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LOVE DESIGN STUDIO

To

Matthew Leeson
Via Email

13 January 2023

Dear Matthew,

R.E. HEATHROW GATE HOTEL (APPLICATION: 2385/APP/2015/1464)

Thank you for engaging with Love Design Studio regarding Discharging Condition 5 of Application: 2385/APP/2015/1464, the London Borough of Hillingdon.

At your request, we have investigated the Approved Scheme Heathrow Gate Hotel scheme's regulated carbon emissions to retrospectively understand whether Condition 5 of the Decision Note has been fully discharged.

Please see the original condition below:

> *"Prior to the commencement development a detailed energy assessment shall be submitted showing how the development will reduce carbon emissions by 40% from a 2010 Building Regulations compliant development. The detailed assessment shall clearly set out the specifications of the proposed CHP unit, including its inputs and outputs and how this relates to the baseline energy demand and carbon emissions. The assessment shall include clear details on the management and maintenance of the CHP unit, as well as how its performance will be monitored and reported to the Local Authority for 5 years after completion of the occupation of the building. The development must proceed in accordance with the approved details."*

We understand, through our desktop research and the information provided to Love Design Studio, that a Combined Heat and Power (CHP) unit has never been installed on-site.

Love Design Studio have constructed a Building Regulations Part L compliant SBEM model to match the As-Built information provided to us (where some information is missing, we have typically used the Non-Domestic Compliance Guide 2013 document, as is deemed industry practice). To allow for the most accurate comparison between our work and the work carried out by previous consultants 'Melin Consultants' (please see 'D_oracleorahome_2portalimagesdv_pl_files2385_APP_2016_2672SBEM Condition Application') we have used the inputs indicated in the Building Regulations Part L UK (BRUKL) report produced by 'Darren Baker'
(please see 'D_oracleorahome_2portalimagesdv_pl_files2385_APP_2016_2672HGH - As Built_brukl').

We have then changed the heat source assumptions in our model to include a CHP model with gas boiler backup rather than a gas boiler/heat pump hybrid; this is to assess whether the scheme would have met a 40% CO_2 reduction on Part L 2010 Building Regulations with a CHP unit installed (as per the requirements of Condition 5).

The CHP unit modelled is based on a Veolia range 95kWe/108kWe at 38.2%/43.4% electrical/thermal efficiency.

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Under the assumption that the CHP unit would account for 80% of the total communal space heating and total site hot water consumption (the remaining 20% would be fulfilled by a gas boiler backup, the same efficiency as found in the 'Melin Consultants' BRUKL report) we have concluded that the total CO2 reduction would possibly have been in the region of 47.9% under 2010 Part L Building Regulations which far exceeds the 40% CO2 reduction requirement of Condition 5; this is based on a 2010 Target Emission Rate (TER) of 59.7 kgCO2/sqm and Building Emission Rate (BER) of 31.1 kgCO2/sqm.

As stated above, no CHP unit was installed on-site, which we believe to be the right decision, as the technology is no longer perceived as the most sustainable solution for reducing carbon, especially under the latest Building Regulations Part L 2021 methodology.

A CHP system installed under today's current Building Regulations (Part L 2021) would see an *increased* regulated carbon emissions by 34.8% on-site compared to the baseline, i.e., emissions would be far worse; this is largely due to the inefficient combustion component of the CHP unit combined with the decarbonisation of the grid.

Our estimates of the 2021 BER using a gas boiler / heat-pump hybrid DHW system (currently on-site) is 28.6 kgCO2/sqm. If we compare the 2021 BER which uses current 2021 carbon factors against the original TER of 59.7 kgCO2/sqm which uses 2010 carbon factors then we are seeing a CO2 reduction 52%, meaning that a choice to opt out of CHP at the time has major CO2 reduction benefits with today's carbon factors.

Love Design Studio therefore believes that what is found on-site, a mix of gas boilers, heat pump(s) and VRV solutions, is a more sustainable solution compared to a CHP unit. The current energy strategy is an improvement on Part L 2010 regulations by more than 40% when considering today's Part L 2021 against the original 2010 TER; therefore, Condition 5 is discharged.

Kind regards,

Andy Love
Director

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