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 '-' Dated - November 2022

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Rev	Date	Description	Issued to	Approved
-		Pre-Planning Report	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.

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 energy hierarchy of lean, clean and green 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 0.24. The south façade rooms have a 'g' value of 0.19.

- Solar shading has been reviewed by incorporated better 'g' rated glazing. 0.24. The south façade rooms have a 'g' value 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.

We have therefore reviewed the existing heating system and plan to replace the boilers with a more modern and higher efficiency units. A small CHP is being reviewed as part of the detail design for the hotel HWS noting that the hotel heating is via VRF AC system.

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 is being located in the roof plantroom. Please see 1470-(CL)-SK123.

Energy Hierarchy Step 3 - Be Green - Renewable Energy

Renewable energy technologies considered suitable for the site.

We have reviewed incorporating photovoltaic (PV) panels but as the existing roof is on a slope this is going to cause a major safety issue to access and maintain them.

The detail design will review if a small CHP can be incorporated to assist with the hot water generation. This will comply with Policy CC1 section 4.0 noting that CHP's developed before 2023 and meets the latest Government analysis of a 15 to 20-year life cycle of the CHP

The air source heat pump system is very effective and as the plantroom is being moved this is considered to be a viable renewable energy source to be incorporated. .

The existing bedroom AHU's have separate supply and extract system with no heat recovery. The replacement AHU on the 6th floor room will combine the three existing systems and add the new bedrooms in an AHU with heat recovery.

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 roof extension 'U' value of this building has been greatly enhanced. The existing 5th floor extension rooms glazing has been improved and the new section is compliant with the latest 'U' valve and improved glazing 'g' value.

4.1.3 Heating Systems

The existing boilers are being upgraded in a phased process with higher efficiency units. The new upgraded CHP will have a LTHW buffer vessel and act as the primary heat source for the HWS.

A full VRF AC system is being installed to save on energy.

Any pumps will be upgraded to Inverter driven pumps linked to the upgraded BMS controls will help save further energy usage.

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

4.1.4 Hot Water Services

The HWS will have pre-heating via a plate heat exchanger using the CHP prior to going into gas fired water heaters to serve the hotel.

We have noted from monitoring other hotels that the water usage is less than the CIBSE criteria and the occupancy rate is around 1.5 times the number of bedrooms.

This efficient system 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 will 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 EBMS system.

The meeting spaces and restaurant are used between 6am and 11pm during the week and to midnight during the weekends.

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 one number air handing unit with heat recovery.

The EBMS will also utilise any free cooling available.

4.1.8 Controls

A full Energy Building Management System 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

- We have to incorporated approximately PV panels on the 6th floor roof .But the existing roof has a slope and there is a major safety issue to service these PV panels.

Rejected

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

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 existing heating varies between LTHW or electric re-heat. We have reviewed the VRF AC system and this can be incorporated in the new roof plant space and will help save energy.

Accepted

4.2.6 Natural Gas CHP

We based all our initial calculations and design on using a CHP and this is identified below.

- The ideal CHP is 17hr heating demand to get the maximum efficiency out of the heat and power production. The hotel will have two LTHW buffer vessel to help the 17hrs a day and 7days demand for hot water and LTHW. The hours will be averaged over the year as the winter period will enable longer hours than the summer period.

For clarity we have shown 100% of the HWS to be via the CHP System and this is reflected in the BRUKL Report.

The Dynamic modelling uses the NCM calculations and this does not reflect the true HWS usage in the hotel. This is a budget hotel and the client has informed us that the monthly average occupancy for the whole year is 75%.

The CIBSE-Guide-G provides a table showing the water usage for the bedrooms and the kitchen. This water usage includes the cold and how water usage. Hence the actual HWS actual heating usage is 60% of this actual demand profile.

We have reviewed the daily CHP usage using CIBSE Guide-G and tested this with an existing CHP on the market. Note our review has shown a monthly average occupancy of 1.5 per room and not 2.0 as in CIBSE Guide.

The CHP is not being used for cooling purposes.

Our calculations show that a CHP with 130kWt with 5000Litre storage will satisfy the HWS demand.

Accepted.

