HOARE LEA

Former Stag Brewery.
London.
Reselton Properties Limited.

SUSTAINABILITY
ENERGY STRATEGY ADDENDUM

REVISION 02 – 28 FEBRUARY 2023

Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
01	23/02/2023	For issue.	E. Jolly	T. Brown	G. Jones
02	28/02/2023	Updated following comments received from GE.	E. Jolly	T. Brown	G. Jones

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Contents.

1. Purpose of the addendum.

This addendum has been prepared by Hoare Lea on behalf of Reselton Properties Limited ("the Applicant") in support of two linked planning applications (Application A (ref: 22/0900/OUT) and Application B (ref: 22/0902/FUL)) for the comprehensive redevelopment of the former Stag Brewery Site in Mortlake ("the Site") within the London Borough of Richmond upon Thames (LBRuT).

This figures presented within this document supersede those presented within the submitted Energy Strategy for Application A (ref: 22/0900/OUT) and Application B (ref: 22/0902/FUL), however please refer to the submitted document for full detail on the proposed strategy.

This addendum has been produced to respond to the following queries raised by Royal Borough of Richmond upon Thames (RBRuT):

- Non-residential areas of Application A not meeting Be Lean target of 15% regulated carbon emissions compared to Part L baseline
- Application B (School) not including PV within the energy strategy.

1.1 Application A: Development Area 1 – Non-residential Be Lean target.

Development Area 1 (Application A) comprises of a mixed-use development that has been submitted to planning, which forms part of the hybrid application of the Former Stag Brewery submission.

As this area of the site has been submitted as a full submission, as opposed to Outline, it is required to demonstrate that the adopted London Plan Policies for energy and carbon be met following detailed analysis.

To respond to the London Plan Policy SI2 – Minimising greenhouse gas emissions, the energy strategy must be developed to follow the Energy Hierarchy:

- Be Lean – Fabric first approach and energy efficiency measures
- Be Clean – Connection to a District Heat Network
- Be Green – Savings from onsite low and zero carbon technologies

Within the policy, specific targets are set for each stage of the hierarchy, which are summarised in the table below.

Table 1: Summary of carbon reduction targets (London Plan Policy SI2).

Energy Hierarchy stages	Residential	Non-residential
Be Lean	10% reduction against Part L baseline	15% reduction against Part L baseline
Be Clean	No targets set	
Be Green	20% reduction against Part L baseline	
Overall	Minimum 35% reduction against Part L baseline on site, with remaining emissions to 100% to be met via carbon offset payment. Carbon offset rate: £95/tCO_2/30 years	

Submitted strategy

The table below provides a summary of the savings demonstrated at each stage of the hierarchy as part of the submitted Energy Strategy.

Table 2: Summary of submitted energy strategy – DA1.

Savings	Residential	Non-residential
Be Lean	10%	11%
Be Clean	0%	0%
Be Green	67%	48%
Total	77%	60%

As noted in the summary table above, the non-residential areas are not meeting the target set by Policy SI2. Therefore, Hoare Lea have undergone a number of iterations of the Part L2A modelling to identify what measures need to be incorporated into the design to meet the planning requirement.

1.2 Application 2 – School: Photovoltaic array.

The submitted Energy Strategy did not propose photovoltaic (PV) panels to be included within the school roof design. This has been queried by Royal Borough of Richmond upon Thames (RBRuT) and asked for this to be reviewed.

Following a review with the design team and landscape architect, an area of roof has been identified to enable rooftop PV provision. This is shown in Appendix A for reference.

1.3 Summary of changes in this Energy Strategy.

Following comments received from RBRuT, as detailed previously, the following improvements have been made to the Energy Strategy to further reduce regulated carbon emissions associated with the Proposed Development:

- Application A – Development Area 1: Non-residential areas
  - Improved lighting efficacy, 100lm/W_c (previously 80lm/W_c)
  - Air permeability of 3.00 m^3/m^2.hr @50Pa previously 5.00 m^3/m^2.hr @50Pa)
  - Dark coloured blinds, shading coefficient 0.3 (no blinds previously included)
  - Mechanical ventilation:
    - System SFP 1.5 W/l/s (previously 1.6 W/l/s)
    - Terminal SFP 0.4 (same as submitted)
    - Pump type: Variable speed differential sensor across pump (previously Constant Speed)
    - Demand control: On gas sensors, speed control (previously assumed none).
- Application B – School
  - 440m^2 panel area of PV applied (previously no PV included).

