Greenwood Place: App Ref. 2016/5372/P

HM Responses to comments received from Camden Council

HILSON MORAN

HM has prepared this note to respond to feedback received from Camden Council on the energy strategy and approach to sustainability adopted by the scheme.

1. Energy

<table>
<tr><td>Camden Council comments (Email from Ana Lopez, dated 31.10.2016)</td><td>Good u values and air tightness proposed, however the development is only achieving 0.41% for the whole development at the ‘Be Lean’ stage of the energy hierarchy, which is very low. As the proposals are for a new building, further passive measures can be incorporated into the design to achieve further reductions at this stage of the energy hierarchy.</td></tr>
<tr><td>HM Response</td><td>The overall site-wide results in the report have been presented relative to the final (‘Be Green’) TER for comparative consistency*.

However, when the performance of the development under the ‘Be Lean’ section is compared against the Target Emission Rate (TER) for the ‘Be Lean’ tier, the performance of the scheme exceeds the notional building by 2.21%. This performance figure is a more accurate representation of the fabric efficiency measures adopted by the scheme and is broken down as follows. Note that the table below is presented as Table 5.6 of the Energy Strategy Report.
<table>
<tr><th>Use</th><th>Target Emission Rate ($kgCO_2/m^2.annum$)</th><th>Dwelling/ Building Emission Rate ($kgCO_2/m^2.annum$)</th><th>Part L:2013 improvement (%)
‘Be Lean’ only</th></tr>
<tr><td>Residential element ‘Be Lean’ Results against ‘Be Lean’ TER of Residential</td><td>15.83</td><td>17.08</td><td>7.31%</td></tr>
<tr><td>Non-residential element ‘Be Lean’ Results against ‘Be Lean’ TER of Residential</td><td>19.20</td><td>19.00</td><td>-1.05%</td></tr>
<tr><td>Site Wide ‘Be Lean’ Results</td><td>-</td><td>-</td><td>2.21%</td></tr>
</table>

It can be observed that the improvements in the residential component of the scheme exceed that of the notional by more than 7%. The performance of the non-residential fabric is slightly below that of the notional building and one of the key reasons for this is that the notional building unfairly benefits from applying a limiting value to the amount of glazing and does not take into account the functional requirements of a café, reception display or an office.

In summary, the above calculations demonstrate that the development and in particular, the residential component of the scheme has maximised the available passive design measures.

