KATHERINE FROST
London Borough of Camden
5 Pancras Square
London
N1C 4AG

17 March 2021

Dear Katherine,

RE: 2020/5593/P 330 GRAY'S INN ROAD - ENERCY / SUSTAINABILITY – RESPONSE TO COMMENTS

This letter accompanies XCO2 responses spreadsheet tracker and provides additional information the responses to the London Borough of Camden Energy and Sustainability comments received via email on 4th March 2021.

ISSUE 2: ENERGY AND CARBON PERFORMANCE

Issue 2: There is a discrepancy in the figures reported for savings at Be Green in Table 18 compared to the GLA spreadsheet in Appendix E. ACTION: This discrepancy should be explained or corrected.

XCO2 RESPONSE

The Energy performance tables have been updated, please see below, to adequately present the carbon savings associated with each part of the development (results for SAP10 carbon factors). Minor updates were done to correct inconsistencies in the Energy Statement.

It should be noted that the minimal discrepancy to the GLA spreadsheet still present should be negligible. Given that the GLA spreadsheet is locked it is unclear why the Be Green savings do not match. Furthermore, the GLA spreadsheet doesn't allow for the separation of new build and refurbishment in the summary tables so therefore shouldn't be used to calculate carbon offset payment as it is only applicable to new buildings.

DOMESTIC CUMULATIVE SAVINGS

Table 1: CO_2 emissions after each step of the Energy Hierarchy for the domestic part of the development

	Carbon dioxide emissions for domestic buildings (tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline	73.3	43.2
After energy demand reduction	60.9	43.2
After heat network/CHP	60.9	43.2
After renewable energy	40.1	43.2

Table 2: Regulated CO2 savings from each stage of the Energy Hierarchy for the domestic part of the development

	Regulated domestic carbon dioxide savings	
	Tonnes CO_2 per annum	% over baseline
Savings from energy demand reduction	12.5	17.0%
Savings from heat network/CHP	0.0	0.0%
Savings from renewable energy	20.5	28.0%
Cumulative on site savings	33.2	45.2%
Cumulative for offset payments	1,204.4 tonnes over 30 years	

NON-DOMESTIC CUMULATIVE SAVINGS

Table 3: CO2 emissions after each step of the Energy Hierarchy for the non-domestic part of the development (including refurbishment)

	Carbon dioxide emissions for non-domestic buildings (tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline	649.8	293.0
After energy demand reduction	587.7	293.0
After heat network/CHP	587.7	293.0
After renewable energy	390.7	293.0

Table 4: Regulated CO_2 savings from each stage of the Energy Hierarchy for the non-domestic part of the development (including refurbishment)

	Regulated non-domestic carbon dioxide savings	
	Tonnes CO_2 per annum	% over baseline
Savings from energy demand reduction	62.1	9.6%
Savings from heat network/CHP	0.0	0.0%
Savings from renewable energy	197.0	30.3%
Cumulative on site savings	259.1	39.9%

NON-DOMESTIC REFURBISHMENT ONLY SAVINGS

Table 5: CO2 emissions after each step of the Energy Hierarchy for the non-domestic REFURBISHMENT ONLY part of the development

	Carbon dioxide emissions for non-domestic buildings (tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline	48.0	19.4
After energy demand reduction	31.2	19.4
After heat network/CHP	31.2	19.4
After renewable energy	23.2	19.4

Table 6: Regulated CO_2 savings from each stage of the Energy Hierarchy for the non-domestic REFURBISHMENT ONLY part of the development

	Regulated non-domestic carbon dioxide savings	
	Tonnes CO_2 per annum	% over baseline
Savings from energy demand reduction	16.8	35.1%
Savings from heat network/CHP	0.0	0.0%
Savings from renewable energy	8.0	16.6%
Cumulative on site savings	24.8	51.7%

NON-DOMESTIC NEW BUILD ONLY SAVINGS

Table 7: CO_2 emissions after each step of the Energy Hierarchy for the non-domestic NEW BUILD ONLY part of the development

