



Central Avenue

Energy Statement

November 2023

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DOCUMENT CONTROL SHEET

Report Reference	PP2233/CA/ES/202311-EC
Revision	-
Issue Purpose	For Planning
Client	London Developments (Global) Ltd
Author	Edward Coate
Approved By	Ryan Thrower
Date of Initial Issue	15 th November 2023

DISCLAIMER

This report has been produced to support a Planning Application and is not to be used 'For Construction', for Building Control compliance or for submission against a Planning Condition.

This report is based on drawings and specifications provided along with information assumed by NRG Consulting for the purposes of compliance. Any budget costs or plant sizing contained within this document are estimated unless otherwise specified and are to be taken as guideline only.

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This report is for the use of the specified Client only unless in the case that there is a signed Letter of Reliance to accompany the report.

1. EXECUTIVE SUMMARY

- 1.1 NRG Consulting have been appointed to undertake an Energy Statement on a proposed development at **1-5 Central Avenue, Sittingbourne, Kent, ME10 4BX** within the jurisdiction of Swale District Council.

The proposed description of development of mixed change of use and new-build, consisting of 22 total units.

- 1.2 SAP calculations have been undertaken and this document illustrates a reduction in CO₂ emissions over the baseline of Part L 2021 for the new-build units via:

Energy Efficient Measures

- High levels of thermal insulation to achieve U-Values lower than the Part L 2021 notional building specification.
- LED Lighting with high luminous efficacy (90lm/W)
- MVHR (Model to be confirmed at a later stage – Either Titon or Silavent as per Noise report recommendations)
- Air Permeability target of 5 m³/(hm²) @50Pa

Renewable Technologies

A hot water heat pump (see Section 5 for further details) has been proposed.

- 1.3 A carbon emissions table is shown across.
- 1.4 This report illustrates how the design of the proposed development has been developed to incorporate energy efficient features and renewable energy to achieve a 62.56% reduction.
- 1.5 For the units formed via the material change-of-use, this report rationalises the savings made by improvements to the fabric and M&E of the units.

	CO ₂ Emissions (Tonnes per Annum)	
	Regulated	
Baseline: Part L 2021 of the Building Regulations (TER)	9.6	
Final Carbon Emissions: Part L 2021 of the Building Regulations (DER)	3.6	
Regulated CO ₂ Savings over Part L 2021	62.56%	
Table: Carbon Emissions Table – New Builds		

2. POLICY FRAMEWORK

- 2.1 The proposed development falls within the Government's "major" category of planning applications.

NATIONAL POLICY – NPPF (2023)

The delivery of sustainable development is at the foundation of the NPPF, which defines it as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

LOCAL POLICIES

- 2.2 The following Planning Policies from the local authority are relevant to this report:

SWALE LOCAL PLAN (2017)

Policy DM 19 Sustainable design and construction

1. Development proposals will include measures to address and adapt to climate change in accordance with national planning policy and guidance and, where appropriate, will incorporate the following:

- a. Use of materials and construction techniques which increase energy efficiency and thermal performance, and reduce carbon emissions in new development over the long term unless considerations in respect of the conservation of heritage assets indicate otherwise;
- b. Promotion of waste reduction, re-use, recycling and composting, where appropriate, during both construction and the lifetime of the development;
- c. Recognition that retaining and upgrading existing structures may be more sustainable than building new whilst making the most of opportunities to improve water and energy efficiency in the existing stock;
- d. Design of buildings which will be adaptable to change and reuse over the long term and which include features which enable energy efficient ways of living (e.g. adequate drying space, cycle storage, home working and good daylighting);
- e. Demonstration of a contribution to the network of green infrastructure and biodiversity, including through tree planting, green roofs and walls, soft landscaping and sustainable drainage systems as appropriate in accordance with Policy CP 7;

f. Encouragement of, where appropriate, mixed-use development where a range of uses provide a variety of heat loads and where local facilities serve local people at scales and layouts which are accessible to pedestrians, cyclists and public transport;

2. Development proposals should, where appropriate, be located, oriented and designed to take advantage of opportunities for decentralised, low and zero carbon energy, including passive solar design, and, connect to existing or planned decentralised heat and/or power schemes.

3. All new non-residential developments will aim to achieve BREEAM 'Good' standard or equivalent as a minimum. All new non-residential developments over 1,000 sq m gross floor area should aim to achieve the BREEAM "Very Good" standard or equivalent as a minimum.

