

Addison Estate, 702 Field End Road, Ruislip, HA4 0QP

ENERGY STATEMENT

9 residential units and 1630sqm of B8 self-storage

January 2023

Document Issue Register

1.0 Planning Issue

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1 Introduction

- 1.1 This report details an Energy Statement for the proposed development at Addison Estate, 702 Field End Road, Ruislip, HA4 OQP. The scheme involves the demolition of the existing industrial floorspace and the replacement with 9no. new residential units along with 1630sqm of B8 self-storage.
- 1.2 The site is located in Ruislip, Hillingdon in the north-west of London. The existing site comprises industrial floorspace over two stories, surrounded by hardstanding used for car parking.
- 1.3 The proposed new buildings will feature insulation standards which meet and exceed current building regulations, along with energy efficient air-source heat pumps and a solar PV array.
- 1.4 The purpose of this report is to review the sustainability requirements at local (borough) and national level, and to discuss how these requirements have been met. The requirements relate to the Hillingdon Local Plan (Core Strategy) 2012.



Figure 1: Site (red), aerial view (source: Google Earth)

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2 Executive Summary

2.1 The development has been shown to meet the national & local sustainability requirements. These include the Building Regulations requirements, and the Hillingdon Local Plan Policy Part 1: EM1 and Part 2: DMEI 2.

Policy	Requirements	Achieved?
Hillingdon Local Plan	Renewable energy will be encouraged in all new	\checkmark
Policy EM1	development	
Hillingdon Local Plan	Make the 'fullest possible contribution' to meet the	\checkmark
Policy DMEI 2	strategic CO2 reduction targets of the London Plan	
Building Regulations	Demonstrate how the development complies with	\checkmark
Part L (2021)	Part L (Vol 1 $\&$ 2) of the Building Regulations	
BRE Water Efficiency	Target internal water use of 105 L/person/day	\checkmark
Calculator Tool		



Figure 2: Proposed development, site plan

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3 Local Requirements and Guidance

3.1 Hillingdon Local Plan Part 2 – Development Management Policy DMEI 2: Reducing Carbon Emissions

3.2 According to the Hillingdon Local Plan Part 2 – Development Management Policy DMEI 2, the council will seek to minimise Hillingdon's contribution to climate change by requiring development to make the 'fullest possible contribution' to meet the strategic carbon emissions reduction targets of the London Plan:

Policy DMEI 2: Reducing Carbon Emissions

A) All developments are required to make the fullest contribution to minimising carbon dioxide emissions in accordance with London Plan targets.

B) All major development⁷ proposals must be accompanied by an energy assessment showing how these reductions will be achieved.

C) Proposals that fail to take reasonable steps to achieve the required savings will be resisted. However, where it is clearly demonstrated that the targets for carbon emissions cannot be met onsite, the Council may approve the application and seek an off-site contribution to make up for the shortfall.

3.3 Hillingdon Local Plan Part 1 – Strategic Policy EM1: Climate Change Adaptation and Mitigation

3.4 According to the Hillingdon Local Plan Part 1 – Strategic Policy EM1, renewable energy will be encouraged in all new development to meet the London Plan targets.
 Further objectives are outlined overleaf:

Policy EM1: Climate Change Adaptation and Mitigation

The Council will ensure that climate change mitigation is addressed at every stage of the development process by:

- Prioritising higher density development in urban and town centres that are well served by sustainable forms of transport.
- Promoting a modal shift away from private car use and requiring new development to include innovative initiatives to reduce car dependency.
- 3. Ensuring development meets the highest possible design standards whilst still retaining competitiveness within the market.
- 4. Working with developers of major schemes to identify the opportunities to help provide efficiency initiatives that can benefit the existing building stock.
- Promoting the use of decentralised energy within large scale development whilst improving local air quality levels.
- Targeting areas with high carbon emissions for additional reductions through low carbon strategies. These strategies will also have an objective to minimise other pollutants that impact on local air quality. Targeting areas of poor air quality for additional emissions reductions.
- Encouraging sustainable techniques to land remediation to reduce the need to transport waste to landfill. In particular developers should consider bioremediation⁽³⁹⁾ as part of their proposals.
- 8. Encouraging the installation of renewable energy for all new development in meeting the carbon reduction targets savings set out in the London Plan. Identify opportunities for new sources of electricity generation including anaerobic digestion, hydroelectricity and a greater use of waste as a resource.
- Promoting new development to contribute to the upgrading of existing housing stock where appropriate.

