



ENERGY STATEMENT

THE BROADWAY DEVELOPMENT BEXLEYHEATH

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1 INTRODUCTION

This report is prepared by IRF Energy Ltd on behalf of MAB Architects. It summarises the proposed strategy to meet energy usage and carbon reduction requirements for this development. The development is located at 235-237 The Broadway, Bexleyheath and consists of a four storeys, with 15 residential flats and a commercial unit on the ground floor.

2 POLICY FRAMEWORK

Part L of the building regulations deals with energy usage and carbon emissions. The 2021 revision of these regulations included major upgrades in fabric and energy standards, and were introduced as a stepping stone to the Future Homes standards proposed for 2025. These will bring in standards that create zero carbon ready dwellings. All new developments must meet the carbon and fabric targets included in these regulations.

The Planning Conditions from the London Borough of Bexley (reference code 22/02438/FUL) do not mention additional carbon or energy requirements.

The Supplementary Planning Document on Sustainable Design on the London Borough of Bexley's dates from 2007 and references carbon targets against the 2006 Building Regulations. This guidance is therefore deemed to be out of date.

In view of the above, it is proposed that an enhanced specification is adopted, exceeding the requirements of the requirements of the current 2021 Part L of the Building Regulations.



3 METHODOLOGY

A sample of flats have been assessed using Elmhurst Energy's SAP 10 software, which is an approved software for the current 2021 Part L of the Building Regulations. Two flat types were created in the software- One based on a typical one bed apartment, and the other on a typical two bed apartment. The following units were then set up to represent the range of residential apartments in this development:

TABLE 1: UNITS USED IN SAP

Flat type	Storey	SAP Reference
1 BED	First storey Over commercial space	F1-1 BED-SEMI
1 BED	Mid floors (2 & 3) No heat loss roof or floor	F2&3-1 BED-SEMI
1 BED	TOP STOREY (4)	F4-1 BED-SEMI
2 BED	First storey	F1-2 BED-SEMI
2 BED	Mid floors (2 & 3)	F2&3-2 BED-SEMI
2 BED	TOP STOREY (4)	F4-2 BED-SEMI

The specification detailed in the following section was included in the SAP assessments.

The results from SAP10 were then used to calculate the weighted average carbon and energy figures for the whole development. The results for this exercise are as shown in Section 5..



4 PROPOSED SPECIFICATION

The table below summarises the proposed specification. The results in the next section show that this passes all Part L regulated targets. This follows the principles of “*be lean, be clean and be green*” set out in the London Plan:

Be Lean: Fabric standards on individual elements are significantly better than regulated limits. The whole dwelling fabric energy efficiency is also met. These high fabric standards provide a passive means of reducing energy usage. The fabric performance is further enhanced by the proposed adoption of a low air permeability target, providing air tight, draft free dwellings.

Be clean: Heat pumps provide a non-polluting source of energy. With the decarbonisation of the national grid they also provide a low carbon solution to heating the dwellings.

Be Green: An array of photovoltaic (PV) panels is proposed on the roof, providing an on site source of renewable energy.

TABLE 2: PROPOSED SPECIFICATION

ELEMENT	PROPOSED SPECIFICATION	REGULATED LIMIT
EXTERNAL WALLS	U=0.18 w/m ² k	U<0.26 w/m ² k
ROOF	U=0.15 w/m ² k	U<0.16 w/m ² k
HEAT LOSS FLOOR	U=0.15 w/m ² k	U<0.18 w/m ² k
WINDOWS	U=1.2 w/m ² k	U<1.6 w/m ² k
THERMAL BRIDGES	Thermally model junctions to quantify heat loss through structural junctions. Upgrade poorly performing junctions.	-
HEATING	Install high performing air source heat pumps to supply space and water heating	-
AIR PERMEABILITY	<4.5 m ³ /h.m ³	<8 m ³ /h.m ³
VENTILATION	Decentralised mechanical ventilation units	-
PHOTOVOTAIC POWER (PV)	Install PV array on roof.	-



5 RESULTS FROM SAP ASSESSMENT

The table below shows results from SAP for the six flat types set up to represent this development: The figures are for carbon emissions, primary energy and fabric energy efficiency. For each the dwelling results are shown against the regulated targets. The number of each dwelling type is then used to calculate the area weighted performance of the development. This “block compliance” is an accepted approach to meeting regulated targets. This shows:

- Regulated carbon emissions are reduced by 67% (DER V’s TER)
- Regulated primary energy is reduced by 33% (DPER V’s DPER)
- Regulated fabric energy efficiency is improved by over 3% (DFEE V’s TFEE)

TABLE 3: CARBON & ENERGY RESULTS FROM SAP

DWELLING TYPE	LOCATION	NO OF UNITS	FLR AREA m2	CARBON EMISSIONS		PRIMARY ENERGY		FABRIC ENERGY EFFICIENCY	
				DER kgco2/y/m2	TER kgco2/y/m2	DPER kwh/m2/y	TPER kwh/m2/y	DFEE kwh/m2/y	TFEE kwh/m2/y
1 BED FLAT	FIRST FLR	2	53	5.34	16.33	57.57	87.06	41.14	41.7
1 BED FLAT	MID FLR	4	53	4.71	13.78	51.14	73.29	31.44	30.01
1 BED FLAT	TOP FLR	2	53	5.25	17.02	56.64	90.76	40.3	44.98
2 BED FLAT	FIRST FLR	2	66	4.9	14.97	52.61	79.56	38.07	40.29
2 BED FLAT	MID FLR	4	66	4.29	12.4	46.3	65.73	28.18	28.42
2 BED FLAT	TOP FLR	1	66	4.83	15.71	51.87	83.53	37.35	43.81
Total		15							
WT AVERAGE %				66.89%		32.79%		3.31%	

The proposed installation of a high performing heat pump helps achieve carbon emissions and primary energy usage well below regulated levels. The addition of PV further reduces carbon emissions and primary energy and also helps raise the predicted EPC rating to a B, reflecting reduced energy bills for the residents.



6 COMMERCIAL UNIT ON GROUND FLOOR

Compliance with Part L of the Building Regulations for the commercial ground floor unit will be demonstrated by a SBEM assessment. This will identify an appropriate M&E strategy to meet regulated energy targets.

7 STRATEGY TO PREVENT OVERHEATING

A dynamic thermal model will be undertaken following CIBSE's TM59 methodology to demonstrate compliance with Part O Overheating. Given the development's location in an urban area of London; the large areas of glazing and the lack of cross ventilation in many flats, it is vital that this risk is mitigated in the design. As part of this strategy, decentralised ventilation is proposed to help improve air flow and provide a better air quality for residents. The TM59 will assess other measures, such as low g glazing to limit the ingress of sunlight, and maximising window openings. Passive means of heat control will be prioritised, with mechanical cooling only to be used if no other solutions are practical.



APPENDIX 1: SAP CALCULATIONS

SAP SUMMARY REPORTS

REPORTS KEPT IN A SEPARATE ONLINE FOLDER



CAVEAT

This document should only be used for the purpose for which it was commissioned. The author shall not be liable for the consequences of using this document for other projects or purposes.

Any advice given, either verbal or written, relates only to the Part L of the Building Regulations (Conservation of Fuel and Power). The suitability of any insulation, building fabric, heating/ventilation system etc should be checked for each development, particularly against fire safety and structural requirements.

REVISION SCHEDULE

Rev	Date	Prepared by	Changes/comments
-	18/11/23	IRF*	First Issue

* Ian Folkard IRF ENERGY LTD Accredited On-Construction Energy Assessor.