regulations. Non- residential developments should achieve 15 per cent through energy efficiency measures.

On the **15% Be Lean target <u>we have achieved 12%,</u>**
On the **35% Be Green target <u>we have achieved 61%</u>**



<u>The Extension Energy Consumption</u>

<u>Table C: Energy Consumption by End Use [kWh/m^2]</u>		
	<u>Actual</u>	**<u>Notional</u>**
Heating	4.62	4.22
Cooling	0.55	16.87
Auxiliary	22.51	26.53
Lighting	5.24	4.34
Hot Water	130.7	290.49
Equipment	60.36	60.36
Total	**163.62**	**342.45**

Table D: Energy Production by Technology [kWh/m^2]		
	Actual	**Notional**
Photovoltaic systems	68.86	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	68.86	0

Table E: Energy & Co2 Emissions Summary		
	Actual	**Notional**
Heating + Cooling demand [MJ/m^2]	80.96	294.98
Primary energy [KWh$_{PE}$ /m^2]	124.8	395.83
Total emissions [kg/m^2]	17.92	67.73

3.0 Energy & Sustainability Statement

3.1 Executive Summary

The proposed energy strategy has been developed in accordance with Camden Planning Guidance document "Energy Efficiency and Adaption Published in January 2021. The Camden plus London Plan energy hierarchy of lean, clean, and green based on Part-L2 2021 has been applied to ensure climate change mitigation measures are integral to the scheme's design and that they are appropriate to the context of the development.

The key measures that have been applied at each stage of the energy hierarchy are summarised as follows.

Energy Hierarchy Step 1 - Be Lean - Reduce Energy Demand

The following range of measures have been adopted to the 5th building fabric extension and services design to reduce the energy demand of the scheme.

- The orientation of the building is fixed as this is an existing hotel.
- Hotel bedrooms are difficult to allow for natural ventilation and this also depends on the guests' occupied periods.
- Night-time ventilation purging is very difficult in a hotel bedroom as this is also the period the guests will be resting in the occupied space.
- Glazing sized to limit solar gain and reduce cooling demand whilst optimised natural daylight where possible. The level-5 extension windows have been upgraded with better 'g' value of 0.19.
- Solar shading has been reviewed by incorporated better 'g' rated glazing of 0.19.

- Improved building fabric thermal performance to the extension part of the building, better than the limiting standards of the Building Regulations. This is as per CC1 section-8 “Energy efficiency in existing buildings.
- Good air tightness through design and construction techniques for the extension.
- Ventilation systems with low specific fan powers and incorporating heat recovery.
- In keeping with the latest Covid and latest ventilation strategy the fresh air rates have been increased for the extension. Heat recovery has been incorporated. Variable volume cannot be economically incorporated into individual hotel bedrooms to reduce energy in-use and to match demand. But as stated heat recovery has now been incorporated for all the new and existing bedrooms.
- Low energy lighting and, where appropriate, automatic lighting control systems that provide both occupancy and daylight control.

Energy Hierarchy Step 2 - Be Clean - Supply Energy Efficiently

Section 4.2.7 of this report on district heating and Appendix ‘A’ shows that a heatmap review took place to review if a proposed Euston Road district heating system which is more than 500m from this site.

Please see 1470-(CL)-SK123 Rev-A. Hence, we have not been able to connect to any district heating network.

Energy Hierarchy Step 3 - Be Green - Renewable Energy

Renewable energy technologies considered suitable for the site.

The only location available for PV panels is the existing east facing roof. This has been reviewed and a maximum of 75m2 of PV panels has been incorporated in the design.

The hot water for the extension has been reviewed and an Air Source Heat Pump with a buffer vessel has been added to the scheme. This has been supplemented with a gas boiler as the rest of the hotel is presently served by gas system and this meets the HWS legionella storage requirements and distribution temperatures.

Note the client is taking additional energy savings measures to the existing building.

On the client’s instruction **the whole building** existing gas fired heating system and chilled water-cooling system will be **replaced with more modern and high efficiency VRF AC (ASHP) system**.

The existing HWS old gas fired units **for the whole building** will be **replaced by modern gas fired condensing units.**

The existing AHU’s have separate supply and extract system with no heat recovery. **The replacement AHU incorporates heat recovery and heat pumps for heating and cooling**.

At present the hotel has two supply and extract systems into two kitchens. This is now being rationalised into **one kitchen**. The kitchen supply unit and extract unit are being in the roof plantroom.

The lighting is also being improved to modern energy efficient fittings.

The BMS System is also being upgraded for the whole building.

4.0 Energy & Sustainability Statement Pre-Assessment

This document has been prepared in support of a planning application for the development of Extension of the existing Holiday Inn Camden Lock development.

4.1 Passive Design

4.1.1 Orientation

This is an existing hotel and the orientation of this building, and the surrounding buildings has been fixed.

However, the surroundings buildings orientation has been considered to help reduce energy usage.

This information has helped with the design selection of services equipment including high efficiency glazing, construction material, daylight and artificial lighting control, space and building cooling plus heating demands all helping reduce energy demands.

