

ARUP ASSOCIATES

reference 246868-00/G:\Jobs\246868-00 147 Triton - Project Mint\4-05 Reports\4-05-05 Energy Strategy Response\RevA\SK

project 1 Triton Square

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file note **Energy and Sustainability Consultation Response**
Introduction

Please find attached responses in relation to the Energy and Sustainability consultation comments.

Energy Hierarch Response:

"The applicant should clarify what the highlighted figure above refers to and whether this is regulated energy consumption.

The applicant should also provide further details missing from the table above."

The energy statement illustrated the regulated emissions only. The energy hierarchy values have been updated to also illustrate the regulated and unregulated emissions. These tables A1 to A6 are located in the appendix of this file note.

In response to the "Be Clean" carbon emissions value comment; this accounts for the additional savings made to the existing refurbished building above Part L2B. These carbon savings have been incorporated into the new extension under the "After energy reduction" row. This strategy was agreed / accepted between Camden Council and Arup at a meeting held in Camden Council offices dated 22/09/2016 at 14:30.

As the carbon savings from 1 Triton Square are greater than the required 35% carbon reduction, as set by the London Plan, there is no shortfall but a surplus over the London Plan Target. Please refer to page 25 of the energy statement.

"There are 2 BRUKL reports for Triton Square- it is not clear which one is for the refurbishment and which is for the new building (air permeability is the same for both) – the applicant should clarify."

Comparing the change in air permeability from 3 to 5 m³/(h.m²) @ 50Pa of the existing floor plates the cooling and heating loads have increased. This has resulted in the previous carbon saving of 14% being reduced to 13.4% for the existing building. Table 1 and 2 below shall illustrate the updated energy hierarchy tables and also the original submitted tables for direct comparison.

The combined development shall target a carbon reduction of 44.7%, compared to the previous value of 46.5% carbon reduction. The reduction in carbon savings is a direct result of changing the air permeability.



As the carbon savings from 1 Triton Square are greater than the required 35% carbon reduction, as set by the London Plan, this change in air permeability will result in a surplus of 8.7% over the London Plan Target.

Note: St Annes residential carbon offset to comply with Camden zero carbon policy is still required.

For clarity the submitted tables (table 1 and 2 below) have been populated and requested values are highlighted yellow.

**Energy Hierarchy Results:
Previously Issued**

	New Build commercial		New Build residential		Commercial Refurbishment		Overall area weighted reductions	
	Total tCO2	% reduction at each stage	Total tCO2	% reduction at each stage	Total tCO2	% reduction at each stage	Total tCO2	% reduction at each stage
Baseline	227	N/A	32.2	N/A	821	N/A	260	N/A
Be Lean	197	13.4%	28.9	10.4%	706	14%	227	12.7%
Be Clean	141 from refurbishment	24.6%	28.9	0%	706	0%	170	21.9%
Be Green	125	7.1%	15.5	41.6%	706	0%	139	11.9%
TOTAL	102	45.1%	16.7	51.9%	115	14%	121	46.5%
Shortfall	0	-10%	15.4	48.1%	N/A	N/A	0	-12%
Offset	0	N/A	£27,710		N/A	N/A	0	N/A

Table 1

New Results Due to Increased Air Permeability to Existing Floors:

	New Build commercial		New Build residential		Commercial Refurbishment		Overall area weighted reductions	
	Total tCO2	% reduction at each stage	Total tCO2	% reduction at each stage	Total tCO2	% reduction at each stage	Total tCO2	% reduction at each stage
Baseline	227	N/A	32.24	N/A	858	N/A	260	N/A
Be Lean	197	13.4%	28.9	10.4%	743	13.4%	227	12.7%
Be Clean	144	23.3%	28.9	0%	743	0%	173	20.7%
Be Green	128	7.1%	15.5	41.6%	743	0%	144	11.4%
TOTAL	99	43.7%	16.7	51.9%	115	13.4%	116	44.7%
Shortfall	0	-9%	15.4	48.1%	N/A	N/A	0	-9.7%
Offset	0	N/A	£27,710		N/A	N/A	0	N/A

Table 2



Be Clean Section

Future Proofing Response:

"Due to the potential to develop a new network, we are asking developments in this area to provide a contribution towards a wider study for determining the feasibility of developing a new decentralised energy network in the area to be led by Camden. This will be agreed with the council through a S.106 clause."