Policy DM 20 Renewable and low carbon energy

3. Priority will be given to development on previously developed land or buildings and proposals which incorporate renewable, decentralised and low carbon energy as integral to new commercial or residential schemes;

Policy DM 21 Water, flooding and drainage

9. Make efficient use of water resources and protect the yield of local public water supplies. For new residential development, all homes to be designed to achieve a minimum water efficiency of 110 litres per person per day, in line with the Government's Housing Optional Technical Standard for water efficiency; and

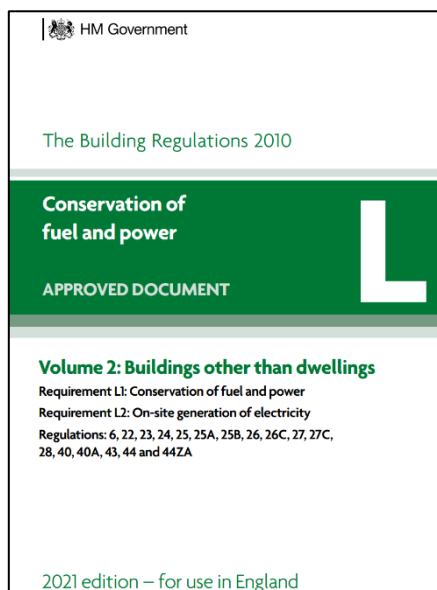
BUILDING REGULATIONS (PART L 2021 & FUTURE HOMES STANDARD)

- 2.3 On 24th July 2018 the Department for Business Energy & Industrial Strategy (BEIS) published their update to SAP 9.92 (Part L 2013), called SAP 10.

In October 2019, the Ministry of Housing, Communities and Local Government (MHCLG) then issued consultation on changes to Part L of the Building Regulations. Dubbed *The Future Homes Standard*, it is an aspiration to ensure all new homes will have low carbon heating and “world-leading levels of energy efficiency” by 2025 and is intended to be the primary driver in achieving the Governments desire to reduce carbon emissions in the creation of new-build housing stock.

On the June 15th, 2022, Part L 2021 of the Building Regulations came into force. As per the requirements, all new homes must produce 31% less CO₂ emissions than that of Part L 2013 in-order to achieve Building Regulation compliance.

- 2.4 The major change in the regulations is the change in carbon factor of electricity to represent the decarbonisation of the National Grid and the push towards net-zero carbon developments.



3. PROPOSED REFURBISHMENT – EXISTING BUILDING

- 3.1 The current existing building has been assessed against its proposed upgrades to ensure that the change of use for the renovated units will be in keeping with all Part L recommended refurbishment targets.

The existing property is of 1960s construction and is a steel frame concrete building with concrete floors, flat roof, and external concrete cladding panels. The existing heating is gas.

ELEMENT	EXISTING U-VALUES (W/m ² K)	PROPOSED U-VALUES (W/m ² K)
<i>Walls</i>		
External Wall	2.1 W/m²K	0.17 W/m²K
Sheltered Walls	0.8 W/m²K	0.17 W/m²K
Party Walls	0.50 W/m²K	0.0 W/m²K
<i>Roof</i>		
All Roofs	0.25 W/m²K	0.13 W/m²K
<i>Floor</i>		
Floor, inc upper exposed	0.25 W/m²K	0.10 W/m²K
<i>Openings</i>		
Windows	2.6 W/m²K	1.4 W/m²K (Double Glazing)
Table: Existing and Proposed Specifications		

ELEMENT	EXISTING DETAILS
Ventilation	System 1 – Natural Ventilation
Air Permeability	Default
Heating	Gas Heating
Heating Controls	Programmers and Room Thermostats

Based on the above descriptions, the introduction of a new mechanical ventilation system, installation of new electric boilers, improvements to all thermal elements, and new fenestrations in the form of double-glazed windows, it can be stated that the overall proposed designed is of much greater quality than the existing building.

Electric Combi Boilers were chosen as there are NOX-free and an easy to install mature technology that works well with refurbished and small dwellings with a low heat demand. These will provide both the heating and hot water.

Light fittings and bulbs will be replaced throughout to a minimum luminous efficacy of 90lm/W.

All windows will be replaced with new double-glazed fittings.

4. PROPOSED CARBON EMISSIONS – NEW BUILD

4.1 In order to estimate the CO₂ emissions for the site, a SAP Calculation has been carried out by a licensed and accredited OCDEA Domestic Energy Assessor using Design SAP 10's online platform.

4.2 The baseline CO₂ emissions covered by Part L 2021 of the Building Regulations will be expressed as the Target Emissions Rate (TER). This covers regulated carbon emissions from:

- Heating
- Cooling
- Hot Water
- Lighting
- Auxiliary (Pumps and Fans)

4.3 Passive Design

Passive design measures utilised by the architect in the concept and development of the schemes design include:

- High levels of insulation have been proposed in excess of the Part L 2021 notional values.
- Through good design and careful construction, air infiltration will be minimised and thus a low Air Permeability target has been sort.
- Optimising orientation and site layout to reduce energy demand.
- Provision of cross-ventilation.
- High performance glazing system and façade design to reduce heat demand and increase solar gains.
- Thermal Bridging has been reviewed and appropriate industry schemes have been proposed.