4.1.2 External Envelope

The external envelope has a major impact on energy consumption of the building and the health and well being of its occupants. Good views out the window, adequate natural daylight, glare control and good standards of thermal comfort are a prerequisite for the welfare of building users.

At the same time, an optimal balance must be struck between the energy savings using natural day lighting and the heat losses and heat gains. Air quality and noise sensitivity are also critical factors considered.

The 5th floor entire glazing is being upgraded and insulated partitions added to help improved the 'U' value. The extension roof insulation has been greatly enhanced.

4.1.3 Heating Systems

The existing boilers serving the Air Handling Units are being upgraded in a phased process with higher efficiency condensing units.

A full VRF AC (ASHP) system is being installed to heat and cool the spaces in the hotel to help save on energy.

There is no available district heating within the 500m of this hotel.

4.1.4 Hot Water Services

The extension has incorporated a heat pump enhanced with the boiler to help achieve the correct 60^{o}C storage temperature.

The existing instantaneous gas fired HWS units that serve the rest of the hotel are being upgraded with new condensing gas units.

This upgraded system is more energy efficient and will help save on energy usage.

4.1.5 Lighting

Every bedroom has lighting controlled by key card access. Task lighting is provided at desk level and separate bedside lamps for night-time reading.

The corridor lighting is zoned to take account of daylight next to window areas. The meeting rooms have a managed lighting scheme for operation when in use together with dimmer control.

High efficiency LED lamps and luminaries with high light output ratios will be selected throughout the building.

4.1.6 Cooling

The existing hotel has a chilled water system. This is going to be improved upon by installing a full VRF AC system.

The building calculations incorporate the shading from the surrounding buildings.

The hotel is a 24hour 7-days a week operation. The AC system is linked to the key cards to help save energy. The AC system is also linked to the Building Energy Management System (BEMS) system.

The meeting spaces and restaurant are used between 6am and 11pm during the week and to midnight during the weekends. This is all controlled by a BMS System.

The meeting spaces are used between 9am and 6pm during the week.

The summertime calculations have shown that comfort cooling is required for user satisfaction. During the detail design checks for mixed-mode operation will be reviewed.

4.1.7 Ventilation

The existing bedroom ventilation system is via three separate fresh air and extract air handling units. The revised scheme combines these into air handing unit with heat recovery and ASHP.

The Building Energy Management System (BEMS) will also utilise any free cooling available.

4.1.8 Controls

A new Trend Building Energy Management System (BEMS) set to control to BSRIA Application Guide AG 7/98 will be installed.

Selection of individual equipment helps play a major part in the energy efficient operation of the systems and overall building.

Monitoring and Targeting is the key element to enable effective operations management.

4.2 Renewable Energy

4.2.1 Toolkit Shortlist

The shortlist of renewable energy technologies may be appropriate for the London mixed used hotel: -

- Wind Generators
- Photovoltaics, roof top and cladding
- Solar water heating
- Biomass heating (Extension and not possible)
- Biomass CHP (Extension and not possible)
- Natural Gas CHP
- Air Source Heat Pump for Heating and Cooling. (Inadequate space on roof so not possible as part of the extension)
- Ground Source Heat Pump for Heating. (Extension and not possible)
- District Heating.

These are individually assessed using the methodology set out in section 4.1 of the toolkit.

4.2.2 Wind Generators

- Wind generation has been considered using https://www.rensmart.com/RenSMARTWindReport#report and post code.
- For a standalone wind turbine, the average wind speed depending on the month of the year will be between 4.1m/s to 6m/s.
- The wind turbine would also have to be between 6m to 9m above the height of the roof and additional cost for structural support. This would also affect the planning application.

Rejected

4.2.3 Photovoltaics, roof top and cladding

- Incorporated approximately 75m2 of PV panels on the existing east roof. We assume Camden Council will approve the installation of these panels and the safe access for maintenance and repairs.

Accepted

4.2.4 Solar water heating

- The optimum location for solar energy generation is the same area and location as the photovoltaics panels.
- Note the complex usage of hot water is generally between 6.30am to 11.00am and partial usage between 11.00am and 1.00pm. The next heavy usage is between 6.30pm to 10.30pm. This Information is extracted from existing hotel usage profile.
- The hotel has a high hot water load but due to timing of solar energy, L8 requirements for hot water temperature storage makes this scheme commercially uneconomical. We are also already using this space with PV panels.

Rejected

4.2.5 Air Source Heat Pump for Heating and Cooling

The existing heating is either by LTHW or electric heating and cooling via chilled water.

Air source heat pumps (ASHP) are becoming increasing popular for heating and cooling systems in UK, as they cost the equivalent of a conventional heating and cooling system to install, they have a Coefficient of Performance (COP) of around 3.5 or greater and therefore uses less energy than alternative types of heating /cooling systems, and the distribution systems are simple and easy to control.

The Mitsubishi Air Source heat pump for the Domestic Hot Water Services has COP of 2.85

Accepted

4.2.6 Natural Gas CHP

The hotel has an existing CHP system that has gone past its life cycle. We have reviewed replacing this CHP for a back-up to the HWS pre-heating.