4.2.7 District Heating

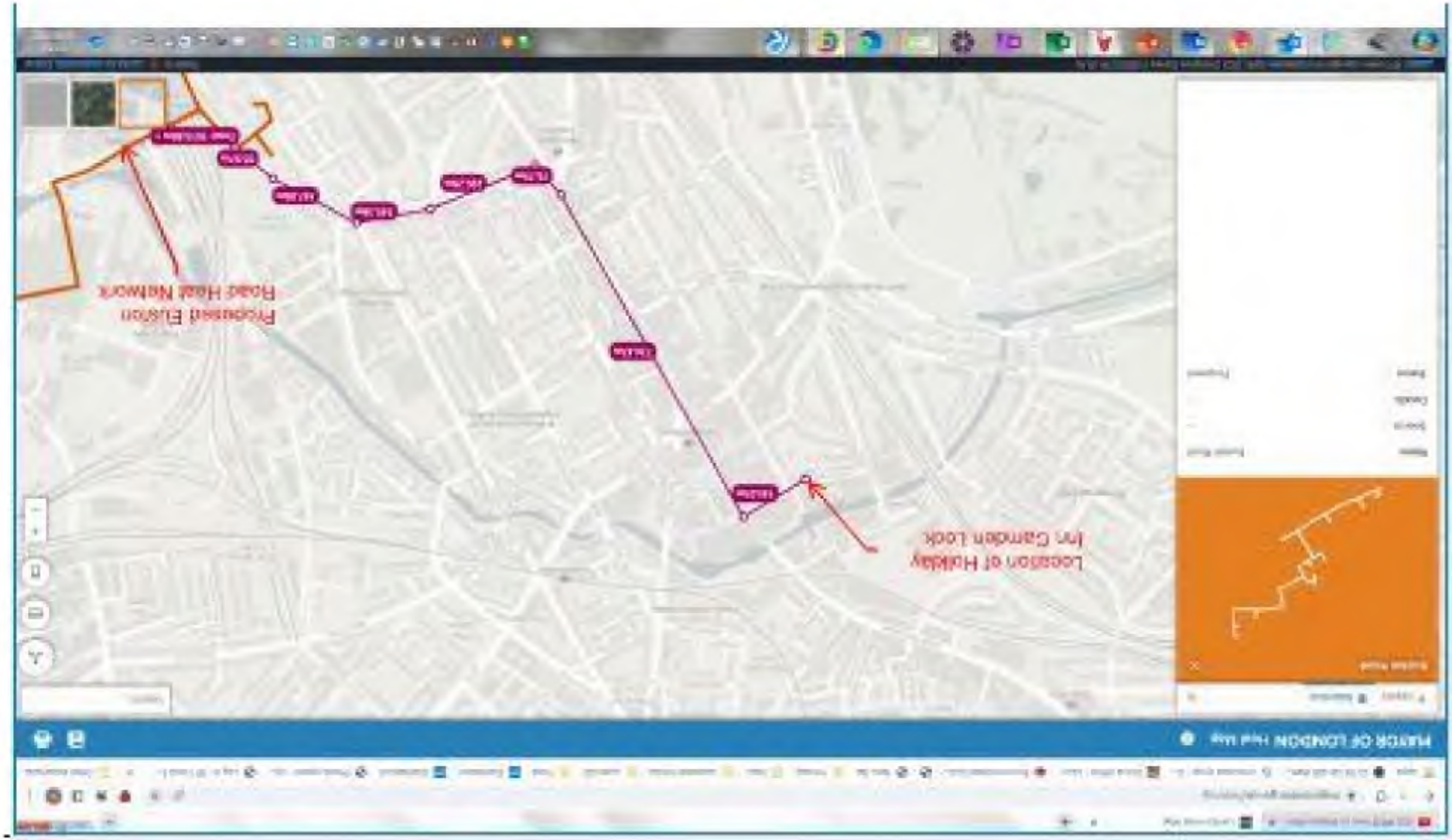
Appendix-'H' shows a screen shot of the London Heat Map.
The nearest "Proposed Euston Road Heat Network is over 1616m (Over 1mile) away.

Rejected.