ELEMENT	PART L1a LIMITING FABRIC PARAMETERS	PROPOSED U-VALUES (W/m ² K)
<i>Walls</i>		
External Walls	0.26 W/m ² K	0.17 W/m ² K
Sheltered Walls	0.26 W/m ² K	0.17 W/m ² K
Party Walls	0.0 W/m ² K	0.0 W/m ² K
<i>Floors</i>		
Exposed Floor	0.18 W/m ² K	0.10 W/m ² K
<i>Roof</i>		
Roofs	0.16 W/m ² K	0.13 W/m ² K
<i>Openings</i>		
Windows (Rear Extension Block)	1.6 W/m ² K	0.9 W/m ² K (Triple Glazed)
Windows (Top Floor)	1.6 W/m ² K	1.3 W/m ² K (Double Glazed)
<i>Air Permeability</i>		
5 m ³ /(hm ²) @50Pa		
<i>Thermal Bridging</i>		
ROI Steel Frame Details – Top Floor		ROI Masonry Details - Extension
Table: Proposed Fabric Specification		

4.4 Active Design

The development will incorporate efficient building services to limit carbon emissions, including:

- A zero-NOx heating system
- LED Lighting
- MVHR

ELEMENT	PROPOSED DETAILS
Air Permeability	5 m ³ /(hm ²) @50Pa
Ventilation	System 4 - MVHR
Heating	Electric Panel Heaters
Hot Water	Dimplex EDL170 Hot Water Heat Pump
Heating Controls	Programmer and Room Thermostats
Emitters	Radiators (>45 degrees)
Lighting	90 lm/w
Under 125ltrs Water	Yes
Table: Proposed Mechanical and Electrical Specification	

4.5 Lighting

In-line with bettering the minimum allowable figure within Part L 2021, all residential light fittings should be Light Emitting Diodes (LEDs) with a luminous efficiency per circuit watt of at least 90 lumens/Watt.

Occupancy sensors and daylight dimming should be specified in communal areas where appropriate.

4.6 Overheating

This development will be Part O of the Building Regulations compliant and will be designed to avoid Overheating with the early stages of the cooling hierarchy prioritised. With the lack of communal heat distribution and the provision of openable windows (with blinds) being major factors in mitigating any potential risks. Furthermore, the units will have MVHR which can be fitted with a summer bypass, further adhering to the cooling hierarchy.

5. RENEWABLE ENERGY

5.1 In order to achieve the required CO₂ reduction, the implementation of low carbon or renewable technology will be required.

5.2 For the scheme, and based on feasibility and recent legislation such as the Clean Air Act, the following technologies have been automatically discounted:

- Wind Turbines
- Biomass
- Hydropower / Wave Technology
- Biogas / Biofuel

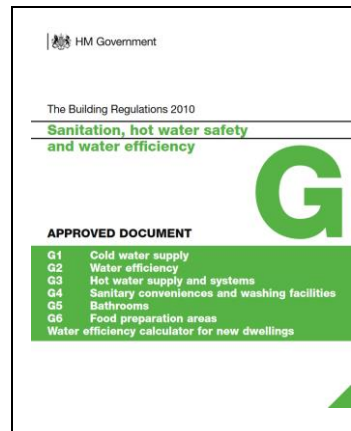
5.3 The feasibility of renewable and low carbon technologies is highlighted below. Following this review, Hot Water Heat Pumps have been chosen as the most suitable technology for the scheme. These details can be seen on the right-hand side of this page.

- Hot Water Heat Pumps (Modelled as the Dimplex EDL170)

RENEWABLE ENERGY FEASIBILITY						
Technology	Considerations					Overall Feasibility
	Cost	Noise	Land Use	Tariffs	CO ₂ Offset	
Photovoltaic Panels (PV)	There is currently an increased cost of PV installation due to supply-chain issues and shipping costs. This is partially offsetting the decreased payback time that the rise in electricity costs per kWh has created. The CO ₂ offset of PV in Part L 2021 is 73.8% less than Part L 2013 therefore carbon savings for the technology are greatly diminished.					No
Hot Water Heat Pumps (ASHP)	The benefit of a Hot Water Heat Pump system is that it allows Heat Pump technology to be used in apartments without the need for an external unit like a traditional system. It also produces Hot Water which has a higher annual demand than Space Heating due to seasonality and the very high levels of insulation in new-build developments.					Yes
Ground Source Heat Pumps (GSHP)	GSHPs are like ASHPs but operate at slightly higher efficiencies due to drawing heat from the ground, a source that is warmer than the outside air, especially in Winter. However, the technology is more expensive than Air Source and requires either significant horizontal space for a slinky style system or deep boreholes as part of a vertical system. As this is not proposed here, ASHPs are more suited to the scheme.					No
Solar Thermal	The water cylinder for a solar thermal system would be much larger and require more cupboard space. This would therefore reduce usable floor area. The hot water demand of the dwellings is already proposed to be provided by heat pumps technology that is incompatible with Solar Hot Water.					No
Table: Renewable Energy Feasibility						