For consistency against the submitted strategy, the figures presented within this addendum have been modelled using Part L 2013 software with SAP 10 carbon factors. It is recognised that the development will be required to comply with Part L 2021 which has since been adopted and has been considered as part of this proposal.

2. Application A: Development Area 1.

Table 3 provides a summary of the proposed performance parameters used within the non-residential areas of Development Area 1 compared to the submitted scheme.

Please refer to the submitted Energy Strategy for full detail on other elements of the proposed development.

Table 3: Target parameters for non-residential areas of Development Area 1.

	Submitted scheme	Updated proposal
Fabric performance		
Exposed Floor U-value (W/m^2K)	0.20	0.20
External Wall U-value (W/m^2K)	0.18	0.18
Roof U-value (W/m^2K)	0.20	0.20
Glazing U-value (W/m^2K)	1.40	1.40
Roof Light Glazing U-value (W/m^2K)	N/A	N/A
Air Permeability ($m^3/h.m^2$) @ 50Pa	5.00	3.00
Building services		
Space heating	Centralised Air Source Heat Pump (ASHP) (300% efficiency) with heat exchangers and Fan Coil Units.	Centralised Air Source Heat Pump (ASHP) (300% efficiency) with heat exchangers and Fan Coil Units.
Domestic hot water	From main heating system via heat interface units	From main heating system via heat interface units
Cooling	High efficiency chillers with an SEER of 5.0	High efficiency chillers with an SEER of 5.0
Ventilation	Air handling units with heat recovery: – System SFP: 1.6 W/l/s – Terminal SFP: 0.4 W/l/s – Heat recovery: 75% – Pump type: Constant Speed – Demand control: None	Air handling units with heat recovery: – System SFP: 1.5 W/l/s – Terminal SFP: 0.4 W/l/s – Heat recovery: 75% – Pump type: Variable speed differential sensor across pump – Demand control: Gas sensors, speed control
Lighting	Target efficacy of >70 luminaire lumens per circuit Watt.	Target efficacy of >100 luminaire lumens per circuit Watt.

2.1 Be lean summary.

With the proposed improvements, the non-residential areas of DA1 are now able to demonstrate a 15.43% improvement compared to the Part L baseline.

As seen on Figure 2 below, the proposed energy efficiency measures are able to provide an additional ~4% saving compared to the submitted strategy enabling the policy target of 15% reduction over the Part L baseline to be demonstrated.