The Borough will ensure that climate change adaptation is addressed at every stage of the development process by:

- Locating and designing development to minimise the probability and impacts of flooding.
- Requiring major development proposals to consider the whole water cycle impact which includes flood risk management, foul and surface water drainage and water consumption.
- Giving preference to development of previously developed land to avoid the loss of further green areas.
- Promoting the use of living walls and roofs, alongside sustainable forms of drainage to manage surface water run-off and increase the amount of carbon sinks⁽⁴⁰⁾.
- Promoting the inclusion of passive design⁽⁴¹⁾ measures to reduce the impacts of urban heat effects.

4 Discussion

4.1 Energy Strategy

- 4.2 The development will meet the requirements of Building Regulations Approved Document L (2021) 'Conservation of fuel and power' Volume 1: Dwellings; and Building Regulations Approved Document L (2021) 'Conservation of fuel and power' Volume 2: Buildings other than Dwellings.
- 4.3 This includes the U-values for thermal elements meeting the standards in Table 4.1 of the Approved Document L1, and the U-values for retained thermal elements meeting the standards in Table 4.3, using the approach under section 11.8 (below):
- 4.4 The three steps of the energy hierarchy will be followed in order to achieve the requirements of the Hillingdon Local Plan (Core Strategy): "Be Lean; Be Clean; Be Green". This ensures that a 'fabric-first' approach will be adopted.
- 4.5 Improved passive energy performance ('Be Lean') will be achieved through the specification of high-performing building fabric (U-values which improve upon the Part L requirements).
- 4.6 Please see Appendix 2: GLA CO2 Report and Appendix 3: As-Designed SAP & SBEM Reports for a full breakdown of residential and non-residential emissions.
- 4.7 The following U-values have been proposed for the buildings, which meet and exceed the Building Regulations requirements. The U-values are categorised according to 'residential' and 'non-residential' elements, as per the GLA guidance:

	Element	Baseline (L1)	Proposed U-value
-	Roof	0.16 W/m ² K	0.10 W/m²K
-	External Walls	0.26 W/m ² K	0.14 W/m ² K
-	Floor	0.18 W/m ² K	0.12 W/m ² K
_	Windows (g-value: 0.63)	1.60 W/m ² K	1.10 W/m ² K

L1 Table 4.1: Residential Thermal Elements

	Element	Baseline (L2)	Proposed U-value
_	Roof (Flat)	0.18 W/m ² K	0.18 W/m ² K
_	External Walls	0.26 W/m ² K	0.26 W/m ² K
_	Floor	0.18 W/m ² K	0.15 W/m²K
_	Windows	1.60 W/m ² K	1.60 W/m ² K
_	Personnel Doors	1.60 W/m ² K	1.60 W/m ² K
_	Vehicle Doors	1.30 W/m ² K	1.30 W/m ² K

L2 Table 4.1: Non-Residential Thermal Elements

- 4.8 Efficient Building services will be installed which meet and exceed the Domestic and Non-Domestic Building Services Compliance Guide requirements, which includes air-source heat pumps, and LED lighting will be implemented throughout (Be Lean).
- 4.9 A 10kW solar PV array will be installed on the roof of the commercial unit, to further reduce carbon emissions for the site (Be Green).

Residential Building Services:

Heating	Individual Air-Source Heat pumps (Grant Aerona 10kW or similar)
Hot Water	150L DHW cylinder linked to ASHP
Lighting	LED lighting 90 Lum/W
Ventilation	Mechanical Ventilation with Heat Recovery (MVHR)
Air Test	3.0 m ³ /m ² @50Pa

Non-Residential Building Services:

Heating	VRV System Air-Source Heat pumps (Heating & Cooling)
Hot Water	Instantaneous electric water heaters
Lighting	LED lighting 100 Lum/W
Air Test	8.0 m ³ /m ² @50Pa
Solar PV	10kW Solar PV Rooftop Array

- 4.10 The regulated carbon emissions for the development have been determined based on modelled SAP results for a sample of units, implementing SAP 10.2, along with modelled SBEM results for the commercial unit (B8 warehouse/storage).
- 4.11 The following table displays the Total Emissions, according to the Energy Hierarchy, indicating the savings achieved through passive measures (fabric-first approach):

	Total emissions (tonnes CO ₂ /yr)	CO ₂ Savings (tonnes CO ₂ /yr)	% Saving
Part L Baseline	14.2		
Be Lean	13.0	1.2	8%
Be Clean	13.0	0.0	0%
Be Green	7.3	5.7	40%
Cumulative Savings	-	6.8	48%

4.12 Water Use

- 4.13 Please see Appendix 1 BRE Water Efficiency Calculator for further details relating to water consumption. The BRE Water Efficiency Calculator Tool has been used to predict water usage for the proposed dwellings.
- 4.14 A target of 105L/person/day has been proposed by the Hillingdon Local Plan (Policy DMEI 10 and Policy EM8), which excludes 5L/person/day for external water use.
 This meets the Building Regulations Part G 'Optional' requirement of 110L/p/day.
- 4.15 The consumption of water will be kept to a minimum within the proposed new dwellings through the implementation of water efficient fittings and appliances. These will include the following:
- Low-flow taps and showers
- Dual Flush WC's
- Low volume (to overflow) bathtub
- 4.16 Through the implementation of water efficient fittings and appliances, waste water will also be reduced within the proposed new dwellings.