6. WATER EFFICIENCY

- 6.1 The Local Plan (Policy DM21) requires that all developments must incorporate water conservation measures to limit the consumption to 110 litres per person per day.
- 6.2 This target is the same as the optional target included within Part G of the Building Regulations which encourages the efficient use of potable water. The specification proposed has been produced using the calculation methodology used to assess compliance against the water performance targets in Building Regulations 17.K and is based on the Government's "The Water Efficiency Calculator for new dwellings – September 2009" (withdrawn in June 2016).
- 6.3 The current guidance and calculation methodology can now be found within *Approved Document G - Sanitation, hot water safety and water efficiency* (2015 edition with 2016 amendments):
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/504207/BR_PDF_AD_G_2015_with_2016_amendments.pdf
- 6.4 The proposed specification for the scheme can be found on the right-hand side of the page showing compliance. For the Dishwashers and Washing Machines, default consumption figures have been used.



PROPOSED SANITARYWARE SPECIFICATION		
ELEMENT	SPECIFICATION	UNIT OF MEASUREMENT
WC	6/3 dual flush	<i>Litres per Flush</i>
Basin Taps	5	<i>Litres per Minute</i>
Kitchen Sink Taps	9	<i>Litres per Minute</i>
Shower	8	<i>Litres per Minute</i>
Bath	155	<i>Capacity to Overflow</i>
Washing Machine	8.17	<i>Litres per Kilo (Dry)</i>
Dishwasher	1.25	<i>Litres per Place Setting</i>
Allowance for External Use	5	<i>(Litres / Person / Day)</i>
Total Consumption (Litres / Person / Day)		109.7
<i>Table : Proposed Water Consumption (litres/person/day)</i>		

7. CONCLUSION

- 7.1 A full energy strategy has been undertaken and this document illustrates a reduction in CO₂ emissions over the baseline of Part L 2021 via:

Energy Efficient Measures

- High levels of thermal insulation to achieve U-Values lower than the Part L 2021 notional building specification.
- LED Lighting with high luminous efficacy (90 lm/W)
- MVHR
- Air Permeability target of 5 m³/(hm²) @50Pa

Renewable Technologies

Hot Water Heat Pumps (Dimplex EDL170) will be installed as a renewable technology serving the new-build units for hot water.

When the above is considered, the scheme will achieve a **62.56%** reduction over that of the Part L 2021 baseline.

- 7.2 A final carbon emission reduction table is shown on the opposite side of the page illustrating the overall savings.

	CO ₂ Emissions (Tonnes per Annum)	
	Regulated	
Baseline: Part L 2021 of the Building Regulations (TER)	9.6	
Final Carbon Emissions: Part L 2021 of the Building Regulations (DER)	3.6	
Regulated CO ₂ Savings over Part L 2021	62.56%	
Table: Carbon Emissions Table – New Builds		

Appendix 1



Project: Central Avenue

Plots	Floor Area	Target Emissions (TER) Part L Baseline	Total TER	Dwelling Emission Rate (DER)	Total DER Part L 2021
	m ²	kg/CO ₂ /m ² /year	kg/CO ₂ /year	kg/CO ₂ /m ² /year	kg/CO ₂ /year
Top-Floor Flat - Unit 22	51.4	16.87	867	6.46	332
Over Exposed - Unit 7	68.2	14.81	1,010	5.83	398
Mid-Floor Flat - Unit 15	68.2	12.24	835	4.19	286
Total Area Assessed	188		2,712		1,015
		Average	1m2 TER 14.44		1m2 DER 5.41
Total Site Area (m ²):	665.2	TOTAL TER CO2:	9,606	TOTAL DER CO2:	3,597

RESULTS			OVERALL RESULTS		
Baseline Emissions (TER) - Total Site	9,606	kg/CO ₂ /year	Final CO ₂ Emissions	3,597	kg/CO ₂ /year
			CO ₂ Savings over Part L 2021	62.56	%
			Total CO ₂ reduction achieved	6,009	kg/CO ₂ /year
RESULTS BY HIERARCHY STAGE					
CO ₂ Reduction over Part L 2021			6,009	kg/CO ₂ /year	

Appendix 2



Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Array SAP 10 program, Array

Date: Wed 15 Nov 2023 12:32:58

Project Information			
Assessed By	Edward Coate	Building Type	Flat, End-terrace
OCDEA Registration	EES/026101	Assessment Date	2023-11-15

Dwelling Details			
Assessment Type	As designed	Total Floor Area	68 m ²
Site Reference	Overbuild Sample	Plot Reference	00001
Address			

Client Details	
Name	TBC
Company	TBC
Address	TBC, TBC, TBC

This report covers items included within the SAP calculations. It is not a complete report of regulations compliance.