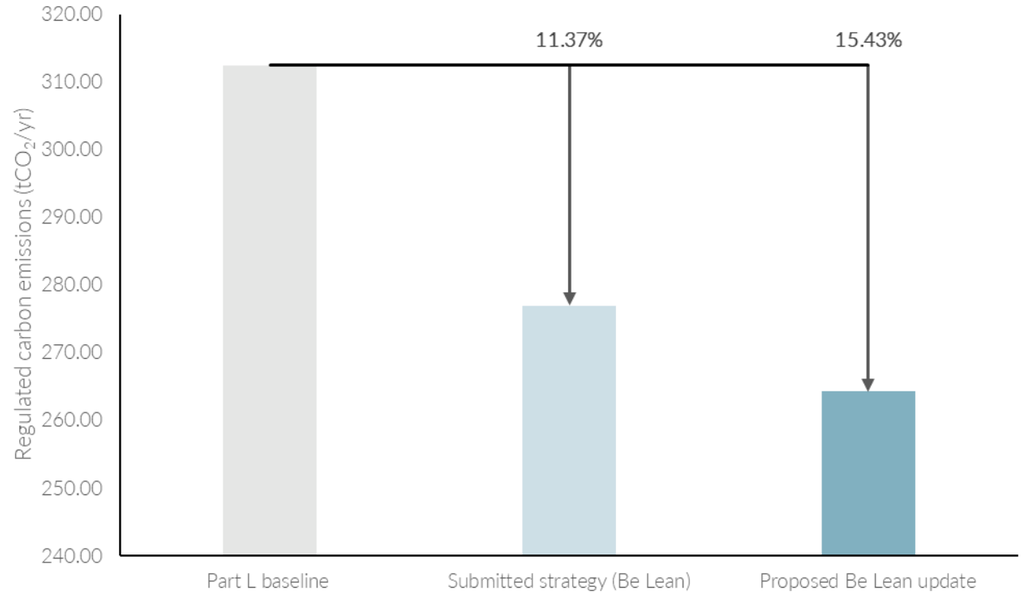

Figure 1: Summary of Be Lean savings for non-residential areas of DA1.

3. Application 2: School.

A review of the roof plan of the school was undertaken by the design team to identify suitable areas for PV installation. As shown in Appendix A, a roof area measuring ~558m^2 has been identified which was previously allocated solely for green roof installation.

The ecologist and landscape architect has confirmed that PV panels can be installed on green roofs providing certain specification guidance is followed.

A full review of the roof area identified will need to be undertaken during detailed design to confirm the panel area that can be achieved in practice. However, for the purpose of this addendum, the assumptions summarised within Table 4 below have been used.

Table 4: Assumptions for School PV array.

Parameters	Assumptions
Available roof area	558m^2
Proportion of roof that can be used of panel area (i.e. allowance for access, spacing, etc.)	75%
Total panel area	440m^2
Panel efficiency	20%
Irradiance	1,000
Orientation	South
Tilt angle	30°

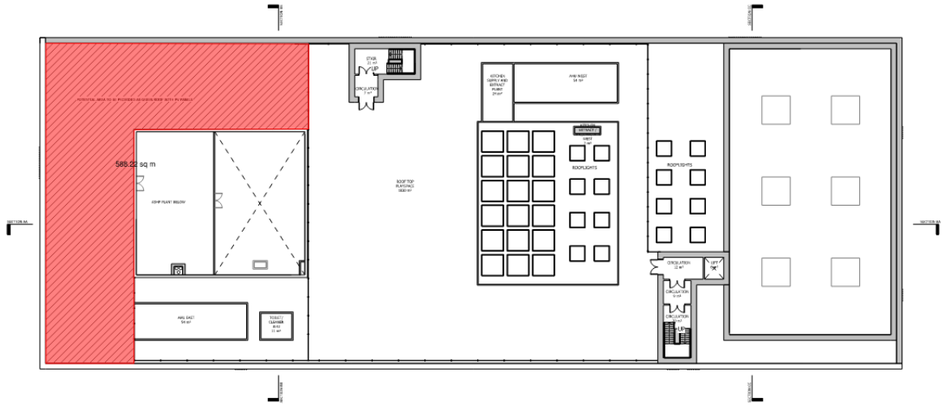

Figure 2: Proposed area identified for PV array, Application 2: School (source: Squire and Partners).

3.1 Additional savings.

Based on the assumptions detailed above, the following savings and electricity generation can be assumed for the proposed School PV array.

Table 5: Summary of PV output.

Parameters	School output
Panel area	440m^2
Peak power rating	63kWp
Electricity generation	66,000 kWh/year
Carbon reduction savings	15tCO_2/yr.

4. Summary of carbon emissions.

The following tables provide a summary of the associated carbon emissions of Application A and B for the residential and non-residential areas as are present as well as their resultant savings at each stage of the hierarchy. These figures reflect the improvements that have been implemented as detailed in the previous sections and supersede the figures presented within the submitted Energy Strategy. However, no changes are proposed to the residential areas of the scheme, therefore these figures are unchanged from the submitted strategy, but have been provided here for ease of reference.