4.17 SUDS & Surface Water Run-Off

- 4.18 In terms of surface water run-off from the site, the sustainable drainage strategy will be designed to ensure all surface water is discharged through sustainable means.
- 4.19 As shown in the Flood Risk Map below, the site of the proposed development lies within Flood Zone 1: Low probability of flooding:



Figure 3: Hillingdon Flood Zones (Source: Environment Agency)

5 Appendix 1: BRE Water Efficiency Calculator Tool

CSH Wat tool May 09

Job no: Date: 03/02/2023 Assessor name: Registration no: Development name: Addison Estate, Ruislip

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	Description:	1-Bed Ap	artment	2-Bed Ap	artment	3-Bed A	artment														
Installation Type	Unit of measure	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day	Capacity/ flow rate	, Litres/ person/ day	Capacity/ flow rate	Litres/ person/ day										
Is a dual or single flu	sh WC specified?	D	व्र	D	ial	Ď	lai	Select	option:	Select (option:	Select	option:	Select o	pption:	Click to	Select	Click to	Select	Click to	Select
	Full flush volume	4	5.84	4	5.84	4	5.84		00.0		0.00		0.00		0.00		0.00		0.00		0.00
2	Part flush volume	2.6	7.70	2.6	7.70	2.6	7.70		00.0		00.00		00.0		0.00		0.00		0.00		0.00
Taps (excluding kitchen and external taps)	Flow rate (litres / minute)	9	11.06	9	11.06	9	11.06		00.0		0.00		0.00		0.00		0.00		0.00		0.00
Are both a Bath &	Shower Present?	Bath & S	Shower	Bath &	Shower	Bath &	Shower	Select	option:	Select o	option:	Select	option:	Select c	option:	Select c	option:	Select c	ption:	Select o	ption:
Bath	Capacity to overflow	150	16.50	150	16.50	150	16.50		00.0		00.0		00.0		00.0		00.0		0.00		0.00
Shower	Flow rate (litres / minute)	റ	39.33	თ	39.33	റ	39.33		00.00		00.0		00.0		00.0		00.0		0.00		0.00
Kitchen sink taps	Flow rate (litres / minute)	9	13.00	6	13.00	9	13.00		00.0		00.0		00.0		00.0		00.0		0.00		0.00
Has a washing machin	e been specified?	ž	•	Ż	0	z	<u>o</u>	Select	option:	Select (option:	Select	option:	Select (pption:	Select (option:	Select c	ption:	Select o	ption:
Washing Machine	Litres / kg	7.2	17.16	7.2	17.16	7.2	17.16		0.00		0.00		0.00		0.00		0.00		0.00		0.00
Has a dishwashe	r been specified?	ž		Ź	0	Z	0	Select	option:	Select c	option:	Select	option:	Select c	option:	Select c	option:	Select c	ption:	Select o	ption:
Dishwasher	Litres / place setting	1.22	4.50	1.22	4.50	1.22	4.50		00.0		0.00		0.00		0.00		0.00		0.00		0.00
Has a waste d	lisposal unit been specified?	No	0.00	No	0.00	No	0.00	Select option:	00.0	Select option:	00.0	Select option:	00.0	Select option:	00.0	Select option:	00.0	Select option:	0.00	Select option:	0.00
Water Softener	Litres / person / day		0.00		0.00		0.00		00.00		0.00		0.00		0.00		00.0		00.0		0.00
	Calcul	ated Use	115.1		115.1		115.1		0.0		0.0		0.0		0.0		0.0		0.0		0.0
	Normalisati	on factor	0.91		0.91		0.91		0.91	_	0.91		0.91		0.91		0.91		0.91		0.91
Code for	Total Consum	nption	104.7		104.7		104.7		0.0		0.0		0.0		0.0		0.0		0.0		0.0
Sustainable Homes	Mandatory I	evel	Level 3/4		Level 3/4		Level 3/4														1
	External u	se	5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0		5.0
Buriaing Regulations 17.K	Total Consun	nption	109.7		109.7		109.7		0.0		0.0		0.0		0.0		0.0		0.0		0.0
	17.K Complia	nce?	Yes		Yes		Yes		•		•				•						