1a Target emission rate and dwelling emission rate			
Fuel for main heating system	Electricity		
Target carbon dioxide emission rate	12.24 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	4.19 kgCO ₂ /m ²		OK
1b Target primary energy rate and dwelling primary energy			
Target primary energy	64.32 kWh _{PE} /m ²		
Dwelling primary energy	43.55 kWh _{PE} /m ²		OK
1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	33.1 kWh/m ²		
Dwelling fabric energy efficiency	29.3 kWh/m ²		OK

2a Fabric U-values				
Element	Maximum permitted average U-Value [W/m ² K]	Dwelling average U-Value [W/m ² K]	Element with highest individual U-Value	
External walls	0.26	0.17	Walls (1) (0.17)	OK
Party walls	0.2	0	Party Wall (1) (0)	N/A
Curtain walls	1.6	0	N/A	N/A
Floors	0.18	N/A	N/A	N/A
Roofs	0.16	0.13	Roof (1) (0.13)	OK
Windows, doors, and roof windows	1.6	0.94	Opening (1.4)	OK
Rooflights	2.2	N/A	N/A	N/A

2b Envelope elements (better than typically expected values are flagged with a subsequent (!))			
Name	Net area [m ²]	U-Value [W/m ² K]	
Exposed wall: Walls (1)	27.495	0.17	
Exposed wall: Walls (2)	1.71	0.17	
Exposed wall: Walls (3)	10.8	0.17	
Party wall: Party Wall (1)	58.5	0 (!)	
Exposed roof: Roof (1)	8.8	0.13	

2c Openings (better than typically expected values are flagged with a subsequent (!))				
Name	Area [m ²]	Orientation	Frame factor	U-Value [W/m ² K]
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	East	0.7	0.9 (!)
Opening, Opening Type 1	1.785	South	0.7	0.9 (!)
Opening, Opening Type 1	1.785	South	0.7	0.9 (!)

Name	Area [m ²]	Orientation	Frame factor	U-Value [W/m ² K]
Opening, Opening Type 1	1.785	South	0.7	0.9 (!)
Opening, Opening Type 2	1.89	West	N/A	1.4

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))

Building part 1 - **Main Dwelling**: Thermal bridging calculated from linear thermal transmittances for each junction

Main element	Junction detail	Source	Psi value [W/mK]	Drawing / reference
External wall	E2: Other lintels (including other steel lintels)	Calculated by person with suitable expertise	0.007 (!)	
External wall	E3: Sill	Calculated by person with suitable expertise	0.006 (!)	
External wall	E4: Jamb	Calculated by person with suitable expertise	0.028 (!)	
External wall	E7: Party floor between dwellings (in blocks of flats)	Calculated by person with suitable expertise	0.032 (!)	
External wall	E16: Corner (normal)	Calculated by person with suitable expertise	0.022 (!)	
External wall	E18: Party wall between dwellings	Calculated by person with suitable expertise	0.12	
External wall	E7: Party floor between dwellings (in blocks of flats)	Calculated by person with suitable expertise	0.2	
External wall	E14: Flat roof	Calculated by person with suitable expertise	0.02 (!)	
Party wall	P3: Intermediate floor between dwellings (in blocks of flats)	SAP table default	0 (!)	

3 Air permeability (better than typically expected values are flagged with a subsequent (!))

Maximum permitted air permeability at 50Pa	8 m ³ /hm ²	
Dwelling air permeability at 50Pa	5 m ³ /hm ² , Design value	OK
Air permeability test certificate reference		

4 Space heating

Main heating system 1: Room heaters - Electricity

Efficiency	100.0%
Emitter type	
Flow temperature	
System type	Panel, convector or radiant heaters
Manufacturer	
Model	
Commissioning	

Main heating system 2: Heat pump with radiators or underfloor heating - Electricity

Efficiency	0.0%
Emitter type	
Flow temperature	
System type	Heat Pump
Manufacturer	Auer
Model	EDL170-520RF
Commissioning	

Secondary heating system: N/A

Fuel	N/A
Efficiency	N/A
Commissioning	

5 Hot water

Cylinder/store - type: N/A

Capacity	N/A
Declared heat loss	N/A
Primary pipework insulated	N/A
Manufacturer	
Model	
Commissioning	