*As stated in the report, the residential Target Emissions Rate (TER) for the ‘Be Lean’ tier of the hierarchy is different from that of the ‘Be Clean’ and ‘Be Green’ tiers. This is due to the National Calculation Method and the different heating sources applied at the ‘Be Lean’ tier.</td></tr>
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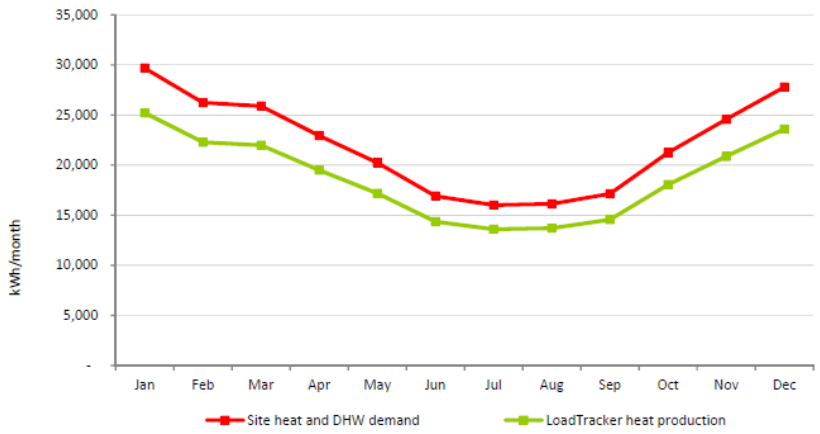
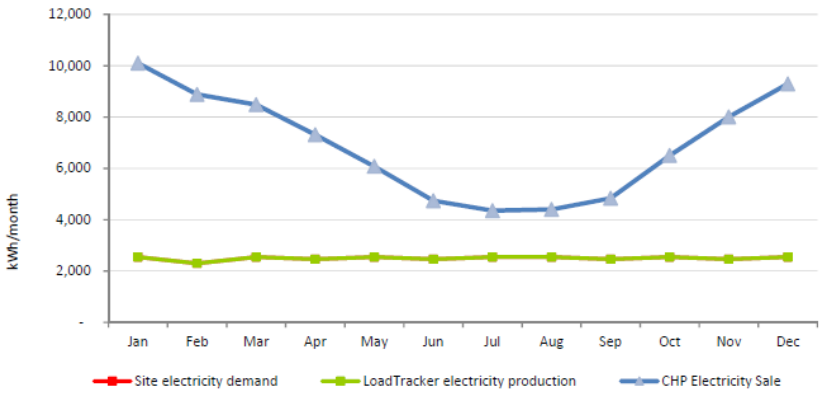
Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	Applicant is proposing gas fired CHP which will be future proofed to enable connection to a decentralised energy network should one become available and should connection be considered viable at that point in time. This should be secured through the S106 (wording can be provided later). The system will be designed following recommendations set in the 'District Heating Manual for London' and an allowance will be made for indicative pipework routes and heat exchanger positions within the design. The CHP will be sized to meet hot water demands for the development but is also expected to meet the electrical demand from the commercial and residential common areas. Therefore solar PV is not considered compatible. A 40kWt gas-fired CHP (with backup boilers) is proposed. Sizing and required thermal storage are to be confirmed at the detailed design stage. This results in a 14.35% reduction at the 'Be Clean' stage of the energy hierarchy. Camden generally does not support the inclusion of small scale CHPs from a planning perspective because of the cumulative local air quality impacts and also because at this size they become uneconomical. Where CHP is proposed we ask applicants to provide justification and evidence to demonstrate that CHP is appropriate and has been appropriately sized for the development. The applicant has provided most of the detail below, it would be useful if they could provide the remainder.
HM Response	1. Estimated annual and peak energy demands (kWh/year and kW) as follows: • Heat demand (for hot water and space heating separately) 94,642 kWh/annum (Space Heating) 170,101 kWh/annum (Hot Water) • Electricity demand (including unregulated energy) - monthly. Estimated landlord electricity demand is anticipated to be approximately 30,000 kWh/annum. This will be calculated at the detailed design stage. 2. Annual heat and electricity demand profiles. 



Site electricity demand (as stated earlier) will be calculated at the detailed design stage and is estimated to be 30,000 kWh for the landlord areas.

3. CHP Details

- Fuel Used (kWh/yr) 388,163 kWh (CHP Gas Consumption)
- CHP size (kWth/kWe) and efficiency (thermal and electrical - gross and not net)

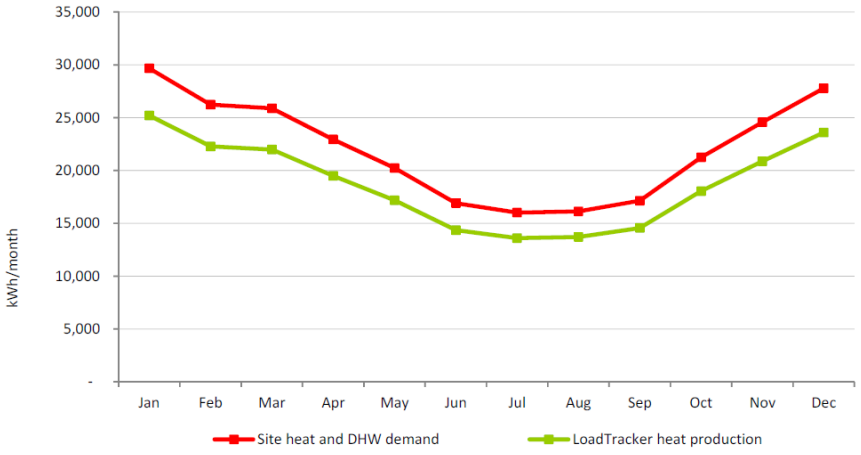
  Thermal Output and Efficiency (@ 100%)- 38.7 kWt, 63.4%

  Electrical Output and Efficiency (@100%) – 20 kWt, 32.7%
- CHP efficiency (gross and not net) Total Efficiency (@100%) - 96.1%
- Heat generated (kWh/yr) and as a proportion –275,165 kWh/annum (CHP Gas Consumption - CHP Electricity Production)
- Electricity generated (kWh/yr) – 112,998 kWh/annum (CHP Electricity Production)
- Operating hours (per yr) – Approximately 5600
- Thermal store details (litres) – To be determined at detailed design but initial analysis suggests at least 500 l
- Space requirements for plant –To be determined at detailed design
- Return temperatures –To be determined at detailed design
- Details on how heat gains from pipe work have been minimised – Insulation and design measures will be developed at detailed design