	Carbon dioxide emissions for domestic buildings (tonnes CO_2 per annum)	
	Regulated	Unregulated
Baseline	601.8	273.5
After energy demand reduction	556.5	273.5
After heat network/CHP	556.5	273.5
After renewable energy	367.5	273.5

Table 8: Regulated CO2 savings from each stage of the Energy Hierarchy for the non-domestic NEW BUILD ONLY part of the development

	Regulated domestic carbon dioxide savings	
	Tonnes CO_2 per annum	% over baseline
Savings from energy demand reduction	45.3	7.5%
Savings from heat network/CHP	0.0	0.0%
Savings from renewable energy	189.0	31.4%
Cumulative on site savings	234.3	38.9%
Cumulative for offset payments	11,025.5 tonnes over 30 years	

SITE-WIDE WHOLE DEVELOPMENT CUMULATIVE SAVINGS

Table 9: Site wide regulated CO_2 emissions and savings

	Total regulated emissions (tonnes CO_2/year)	Regulated CO_2 savings (tonnes CO_2/year)	Percentage saving (%)
Baseline	723.1		
Be Lean	648.5	74.5	10.3%
Be Clean	648.5	0.0	0.0%
Be Green	430.9	217.5	30.1%
Total		292.2	40.4%
Offset to zero carbon for domestic		1,204.4 tonnes over 30 years	
Offset for non-domestic to zero carbon		(see table 8 for non-dom new build portion only)	

SITE-WIDE NEW BUILD ONLY CUMULATIVE SAVINGS

Table 10: Site wide NEW BUILD ONLY regulated CO_2 emissions and savings

	Total regulated emissions (tonnes CO_2/year)	Regulated CO_2 savings (tonnes CO_2/year)	Percentage saving (%)
Baseline	675.1		
Be Lean	617.2	57.9	8.6%
Be Clean	617.2	0.0	0.0%
Be Green	407.7	209.5	31.0%
Total		267.4	39.6%
Offset to zero carbon for domestic		1,204.4 tonnes over 30 years	
Offset for non-domestic to zero carbon		11,025.5 tonnes over 30 years	

ISSUE 4: CARBON OFFSET

Issue 4: Carbon offset has been calculated at the rate of £95/t for 30 years for zero carbon for both commercial and domestic new build. This equates to £1,217,805 (or £1,231,770 – see above). It should be noted that the carbon offset rate is calculated at planning approval stage and should be included in the s106 agreement and is not adjustable at design stage, as is suggested in the Energy Statement. ACTION: Carbon offset amount to be confirmed and included in s106Carbon offset

XCO2 RESPONSE

The Energy Statement presented the carbon emission savings for the whole development (including refurbishment) and separately the savings associated with the refurbishment only.

Additional energy savings summary tables have been produced (see previous section) to adequately present the carbon savings associated with each part of the development.

In line with GLA guidance, carbon offset payment is only required for the new build part of the development only. The following is a revised calculation:

- With SAP10 carbon factors, the overall carbon emissions from the new build only will be 39.6% corresponding to 267.4 tonnes of regulated CO2 reduction saving.
- Whole development: Based on current tools and methodology available for calculation of CO2 emissions under SAP10 the new build part of the development will have a shortfall of 407.7 tonnes of carbon annually corresponding to circa 12,230 tonnes of CO2 over 30 years. For the GLA carbon offsetting price of 95£/tonne a total figure of circa £1,161,800 is expected to be required.
- Residential: To achieve 'zero carbon' for the new build only non-domestic portion of the scheme, 40.1 tonnes per annum of regulated CO2, equivalent to 1204.4 tonnes over 30 years should be offset offsite.
- Commercial: To achieve 'zero carbon' for the new build residential portion of the scheme, 367.5 tonnes per annum of regulated CO2, equivalent to 11,025.5 tonnes over 30 years, to be offset offsite (excluding the refurbishment part of the development).