Waste water heat recovery system 1 - type: N/A

Efficiency	
Manufacturer	
Model	

6 Controls		
Main heating 1 - type: Programmer and appliance thermostats		
Function		
Ecodesign class		
Manufacturer		
Model		
Main heating 2 - type: Not applicable		
Function		
Ecodesign class		
Manufacturer		
Model		
Water heating - type: N/A		
Manufacturer		
Model		
7 Lighting		
Minimum permitted light source efficacy	75 lm/W	
Lowest light source efficacy	90 lm/W	OK
External lights control	N/A	
8 Mechanical ventilation		
System type: Balanced whole-house mechanical ventilation with heat recovery		
Maximum permitted specific fan power	1.5 W/(l/s)	
Specific fan power	0.45 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	88%	OK
Manufacturer/Model	D	
Commissioning		
9 Local generation		
N/A		
10 Heat networks		
N/A		
11 Supporting documentary evidence		
N/A		
12 Declarations		
a. Assessor Declaration		
This declaration by the assessor is confirmation that the contents of this BREL Compliance Report are a true and accurate reflection based upon the design information submitted for this dwelling for the purpose of carrying out the "As designed" assessment, and that the supporting documentary evidence (SAP Conventions, Appendix 1 (documentary evidence) schedules the minimum documentary evidence required) has been reviewed in the course of preparing this BREL Compliance Report.		
Signed:	Assessor ID:	
Name:	Date:	
b. Client Declaration		
N/A		

Summary for Input Data

Property Reference	Overbuild Sample	Issued on Date	15/11/2023
Assessment Reference	00001	Prop Type Ref	
Property			

SAP Rating	85 B	DER	4.19	TER	12.24
Environmental	97 A	% DER < TER			65.77
CO ₂ Emissions (t/year)	0.23	DFEE	29.32	TFEE	33.11
Compliance Check	See BREL	% DFEE < TFEE			11.45
% DPER < TPER	32.30	DPER	43.55	TPER	64.32

Assessor Details	Mr. Edward Coate	Assessor ID	Z417-0001
Client			

SUMMARY FOR INPUT DATA FOR: New Build (As Designed)

Orientation	West	
Property Tenture	ND	
Transaction Type	6	
Terrain Type	Urban	
1.0 Property Type	Flat, End-Terrace	
Position of Flat	Mid-floor flat	
Which Floor	2	
2.0 Number of Storeys	1	
3.0 Date Built	2023	
3.0 Property Age Band	L	
4.0 Sheltered Sides	2	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
Thermal Mass	N/A	kJ/m²K
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements	Heat Loss Perimeter	Internal Floor Area	Average Storey Height
Basement:	0.00 m	0.00 m ²	0.00 m
Ground floor:	26.50 m	68.20 m ²	3.00 m
1st Storey:	0.00 m	0.00 m ²	0.00 m
2nd Storey:	0.00 m	0.00 m ²	0.00 m
3rd Storey:	0.00 m	0.00 m ²	0.00 m
4th Storey:	0.00 m	0.00 m ²	0.00 m
5th Storey:	0.00 m	0.00 m ²	0.00 m
6th Storey:	0.00 m	0.00 m ²	0.00 m
7th Storey:	0.00 m	0.00 m ²	0.00 m

8.0 Living Area	26.70	m ²
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9.0 External Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Gross Area(m ²)	Nett Area (m ²)	Shelter Res	Shelter	Openings	Area Calculation Type
	External Wall 1	Cavity Wall	Cavity wall; dense plaster, lightweight aggregate block, filled cavity, any outside structure	0.17	140.00	50.70	27.50	0.00	None	23.20	Enter Gross Area
	Sheltered Corridor	Steel Frame	Steel frame wall (warm frame or hybrid construction)	0.17	14.00	3.60	1.71	0.00	None	1.89	Enter Gross Area
	Corridor Wall	Solid Wall	Solid wall : dense plaster, insulation, any outside structure	0.17	17.00	10.80	10.80	0.00	None	0.00	Enter Gross Area

9.1 Party Walls	Description	Type	Construction	U-Value (W/m ² K)	Kappa (kJ/m ² K)	Area (m ²)	Shelter Res	Shelter
	Party Wall 1	Filled Cavity with Edge Sealing	Steel frame	0.00	20.00	58.50	0.00	None

9.2 Internal Walls	Description	Construction	Kappa (kJ/m ² K)	Area (m ²)
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Summary for Input Data

Internal Wall 1 Dense block, plasterboard on dabs 75.00 124.80

10.0 External Roofs

Description	Type	Construction	U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area (m²)	Shelter Code	Shelter Factor	Calculation Type	Openings
External Roof 1	External Flat Roof	Plasterboard, insulated flat roof	0.13	9.00	8.80	8.80	None	0.00	Enter Gross Area	0.00

10.1 Party Ceilings

Description	Construction	Kappa (kJ/m²K)	Area (m²)
Party Ceiling 1	Precast concrete planks floor, screed, carpeted	30.00	59.20

11.1 Party Floors

Description	Storey Index	Construction	Kappa (kJ/m²K)	Area (m²)
Party Floor 1	Lowest occupied	Precast concrete planks floor, screed, carpeted	30.00	68.20

12.0 Opening Types

Description	Data Source	Type	Glazing	Glazing Gap	Filling Type	G-value	Frame Type	Frame Factor	U Value (W/m²K)
Opening Type 1	Manufacturer	Window	Triple Low-E Hard 0.2		Air Filled	0.64	Wood	0.70	0.90
Opening Type 2	SAP table	Door to Corridor			Air Filled	0.00	Wood	0.70	1.40

13.0 Openings

Name	Opening Type	Location	Orientation	Area (m²)	Pitch
Opening	Opening Type 1	External Wall 1	East	17.85	0
Opening	Opening Type 1	External Wall 1	South	5.35	0
Opening	Opening Type 2	Sheltered Corridor	West	1.89	0

14.0 Conservatory

None

15.0 Draught Proofing

100 %

16.0 Draught Lobby

No

17.0 Thermal Bridging

Calculate Bridges

17.1 List of Bridges

Bridge Type	Source Type	Length	Psi	Adjusted Reference:	Imported
E2 Other lintels (including other steel lintels)	Independently assessed	14.55	0.01	0.01	Yes
E3 Sill	Independently assessed	13.65	0.01	0.01	Yes
E4 Jamb	Independently assessed	48.40	0.03	0.03	Yes
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	16.90	0.03	0.03	No
E16 Corner (normal)	Independently assessed	6.00	0.02	0.02	Yes
E18 Party wall between dwellings	Independently assessed	6.00	0.12	0.12	Yes
E7 Party floor between dwellings (in blocks of flats)	Independently assessed	9.60	0.20	0.20	No
E14 Flat roof	Independently assessed	16.90	0.02	0.02	No
P3 Party wall - Intermediate floor between dwellings (in blocks of flats)	Table K1 - Default	37.00	0.00	0.00	No

Y-value 0.07 W/m²K

18.0 Pressure Testing

Yes

Designed AP₅₀ 5.00 m³/(h.m²) @ 50 Pa

Property Tested? Yes

Test Method Blower Door

19.0 Mechanical Ventilation

Mechanical Ventilation

Mechanical Ventilation System Present Yes

Approved Installation No

Mechanical Ventilation data Type Data Sheet

Type Balanced mechanical ventilation with heat recovery

Manufacturer SFP 0.45

Duct Type Rigid

MVHR Efficiency 88.00

Wet Rooms 1

Brand, Model D

SFP from Installer Commissioning Certificate Yes

MVHR System Location Inside heated envelope (installed exclusively)

Summary for Input Data

Duct Installation Specification

Level 1

19.1 Mechanical extract ventilation - Decentralised

SFP	Fan/Room Type	Count
0.20	In Room Fan Kitchen	1
0.20	In Room Fan Other Wet Room	1

20.0 Fans, Open Fireplaces, Flues

21.0 Fixed Cooling System

No

22.0 Lighting

No Fixed Lighting

No

Name	Efficacy	Power	Capacity	Count
Lighting 1	90.00	5	450	11

24.0 Main Heating 1

SAP table	
Percentage of Heat	100.00 %
Database Ref. No.	0
Fuel Type	Electricity
SAP Code	691
In Winter	100.00
In Summer	302.95
Controls SAP Code	2603
Delayed Start Stat	No
HETAS approved System	No
Oil Pump Inside	No
Fan Assisted Flue	No
Boiler Interlock	No

25.0 Main Heating 2

Database	
Percentage of Heat	0.00 %
Database Ref. No.	105752
Fuel Type	Electricity
SAP Code	0
In Winter	0.00
In Summer	302.95
Model Name	EDL170-520RF
Manufacturer	Auer
Controls	2100
Delayed Start Stat	No
HETAS approved System	No
Oil Pump Inside	No
FI Case	0.00
Flue Type	None or Unknown
Fan Assisted Flue	No
Flow Temperature	Enter value

26.0 Heat Networks

None

Heat Source	Fuel Type	Heating Use	Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1	None								
Heat source 2	None								
Heat source 3	None								
Heat source 4	None								
Heat source 5	None								

28.0 Water Heating

Summary for Input Data

Water Heating	Main Heating 2
SAP Code	914
Flue Gas Heat Recovery System	No
Waste Water Heat Recovery Instantaneous System 1	No
Waste Water Heat Recovery Instantaneous System 2	No
Waste Water Heat Recovery Storage System	No
Solar Panel	No
Water use <= 125 litres/person/day	Yes
Summer Immersion	No
Cold Water Source	From mains
Bath Count	1
Supplementary Immersion	No
Immersion Only Heating Hot Water	Yes

28.1 Showers

Description	Shower Type	Flow Rate [l/min]	Rated Power [kW]	Connected	Connected To
1	Vented hot water system	7.00		No	