1 Triton Square shall incorporate connections for a future heat network and space for a plate heat exchanger in the plant room.

Suitability for on-site CHP Response:

"Where possible, the preference will be for a boiler led communal heating system to future proof the development and enable later connection to a heat network."

St Anne's shall incorporate connections for a future heat network and space for a plate heat exchanger in the plant room.

BRUKL Files Response:

"There are 2 BRUKL reports for Triton Square- it is not clear which one is for the refurbishment and which is for the new building (air permeability is the same for both) – the applicant should clarify."

Please find attached in the appendix two BRUKL files with individual headings. The air permeability rate has been changed to 5 m³/(h.m²) @ 50Pa for the existing building. This has resulted in a change of BER and TER results for the refurbishment aspect of the building.

Sustainability Plan Section

BREEAM Rating Response:

The applicant should confirm if the refurbished part of the building is also included within the assessment or whether it has undergone a separate BREEAM Refurbishment and Fit Out assessment."

Yes, the refurbished part of the building is included. Both the existing (to be refurbished) and new extension parts will be assessed using BREEAM 2014.

New Construction for Office building types, with a target rating of Excellent (75.8%). The Pre-assessment presented within the Planning application refers to both parts of the building.

Cooling Hierarchy Response:

"The statement identifies a potential overheating risk through lack of shading on the existing south east façade – the applicant should confirm. Furthermore it appears that the TM52/49 assessment has not been undertaken for Triton Square."

The new upper floors of the development shall incorporate solar shading. The BRUKL file demonstrates under Criterion 3 that the solar gain limit is not exceeded proving that sufficient solar shading has been incorporated into the scheme.

The statement in relation to a "potential overheating risk through lack of shading on the existing south east façade" represents text which remained from a previous scheme which was not removed before the issue of the Energy Statement.

Shading has been included to the glazing elements of the existing building south east façade removing any risk of overheating via solar gains. The BRUKL file demonstrates under Criterion 3 that the solar gain limit is not exceeded proving that sufficient solar shading has been incorporated into the scheme. Please see attached image from the IES model illustrating in red solar shading of the south east corner on the existing building, with solar shading to the new floors in yellow.



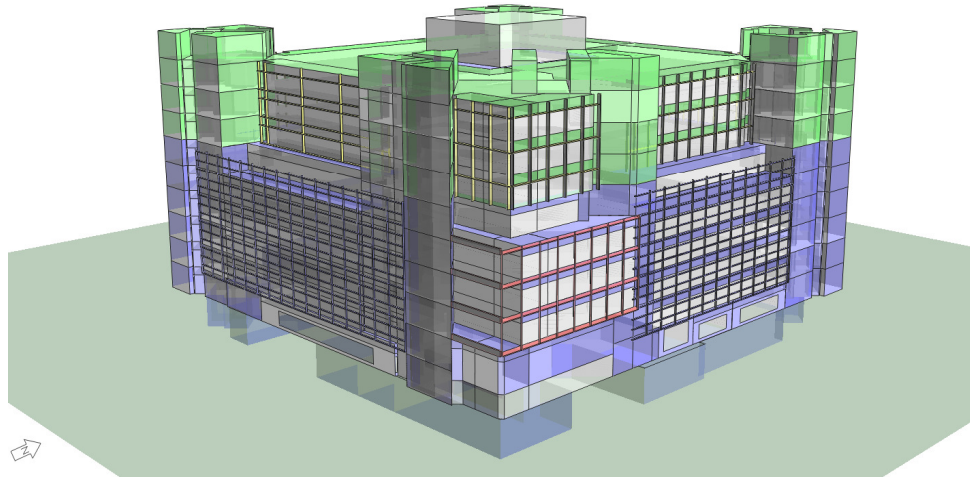


Image 1. South East Perspective of Energy Model

A full dynamic thermal model will be created at the next design stage to test thermal comfort under summer and winter conditions. The modelling process and software used are in line with the guidance contained within CIBSE AM11 Building Energy and Environmental Modelling taking into consideration site weather conditions.