4.1 Application A.

Development Area 1 – Residential

Table 6: Summary of CO_2 emissions reductions – Application A: DA1 – Residential.

Application A – DA1 – Residential	Carbon Dioxide Emissions (tonnes CO_2 per annum)	
	(Regulated)	(Unregulated)
Part L Gas Boiler Baseline	806	55
Reduction from Be Lean	707	55
Reduction from Be Clean	707	55
Reduction from Be Green	199	55
	Regulated Carbon Dioxide Emission Savings	
	(tonnes/yr)	(%)
Reduction from Be Lean	99	12.3%
Reduction from Be Clean	0	0.0%
Reduction from Be Green	508	63.0%
Total Reduction	**607**	**75.3%**
Total Target Reduction	**806**	**100.0%**
Annual Surplus / Shortfall	**-199**	**24.7%**
Carbon offset payment	£567,065	

Development Area 1 – Non-residential

Table 7: Summary of CO_2 emissions reductions – Application A: DA1 – Non-residential.

Application A – DA1 – Non-residential	Carbon Dioxide Emissions (tonnes CO_2 per annum)	
	(Regulated)	(Unregulated)
Part L Gas Boiler Baseline	312	189
Reduction from Be Lean	264	189
Reduction from Be Clean	264	189
Reduction from Be Green	113	189
	Regulated Carbon Dioxide Emission Savings	
	(tonnes/yr)	(%)
Reduction from Be Lean	48	15.4%
Reduction from Be Clean	0	0.0%
Reduction from Be Green	152	48.5%
Total Reduction	**200**	**64.0%**
Total Target Reduction	**312**	**100.0%**
Annual Surplus / Shortfall	**-113**	**36.0%**
Carbon offset payment	£320,961	

Development Area 2 – Residential only
Table 8: Summary of CO_2 emissions reductions – Application A: DA2 – Residential.

Application A – DA2 – Residential	Carbon Dioxide Emissions (tonnes CO_2 per annum)	
	(Regulated)	(Unregulated)
Part L Gas Boiler Baseline	472	241
Reduction from Be Lean	448	241
Reduction from Be Clean	448	241
Reduction from Be Green	99	241
	Regulated Carbon Dioxide Emission Savings	
	(tonnes/yr)	(%)
Reduction from Be Lean	24	5.04%
Reduction from Be Clean	-	0.00%
Reduction from Be Green	349	73.94%
Total Reduction	**372**	**79%**
Total Target Reduction	472	100.0%
Annual Surplus / Shortfall	-99	-21%
Carbon offset payment	£282,443	

4.2 Application B.

School
Table 9: Summary of CO_2 emissions reductions – Application B - School.

Application B - School	Carbon Dioxide Emissions (tonnes CO_2 per annum)	
	(Regulated)	(Unregulated)
Part L Gas Boiler Baseline	104	43
Reduction from Be Lean	88	43
Reduction from Be Clean	88	43
Reduction from Be Green	21	43
	Regulated Carbon Dioxide Emission Savings	
	(tonnes/yr)	(%)
Reduction from Be Lean	16	15.0%
Reduction from Be Clean	0	0.0%
Reduction from Be Green	67	64.5%
Total Reduction	**83**	**79.5%**
Total Target Reduction	104	100.0%
Annual Surplus / Shortfall	-21	20.5%
Carbon offset payment	£60,726	

4.3 Summary of carbon offset payments.

Table 10 shows the anticipated CO_2 emissions that will be subject to a carbon offset charge to be agreed with LBRuT.

Table 10: Carbon Offset

Whole Site (Application A and B) Total		Carbon Offset (tonnes)	Cost (£)
Development Area 1	Annual Offset (Residential Areas)	199 tCO_2	£567,065
	Annual Offset (Non-residential Areas)	113 tCO_2	£320,691
Development Area 2	Annual Offset (Residential Areas)	99 tCO_2	£282,443
	Annual Offset (Non-residential Areas)	n/a	£0
Application B - School	Annual Offset (School)	21 tCO_2	£60,726
Total carbon offset		**459**	**£1,307,856**

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