We based all our initial calculations and design on using a new more efficient CHP and the usage CIBSE profile of Guidebook G Figure 2.4. However, the two 5-star hotels we have been monitoring for the last year has shown a completely different profile of early morning and late evening as the main water usage.

On this new information the CHP would spend a lot of time apart from the two peaks period in the day switching off and on every half hour. This would also not financially and environmentally work effectively.

Rejected.

4.2.7 District Heating

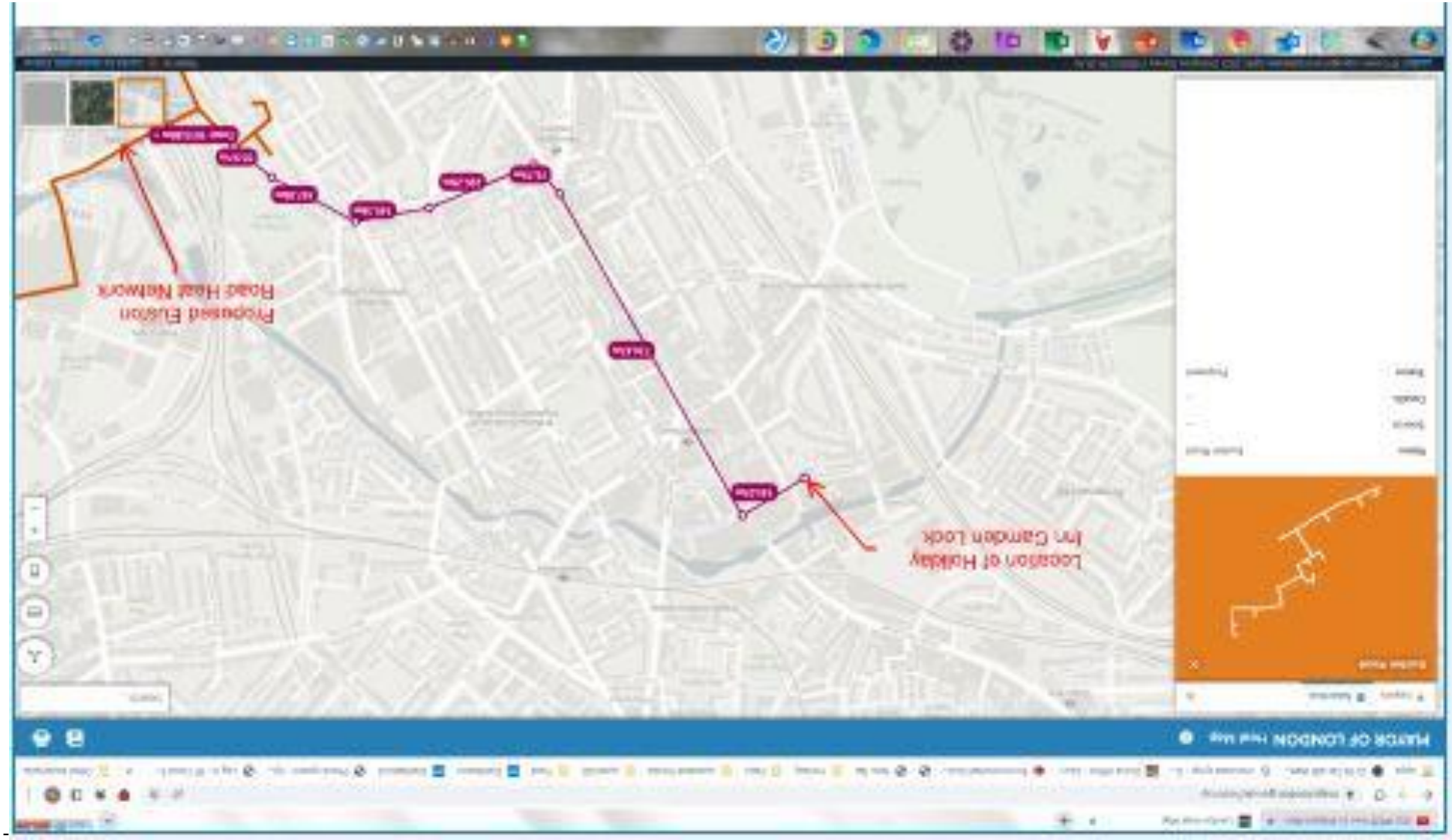
Appendix-'H' shows a screen shot of the London Heat Map.
The nearest "Proposed Euston Road Heat Network is over 1616m (Over 1mile) away.

Rejected.

4.2.8 Summary

•	Wind Generators		Rejected	
•	Photovoltaics, roof top and cladding		Rejected	**Accepted**
•	Solar water heating		Rejected	
•	Biomass heating		Rejected	
•	Biomass CHP		Rejected	
•	Natural Gas CHP		Rejected	
•	**Air Source Heat Pump for Heating and Cooling**			**Accepted**
•	Ground Source Heat Pump for Heating		Rejected	
•	District Heating System		Rejected	

Appendix A – District Heating-Heat Map



Appendix B – Roof Services Layout SK-123.