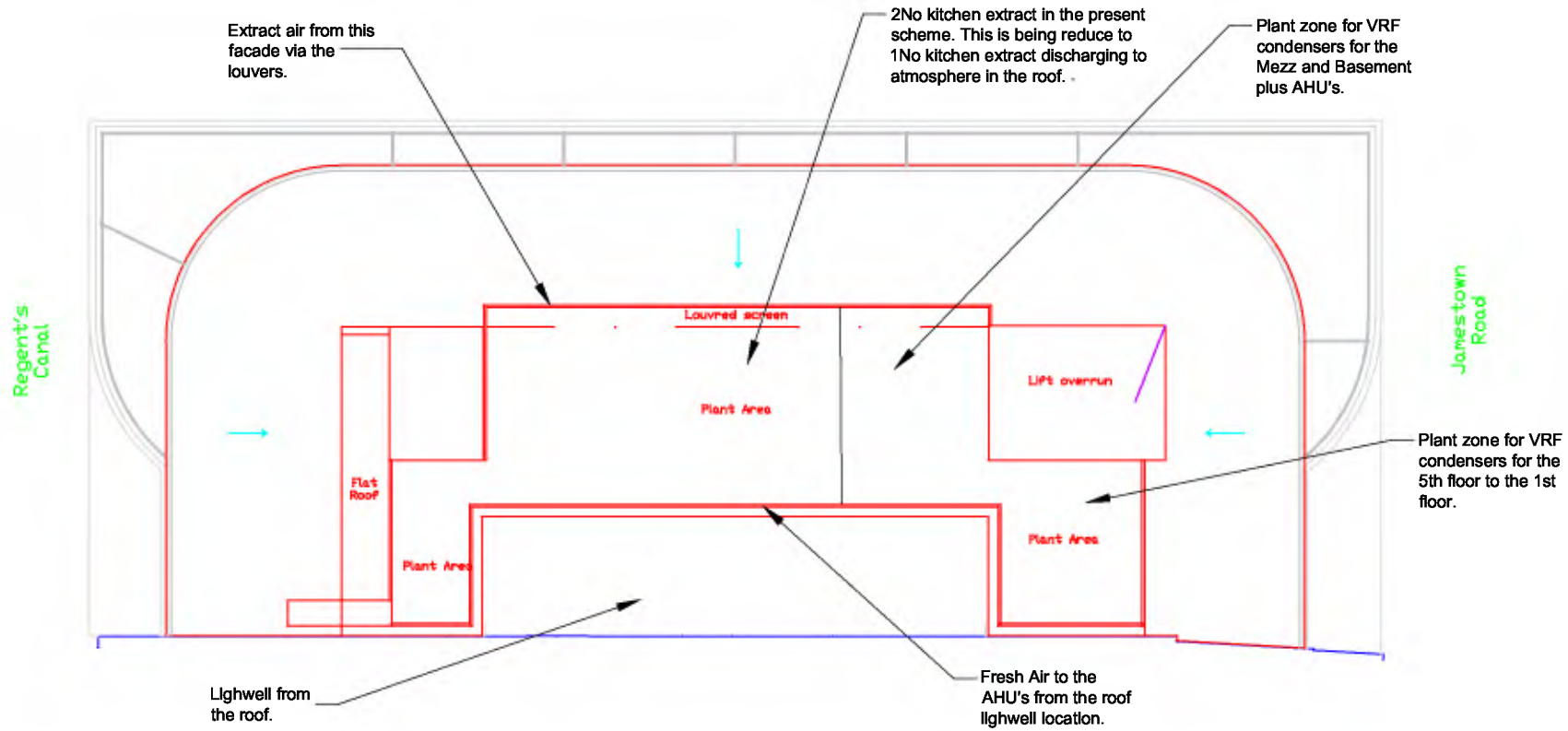
4.2.8 Summary

•	Wind Generators		Rejected	
•	Photovoltaics, roof top and cladding		Rejected	PV Accepted
•	Solar water heating		Rejected	
•	Biomass heating		Rejected	
•	Biomass CHP		Rejected	
•	**Natural Gas CHP**			**CHP Accepted**
•	**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.



Rev	Description	Date	Drawn	Apc
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This Drawing should be read in conjunction with: Ventilation Schematics and Schedules

Stage - 2
Concept Planning

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Drawing Title
ROOF PLAN
SERVICES NOTES

Scale:	Date	Sheet Size:
1:100@A1	07-11-22	A1
Drawn:	Checked:	Approved:
S.M	S.M.	S.M.

Drawing Number: 1470 (CL) SK 123
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