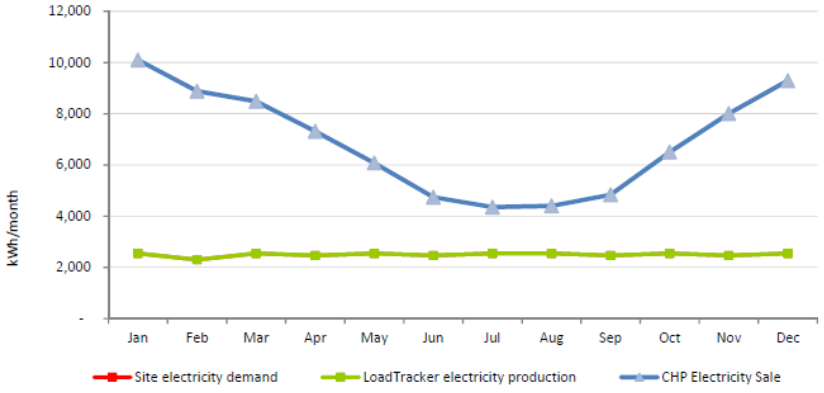
4. Proportion of the annual heat demand profile provided by CHP/boiler/other technology illustrated as a heat profile showing the

monthly demand profiles for heating, cooling and electrical loads alongside the CHP provision

The CHP is anticipated to meet 85% of the heating and hot water demand for the development. The CHP Load Tracker Units can maintain a similar profile to take into account typical seasonal variations in heat requirements, as shown below.



Typical seasonal variations in electricity consumption have been assumed, in producing an approximate consumption pattern for the user centre.



5. Heat and Electricity supply details from CHP (kWh/yr/building) and estimated electricity exported to grid (kWh/yr).

   CHP Gas Consumption is 388,163 kWh/annum

   CHP Electricity Production is 112,998 kWh of which 82,998 kWh is estimated to be exported to the grid. The split of electricity consumed on site and exported to the grid will be reviewed at the detailed design stage.

6. Carbon benefits (gross values rather than net values).

   Approximately 32 tonnes of CO_2

	7. Confirmation of who will be responsible for the CHP electricity sales (if applicable) and that the costs associated with this have been considered. Include any details of communications with ESCOs. Not available at this stage, will be made available once discussions are initiated and progressed. 7. Financial appraisal to demonstrate that the CHP will be economical to operate and maintain. Not available at this stage, will be made available once discussions are initiated and progressed. *8.* Details of monitoring and maintenance Not available at this stage, will be made available once discussions are initiated and progressed. 9. Details of other proposed developments in the area which could benefit from exported heat and therefore opportunities to increase the size of the proposed system. The applicant is unaware of any developments, awaiting confirmation from planning officer.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	The applicant is also proposing ASHP resulting in just 0.77% reduction in CO_2. This misses policy targets for on-site renewables. The applicant should seek opportunities for on-site renewable provision, where feasible, with a view to meeting policy targets.
HM Response	The applicant has reviewed all technologies and in particular looked at the introduction of Photovoltaics which have been deemed unviable due to the following: • The design has limited roof space available which has been prioritised for plant provision and green/brown roofs. • A minimal benefit in carbon savings will be achieved through the introduction of PVs. Preliminary calculations for 50m^2 of rooftop PV indicate that a further carbon reduction of less than 1.5% would be achieved. • The electricity demand for the landlord areas is being met by the CHP with the surplus being exported to the grid. For commercial reasons, it is not considered viable to export electricity back to the grid and the further introduction of photovoltaics creates a risk that the system will run sub-optimally. Based on the lack of demand, increase in capital and ongoing maintenance costs and the minimal carbon savings, PVs were considered unviable.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	The annual CO_2 reduction shortfall is 42.58 tonnes – we would encourage the development to seek further on-site reductions. If further reductions are not