The weather file used to assess this proposed commercial office development against the building regulations Part L2A 2013 was LondonTRY05.fwt. Technical Memorandum 49 represents a guidance weather file and is not a regulatory requirement. However, Arup will conduct an analysis at the next stage of design to review the performance of the building in future climates by utilising an advanced future weather file which looks at Test Reference Year climate in London in 2050.

Materials, sourcing and waste Response:

"The applicant should confirm what rating is targeted."

Material will be selected with a view of maximising the specifications rated A+ or A under the BRE Green Guide to Specification, wherever technically feasible.



Appendix
Previous Submitted Results:

1	Triton (New Extension):	Regulated	Unregulated	Total Carbon Dioxide Emissions (Tonnes CO2 per annum)	% Carbon Reduction
		Carbon Dioxide Emissions (Tonnes CO2 per annum)	Carbon Dioxide Emissions (Tonnes CO2 per annum)		
	Baseline	227	202	429	-
	Be Lean	197	202	399	13.4%
	After energy reduction	141	202	343	24.6%
	After renewable energy	125	202	327	7.1%
Total Carbon Reduction:		45.1%			

Table A1

2	St. Annes:	Regulated	Unregulated	Total Carbon Dioxide Emissions (Tonnes CO2 per annum)	% Carbon Reduction
		Carbon Dioxide Emissions (Tonnes CO2 per annum)	Carbon Dioxide Emissions (Tonnes CO2 per annum)		
	Baseline	32.24	25.88	58.12	-
	Be Lean	28.9	25.88	54.78	10.4%
	After energy reduction	28.9	25.88	54.78	0.0%
	After renewable energy	15.5	25.88	41.38	41.6%
Total Carbon Reduction:		51.9%			

Table A2

3	Combined Development:	Regulated	Unregulated	% Carbon Reduction
		Carbon Dioxide Emissions (Tonnes CO2 per annum)	Carbon Dioxide Emissions (Tonnes CO2 per annum)	
	Baseline	260	228	-
	Be Lean	227	228	12.7%
	After energy reduction	170	228	21.9%
	After renewable energy	139	228	11.9%
	London Plan Target	169	-	35%
Total Carbon Reduction:		46.5%		

Table A3



Result Due to Increased Air Permeability to Existing Floors:

	Regulated	Unregulated		
1 Triton (New Extension):	Carbon Dioxide Emissions (Tonnes CO2 per annum)	Carbon Dioxide Emissions (Tonnes CO2 per annum)	Total Carbon Dioxide Emissions (Tonnes CO2 per annum)	% Carbon Reduction
Baseline	227	202	429	-
Be Lean	197	202	399	13.4%
After energy reduction	144	202	346	23.3%
After renewable energy	128	202	330	7.1%
Total Carbon Reduction:			43.7%	

Table A4

	Regulated	Unregulated		
2 St. Annes:	Carbon Dioxide Emissions (Tonnes CO2 per annum)	Carbon Dioxide Emissions (Tonnes CO2 per annum)	Total Carbon Dioxide Emissions (Tonnes CO2 per annum)	% Carbon Reduction
Baseline	32.24	25.88	58.12	-
Be Lean	28.9	25.88	54.78	10.4%
After energy reduction	28.9	25.88	54.78	0.0%
After renewable energy	15.5	25.88	41.38	41.6%
Total Carbon Reduction:			51.9%	

Table A5

	Regulated	Unregulated	
3 Combined Development:	Carbon Dioxide Emissions (Tonnes CO2 per annum)	Carbon Dioxide Emissions (Tonnes CO2 per annum)	% Carbon Reduction
Baseline	260	228	-
Be Lean	227	228	12.7%
After energy reduction	173	228	20.7%
After renewable energy	144	228	11.4%
London Plan Target	169	-	35%
Total Carbon Reduction:			44.7%

Table A6



Appendix
BRUKL Files:

