



ABBA
ENERGY

81 AVENUE ROAD

London NW8 6JD

ENERGY REPORT

Part L compliance (2013) & SAP assessment report (SAP2012)

Revision A – 7 Feb 2017

Rev A changes: additional points 1.6 & 1.7

Abba Energy Ltd

Registered with BRE for Code, BREEAM Domestic Refurbishment & EcoHomes - abbaenergy.com
Abba Energy Ltd – Registered in England No.6499134 – Reg. Office Summit House, 170 Finchley Rd, London NW3 6BP

Index and summary of contents

- 1) Results based on current proposals
- 2) Appendix

1 RESULTS BASED ON CURRENT PROPOSALS

- 1.1 The proposed development includes the demolition of the existing property and replacement with a new single family dwelling.
- 1.2 The designed development has attained the Planning standards for this scheme, which are:
 - 1.2.1 Comply with Part L 2013
 - 1.2.2 Comply with London Plan Target of 40% reduction in carbon emissions over Part L2010, (35% reduction in carbon emissions over Part L2013)
 - 1.2.3 Produce a 20% reduction in carbon emissions from on-site renewables
- 1.3 The Outline Specification in the Appendix shows the data used in the base SAP calculation. These standards have been taken from the drawings and construction specification provided.

CALCULATED SAP PART L RESULTS

81 Avenue Road	Energy Rating Results - SAP 2012				2013 Build Regulations Part L												
	FLOOR AREA	B form	SAP	CO2 kg/yr	DER kgCO2/m2/yr	TER kgCO2/m2/yr	DFEE	TFEE	% Difference DER/TER	1-CO2	1-FEE	2A U-Values	2B Efficiencies	2C Lighting	3 Overheating	4 ir Permeability	OVERALL
Results	1346	House	91	12022	9.58	14.77	53.96	70.7	-35.13%	P	P	P	P	P	P	P	Pass

- 1.4 To comply with Part L, the dwellings need to achieve a DER (Dwelling Emissions Rate) that is less than the TER (Target Emissions Rate) – criteria 1. Further there are standards required for the U values (criteria 2a); heating system efficiencies and controls (criteria 2b) and numbers of lowE lights (criteria 2c); and levels of air permeability (criteria 4). There are also requirements regarding the potential for the home to overheat in summer (criteria 3). This is a separate calculation from the energy issues, and does not affect the energy results.
- 1.5 The above table also shows a result for the DFEE. This is the Dwelling Fabric Energy Efficiency Assessment. A measure used to define the minimum energy efficiency for zero carbon homes. Measured in kWh/m2/yr, covering space heating and space cooling energy demand. This is an indicator for the overall efficiency of the fabric to resist the flow of heat. There are standards set for various house types within the zero carbon homes standard. For information, for a detached house the maximum standard for a zero carbon standard house is 46kWh/m2/yr. This is not a requirement for Part L.

LONDON PLAN ENERGY HIERARCHY RESULTS

- 1.6 After the 'be lean' and 'be clean' stages there is a 14.7% improvement. After the 'be green' stage there is a 35.1% improvement.
- 1.7 Of the 35.1% improvement, 14.7% comes from being lean, and 20.4% comes from the PV.
- 1.8 With the Proposed Specification in the Appendix, this development:
 - 1.8.1 **Complies with SAP 2012 (Part L 2013)**
 - 1.8.2 **Complies with the requirement for a 20% reduction in carbon emissions from renewables**
 - 1.8.3 **Complies with the London Plan target of a 35% improvement over Part L 2013.**