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder

Internal Store		
Cylinder Stat	No	
Cylinder In Heated Space	No	
Independent Time Control	No	
Insulation Type	Measured Loss	
Cylinder Volume	173.00	L
Loss	1.92	kWh/day
In Airing Cupboard	No	

31.0 Thermal Store

None

Recommendations

Lower cost measures

None

Further measures to achieve even higher standards

None

Appendix 3



EDEL 170RF HOT WATER HEAT PUMP



A+



SUPPORT TRIPOD INCLUDED

PRODUCT DESCRIPTION

The Edel EDL170-520RF is a compact hot water heat pump cylinder, measuring only Ø520mm and with a 170L storage capacity it is an ideal water heating solution for apartments and smaller dwellings. An integral heat pump mounted on top of the stainless steel cylinder extracts heat from an external air which is supplied via insulated ductwork, to produce hot water very efficiently. All Edel heat pump cylinders feature RF connectivity, enabling them to be conveniently controlled remotely when connected to a DimplexHub.

KEY FEATURES

- Consumes five times less electricity than standard electric water heated cylinders for up to 80% hot water energy saving
- Helps to achieve Part L Building Regulations by reducing dwelling emissions in SAP, making it possible to pass using electric space heating and a heat pump cylinder
- Compact Ø520mm cylinder with 170L hot water capacity
- Fully time and temperature programmable with boost, holiday and anti-legionella functions
- Internet-connected smartphone app connectivity
- Stainless steel tank with 5 year guarantee, no sacrificial anode requirement
- Very quiet in operation due to soundproof hood housing, variable speed fan and rotary compressor anti-vibration mounting pads
- Patented high performance heat exchanger with defrost mode operation in UK climates
- The heat pump cylinder is supplied with an adjustable cylinder support tripod, an unvented safety kit and a 1 metre vent kit
- 2 metre extension ducting kits are also available for longer ducted installations up to a maximum of 5 metres (Part No. 500001493)

INTERNET CONNECTIVITY

App platform	Dimplex Control
Connectivity method	RF 868Mhz (Included)
Additional hardware	Requires 1 x 'DimplexHub'



Use of Dimplex Control is subject to agreement of the GDHV Internet of Things (IoT) [Terms and Conditions](#), [Privacy Policy](#) and [Cookie Policy](#).

TECHNICAL DETAILS

HEAT PUMP PERFORMANCE		
Model code		EDL170-520RF COMPLETE (Includes safety kit and EDL170 vent kit)
Item No.		400001350
EAN/Bar code		5011139085641
Nominal volume	L	170
Air operating range	°C	-7 to +35
Achievable hot water temperature via heat pump	°C	30 to 55
Max. electrical power input (heat pump & immersion)	W	350 + 1200 = 1550
Max. thermal power output (heat pump ONLY)	W	1170
Max. power output (heat pump & immersion) at 45°C	W	1170 + 1200 = 2370
Air flow rate range	m³/h	90 to 140
Sound pressure level at 1m	dB(A)	36
Refrigerant Type / Quantity	/kg	R290 / 0.1
Standing heat loss	kWh/24h	1.92
Air ducting method		Concentric Duct
Heat up from cold (10°C)		10hr 24mins
Coefficient of performance		2.85
DIMENSIONS & CONNECTIONS		
Appliance + (Adjustable Tripod)	mm	Ø520 x 1760 high + (300 to 556)
Weight with/without packaging	kg	64 / 58
Weight when filled	kg	228
Air duct diameter	mm	80/125
Max. ducting pressure drop		90Pa at 90m³/h
Water connections	Inch	M 3/4"
Condensate tube	mm	Ø18/24 x 1500 long
Electrical supply		230V 50Hz
IP rating		IPX4
RCBO/MCB type C	Amp	16
HOT WATER CYLINDER		
Material		Stainless steel
Insulation		50mm PU foam with PVC outer
Refrigeration heat exchanger		Double walled separation from potable water
Max. operating pressure	Bar/Mpa	6 / 0.6
Max. condensate production	L/h	0.3
Integrated immersion heater	W	1200
Immersion heater material		Titanium
Max. temp. with Imm./Heater	°C	65
APPROVALS		
Water regulations		G3 KIWA approval to EN12897
T&P valve		Factory fitted
Installation Components Included		Inlet group, tundish, expansion vessel
Guarantee (UK)		5 years tank (2 years other parts)

DUCTING COMPONENTS AND OPTIONAL EXTENSION ACCESSORY KIT

INCLUDED WITH HEAT PUMP: an EDL170 Vent Kit (for 1m termination to the exterior) comprising of: 1 metre Ø125mm thermal and internal Ø80mm ducting with all components to link to the external intake/vent safety grille.

OPTIONAL ACCESSORY: EDL170 Vent Extension Kit (Part No. 500001493 EAN: 501139083951) comprising of: 2 metre Ø125mm thermal and internal Ø80mm ducting with all components to extend the installation.