These figures should be confirmed via detailed design stage calculations based on the adopted SAP10 methodology at the time the section 106 is due, and not at planning approval stage.

ISSUE 7 BE GREEN

PV

PV shall comprise 24.70kWp (130m2) of roof mounted arrays on Block A of the residential development and the Hotel. In total the PV installation would produce regulated CO2 savings of 0.6% for the development. The other roof area is either external plant space, accessible terrace space or unsuitable for PVs due to size or shading restrictions.

Comment: All opportunities for maximising on site renewables should be explored and given the extensive roof area it is disappointing that there is not a larger amount of solar PV.

Comment: The proposals report meeting the required 20% reduction target at Be Green stage through onsite renewables however the 24.7kWp array on block A of the residential development and the hotel only save 4.4 t/yr of carbon. Combined with the carbon saving of 19.8t per annum from the domestic ASHP this seems to have all attributed all of the PV savings to the residential carbon savings. The PV savings should be attributed to the building they are located on and feed into. This is not expected to affect any areas meeting their targets but they should be correctly attributed.

Air source heat pumps

For the commercial part of the development, it is assumed that ASHPs will supply 100% of the heating and cooling demand, with the domestic hot water demand served by 50% ASHPs and 50% electric boilers. For the domestic part of the development the heating and domestic hot water load will be supplied via 50% ASHPs and 50% electric boilers.

Comment: Air source heat pumps are welcomed in this area of poor air quality.

Comment: Estimated operational fuel cost has been provided in Table 15 but this is not broken down by residential to non-residential and no comparison to average residential costs provided.

Issue 7: Further information required on the estimated energy cost to the residents. ACTION: Further information required.

XCO2 RESPONSE:

PVS

The PV area proposed has been discussed in detail with the design team and maximised to the extent possible.

PV cannot be added on top of plant as they would obstruct the discharge air path. Adding PV over the generators and the lift overruns was considered. However, since the lift overruns will be quite small, the number of panels will be small and gaps around the panels will be quite large. This is not expected to be very useful in terms of contributions to savings and will not provide a valuable cost benefit. Any PV placed around the generators will need to be built on an independent frame and coordinated around the exhaust, which increase the complexity and cost when compared to low savings gained.

Carbon savings associated with PVs have been allocated to the residential part of the development but accounted for the whole development. As noted by LBC the PV contribution to carbon reduction is not high and splitting it per building would not change the carbon emissions savings for the whole development.

OPERATIONAL COSTS

As per GLA Energy Assessment Guidance (April 2020) operational costs have been estimated for the whole development. The table below presents the annual estimated operational fuel cost predictions associated with the residential part of the development only, using SAP methodology.

It should be appreciated that the operational fuel costs presented in this report are solely based on Building Regulations Part L compliance calculations carried out at early design stage. These estimations do not necessarily reflect the actual operational costs, and do not take into consideration occupant behaviour and account for costs associated with un-regulated energy use.

It is noted that Renewable Heat Incentive (RHI) is available for both domestic and non-domestic developments with ASHPs installed. This will be explored in more detail post-planning and post-construction so the applicant can seek a financial subsidiary with the more detailed design information required (e.g. EPCs).

Annual administration costs of the communal system will be confirmed by the management company, they are therefore considered to have a more accurate understanding of these associated costs and given the nature of the scheme, closer to completion of the development.

Table 11. Estimated operational fuel cost for the proposed development (residential development only).

		Unit
Space heating energy demand	**82,000**	kWh/year
Hot water energy demand	123,160	kWh/year
Other electricity consumption	226,790	kWh/year
Per unit cost - electricity	0.13	£/kWh
Total annual operational energy fuel cost	**55,722**	**£/year**
Average cost per m2	**11**	**£/m². year**

I trust the above and separate spreadsheet provides sufficient clarification to the points on Energy and Sustainability but if you have any additional comments or questions, please do not hesitate to contact us.

Kind regards,

SARA GODINHO
SENIOR CONSULTANT