APPENDIX – CONSTRUCTION SPECIFICATION

Element			U-Value	Limiting U-values - Area weighted max value	Construction
Floor	1	Basement floor	0.08	0.25	250mm concrete; 150mm Kingspan K103 (k=0.018); 75mm screed; floor finish
	2	Pool floor	0.13	0.25	250mm concrete; 150mm Kingspan styrozone (k=0.038); 100mm concrete 75mm screed; finish
Walls	1	New External wall	0.13	0.30	25mm render, 100mm thermalite block (k=0.015); 150mm cavity part filled with 100mm K108 (k=0.018); 100mm thermalite block (k=0.015); plasterboard on dabs
	2	Basement wall	0.11		ASSUMED SIMILAR TO WALL 1 Concrete retaining wall; cavity fully filled with 100mm K108 (k=0.018); 100mm thermalite block (k=0.015); plasterboard on dabs
	3	Wall between house and car stacker	n/a		ASSUMED Car parking areas heated.
	4	Mansard	0.17		Slate on battens; 150mm rafters with 150mm kingspan K7 between (k=0.020); ASSUMED - 37.5mm K18 board
	5	Dormers	0.17		ASSUMED same as mansard
	6	Pool wall	0.10		ASSUMED Concrete retaining wall; cavity fully filled with 100mm K108 (k=0.018); 100mm med dense block (k=0.51); tanking; render; tiling
Party wall		Party wall		0.00	
Roof	1	Flat roof	0.10	0.20	Membrane; 140mm kingspan TR27 (k=0.024); 18mm ply; 150mm joists with 80mm mineral wool between; plasterboard
	2	Roof to terrace	0.10		As flat roof
	3	Roof to basement	0.10	ASSUME Solid Membrane 200mm concrete; 150mm kingspan; 75mm metal studs; plasterboard	
Windows	1	Windows	1.40	2.00	Timber double glazed
	2	Roof lights	1.80		Frameless DG target UV=1.80
Doors	1	Door	1.20	2.00	Solid timber
		Doors other			None
Thermal bridging					Accredited Construction Details for all construction details EXCEPT Enhanced Construction Details for Lintels (Psi Value 0.01) Constructive Detail CD0014 for Corners (Psi Value 0.044) Constructive Detail CD0008 for internal floor/wall (Psi Value 0.00)
Thermal mass	MEDIUM				default

Space Heating	System	Gas boiler-SEDBUK Band A Boiler min 89% efficient. Make – Hamworthy; model – TBC. Similar to the MVHR, Hamworthy is a commercial boiler range. We can enter the efficiency at design stage as a 'Manufacturer Declared', but SAP does not allow this for the issue of an EPC on completion. For an EPC it has to be a boiler listed on the SEDBUK database, or a Default Value. A Default Value will give a much worse result. It may be possible, with negotiation, to provide the Building Control Officer with a SAP based on the Manufacturer's Declared Efficiency for Building Regulations purposes, and with an EPC showing a different (worse) result.
	Emitter	Underfloor heating (in screed) and in timber
	Controls	Time and temperature zone control
	Compensator	Provided – Weather Compensator As with the boiler, we can enter a Weather Compensator at Design Stage, but for EPC issue we have to use a product from SEDBUK, and there is nothing currently noted as suitable for the Hamworthy boiler range.
	Delayed start	Provided
Space Heating 2	None	

Secondary heating	Gas	3 number, closed front, balanced flue fireplaces
	Solid fuel	None
	Electric	Underfloor mats in bathrooms - 6 no
Hot water	System	From main system
	Hot Water Cylinder	Megaflow commercial 2 x 400 litre Heat loss = 1.72 kWh/day Cylinder stat Primary pipework fully insulated
	HWC Controls	Separately timed
	Water use	Less than 125 litres / person / day

Ventilation	Air permeability	Target 3 m3/m2.hr
	Open chimneys	3no flues
	Extract ventilation	Kitchen and bathrooms
	Other ventilation	None
	MVHR	Nuair X Boxer ASSUMED Efficiency = 91% SFP = 1.05 MVHR - Nuair XBoxer – is a commercial unit, however, this means it is not in Appendix Q. We can use Manufacturer's Data instead, which is what we have done here, using assumed figures. However, for an EPC we can only use SEDBUK product database figures, or Default Data, which will give a very much worse result. As with the boiler it may be possible to negotiate with Building Control to have a SAP report based on Manufacturer's Data for Part L approval; and for the Energy Statement, to have an EPC with a worse result based on the default. Alternatively, the system could be changed for one which features in SEDBUK.
Lights	Internal	Provision – min 100%
Cooling		675m2 cooled Daiken 2 pipe heat VRV Assume class A
Renewables	Solar thermal	None
	PV	10.3 kWp laid horizontally
Summer Over heating	Cross ventilation	Yes
	Window ventilation	Houses- fully open half the time.

THERMAL BRIDGES

These are tables of all the junctions in the ACD list. We have indicated which junctions are present in this building with a "Y" in the 1st column. Extra columns are available for Enhanced ACDs (EACD) and Constructive Details values (CD) should they wish to be used.

K1 Ref	JUNCTION	Junction present	USE	JUNCTION REF	ACD	default	ECD ref. no.	ECD	CD ref num	CD block k=0.11
E1	Steel, lintel baseplate perforated				0.5	1				
E2	Other lintels (incl steel)	Y	ECD				MV01-A	0.01		
E3	Sill	Y	ACD	MCI-WD-04	0.04	0.08				
E4	Jamb	Y	ACD	MCI-WD-06	0.05	0.1				
E5	Ground floor (normal)	Y	ACD		0.16	0.32				
E19	Ground floor (inverted)									
E20	Exposed floor (normal)				0.32					
E21	Exposed floor (inverted)				0.32					
E22	Basement floor	Y	default		0.07					
E6	Internal floor within dwelling	Y	CD	MCI-IF-02	0.07	0.14			CD8	0.00
E7	Party floor between dwellings				0.07	0.14				
E8	Balcony within dwelling (continuous insulation)				0.0	0.0				
E9	Balcony between dwellings (continuous insulation)				0.02	0.04				
E23	Balcony (support penetrates insulation)				none	1.00				
E10	Eaves (insulation at ceiling level)				0.06	0.12				
E24	Eaves (insulation at ceiling level inverted)				none	0.24				
E11	Eaves (insulation at rafter level)	Y	ACD		0.04	0.08				
E12	Gable (insulation at ceiling level)				0.24	0.48				
E13	Gable (insulation at rafter level)				0.04	0.08				
E14	Flat roof	Y	ACD	MCI-RF-01	0.04	0.08				
E15	Flat roof with parapet	Y	ACD	MCI-RF-02	0.28	0.56				
E16	Corner normal	Y	CD		none	0.18			CD14	0.044
E17	Corner invert	Y	CD		none	0				
E18	Party wall between dwellings	Y	ACD		0.06	0.12				
E25	Staggered party wall between dwellings				none	0.12				

JUNCTIONS WITH A PARTY WALL

K1 Ref	JUNCTION	Junction present	USE	JUNCTION REF	ACD	default	EACD ref. no.	EACD	ref num	CD block k=0.11
P1	Ground floor				none	0.16				
P6	Ground floor inverted				none	0.07				
P2	Internal floor within dwelling				none	0.04				
P3	Internal floor between dwellings				none	0.04				
P7	Exposed floor (normal)				none	0.16				
P8	Exposed floor (inverted)				none	0.24				
P4	Roof (insulation at ceiling level)				none	0.24				
P5	Roof (insulation at rafter level)				none	0.04				

JUNCTIONS WITH A ROOF OR A ROOM-IN-A-ROOF

K1 Ref	JUNCTION	Junction present	USE	JUNCTION REF	ACD	default	EACD ref. no.	EACD	CD ref num	
R1	Head	Y	default		none	0.08				
R2	Sill	Y	default		none	0.06				
R3	Jamb	Y	default		none	0.08				
R4	Ridge (vaulted ceiling)				none	0.08				
R5	Ridge inverted				none	0.04				
R6	Flat ceiling				none	0.06				
R7	Flat ceiling (inverted)				none	0.04				
R8	Roof wall (rafter)				none	0.06				
R9	Roof wall (flat ceiling)				none	0.04				

DEFINITIONS

SAP Standard Assessment Procedure. A form of energy rating based on the energy use of space heating, water heating, lights, and auxiliary equipment (pumps & fans) but excludes energy use of appliances and cooking. Rating is based on running costs. The higher the rating the lower the running cost. The scale is 1 – 100+. A SAP of 100 represents zero energy cost.

DER Dwelling Emission Rate New build only; The estimated annual CO₂ emissions per square meter due to space heating, water heating, ventilation and internal lighting, minus any CO₂ emissions saved by the generation of electricity

TER Target Emission Rate New build only; To meet one of the criterion for compliance with Part L1A, the dwelling CO₂ emission rate (DER) must be no greater than a target emission rate based on a notional dwelling of the same size and shape.

FEE Fabric Energy Efficiency Assessment. A measure used to define the minimum energy efficiency for zero carbon homes. Measured in kWh/m²/yr, covering space heating and space cooling energy demand.

<END>