	feasible then the development will be required to pay a carbon offset contribution. This is calculated as follows: 42.58 x £2,700 = **£114,966.**
HM Response	All viable measures within the Be Lean, Be Clean and Be Green sections have been maximised and the carbon offset contribution based on a price of £90/tonne as quoted above has been noted by the applicant.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	BREEAM "Very Good" is being targeted for the Self-Storage area and "Excellent" for the office. The Storage area is targeting 59.74% but cannot achieve the mandatory credit for ENE1 (relating to Green Fit Out Agreement) – the applicant should provide further detail as to why this is not achievable. The offices have potential to achieve 76.04% though are targeting 61.05%, furthermore the development will fall short of the required minimum water credits (55%).
HM Response	The Self Storage units consist of 2 levels of basement for storage and a small reception and associated office area on the ground floor. Consequently, the Self-Storage component of the scheme has a limited heating demand. Any cooling demand associated with the office and reception areas is met by high efficiency VRF units. All of the domestic hot water demand is met by the CHP proposed for the wider development. The warehouse benefits from efficient lighting and photocell control dimming has been proposed for any associated office areas. The warehouse component of the scheme presents no further opportunities to demonstrate a carbon reduction and therefore, it was not considered viable to achieve the minimum energy credits required to achieve an 'Excellent' rating. The offices are targeting an 'Excellent' rating and credits identified as priority 1 will continue to be investigated at the detailed design stage to get a reasonable margin (4-6%) above the 70% threshold score.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	Cooling hierarchy has broadly been followed: balconies will provide shading; solar control glazing is proposed; thermal massing is considered; development will use natural ventilation in residential parts of the scheme. Though some aspects of the cooling hierarchy have not been fully explored in the energy and sustainability statement. There are also some contradictory statements in the report: in one part it says that all dwellings meet the criteria for overheating set out in CIBSE TM52, and in another part it says there are some isolated exceedances in the top floor apartments. Overheating assessments should be provided and units sampled in the assessments should be indicated on a plan.
HM Response	The report states that all representative dwellings were assessed using the CIBSE TM 52 'The Limits of Thermal Comfort: Avoiding Overheating in European Buildings'. The results confirmed that the majority of dwellings do not present an overheating risk when using the current Design Summer Year weather file. A separate 'Residential Overheating Risk – Greenwood Place' report has been prepared and will be submitted as part of these responses.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	Comfort cooling is also being provided for the penthouse apartments – an overheating assessment should be provided for these units to demonstrate that cooling is required. The applicant will need to demonstrate that the cooling hierarchy has been followed and that passive measures have been incorporated before any active cooling is proposed. If cooling is proposed details of the efficiency of the system will also need to be provided.
HM Response	The choice of comfort cooling for the penthouses is solely down to market expectations. The design has endeavoured to incorporated all passive design

	measures to reduce overheating and further details will be made available in a separate 'Residential Overheating Risk – Greenwood Place' report.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	The applicant has undertaken a feasibility assessment for greywater harvesting which established payback of 16 years for residential or 13 if incorporated site wide. The applicant considers this too long. The applicant has not considered feasibility of greywater harvesting in the commercial parts solely. Rainwater harvesting is also not proposed. The residential units will be designed to meet water efficiency targets but as noted above, the applicant is not meeting the minimum BREEAM water credits – therefore greywater harvesting should be explored further.
HM Response	The commercial component of the scheme has low greywater generation (from hand wash basins and cyclists showers) which is not adequate to meet the greywater demand for the WCs within the commercial offices. The capital cost and challenges associated with implementing a greywater system within the commercial component in a mixed use building will result in a much longer payback period than the residential component of the scheme and thus, be unviable. The applicant is committed to reducing water use through low flow fittings and this is demonstrated by targeting 3 credits under the BREEAM Wat 01 Water Consumption credit which equates to at least a 40% reduction over an established baseline. To achieve the Excellent rating required under BREEAM, it is mandatory to only achieve 1 credit under Wat 01 and the rest of the credits are awarded on performance with a maximum of 5 credits available under the issue. The applicant will also target the Wat 03 credits (Leak detection system and flow control devices) which are currently identified under Priority 1. In summary, the design team will aim to target 78% of the total credits available under the Water section of BREEAM, thereby demonstrating their commitment to reduction of water use.

Camden Council comments (Email from Ana Lopez, dated 31.10.2016)	The applicant should provide justification for demolition over retrofitting, and also provide % of demolition material reused and recycled in the scheme. All construction materials will have a rating of D to A+ - this is a fairly broad target and we would expect higher ratings to be specified, particularly for the materials for the main building elements.
HM Response	The applicant will make best endeavours to achieve a rating of A or A+ for materials with the greatest volume. The broad target was stated only to give credence to the fact that there may be materials where it is unavoidable to secure a higher rating within the constraints of the green guide rating methodology.