1 of 1

6 Appendix 2: GLA CO2 Report

Residential

Part L 2021 Performance Non-residential

Table 1: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for residential buildings

	Carbon Dioxide Emission (Tonnes CO	s for residential buildings per annum)
	Regulated	Unregulated
Baseline: Part L 2021 of the Building Regulations Compliant Development	7.8	
After energy demand reduction (be lean)	7.5	
After heat network connection (be clean)	7.5	
After renewable energy (be green)	3.3	

Table 2: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for residential buildings

	Regulated residential carbon dioxide savings		
	(Tonnes CO ₂ per annum)	(%)	
Be lean: savings from energy demand reduction	0.3	4%	
Be clean: savings from heat network	0.0	0%	
Be green: savings from renewable energy	4.3	54%	
Cumulative on site savings	4.5	58%	
Annual savings from off-set payment	3.3	-	
	(Tonne	es CO ₂)	
Cumulative savings for off- set payment	99	-	
Cash in-lieu contribution (£)	9,365		

*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab



SITE-WIDE

	Total regulated emissions (Tonnes CO ₂ / year)	CO ₂ savings (Tonnes CO ₂ / year)	Percentage savings (%)
Part L 2021 baseline	14.2		
Be lean	13.0	1.2	8%
Be clean	13.0	0.0	0%
Be green	7.3	5.7	40%
Total Savings	-	6.8	48%
	-	CO ₂ savings off-set (Tonnes CO ₂)	-
Off-set	_	220.4	-

EUI & space heating demand (predicted energy use)

Residential

Building type	EUI (kWh/m ² /year) (excluding renewable energy)	Space heating demand (kWh/m ² /year) (excluding renewable energy)	EUI value from Table 4 of the guidance (kWh/m²/year) (excluding renewable energy)	Space heating demand from Table 4 of the guidance(kWh/m ² /year) (excluding renewable energy)	Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)	Explanatory notes (if expected performance differs from the Table 4 values in the guidan

Non-residential

Building type	EUI (kWh/m ² /year) (excluding renewable energy)	Space heating demand (kWh/m ² /year) (excluding renewable energy)	ig demand (year) (xable energy) EUI value from Table 4 of the guidance (kWh/m²/year) (excluding renewable energy) (excluding renewable		Methodology used (e.g. 'be seen' methodology or an alternative predictive energy modelling methodology)	Explanatory notes (If expected performance differs from the Table 4 values in the guidance)

Table 3: Carbon Dioxide Emissions after each stage of the Energy Hierarchy for non-residential buildings

	Carbon Dioxide Emissions for non-residential buildings (Tonnes CO ₂ per annum)						
	Regulated	Unregulated					
Baseline: Part L 2021 of the Building Regulations Compliant Development	6.3						
After energy demand reduction (be lean)	5.5						
After heat network connection (be clean)	5.5						
After renewable energy (be green)	4.1						

Table 4: Regulated Carbon Dioxide savings from each stage of the Energy Hierarchy for non-residential buildings

	Regulated non-residentia	Il carbon dioxide savings
	(Tonnes CO ₂ per annum)	(%)
Be lean: savings from energy demand reduction	0.9	14%
Be clean: savings from heat network	0.0	0%
Be green: savings from renewable energy	1.4	22%
Total Cumulative Savings	2.3	36%
Annual savings from off-set payment	4.1	-
	(Tonne	s CO ₂)
Cumulative savings for off- set payment	122	-
Cash in-lieu contribution (£)	11,571	

*carbon price is based on GLA recommended price of £95 per tonne of carbon dioxide unless Local Planning Authority price is inputted in the 'Development Information' tab



	Target Fabric Energy	Dwelling Fabric Energy	Improvement
	Efficiency (kWh/m²)	Efficiency (kWh/m ²)	(%)
Development total	0.00	0.00	

	Area weighted non-residential cooling demand (MJ/m ²)	Total non-residential cooling demand (MJ/year)
Actual		
Notional		

7 Appendix 3: As-Designed SAP & SBEM Reports



Property Reference	Flat 1				Issued	l on Date	31/01/2023	
Assessment Reference	Be Lean		Prop	Type Ref	3b6p			
Property	Flat 1, 702 Field End Re	d, Ruislip , Hillingdon,	HA4 0QP					
SAP Rating		80 C	DER	5.28		TER	10.07	
Environmental	95 A	% DER < TER				47.57		
CO ₂ Emissions (t/year)	0.52	DFEE	29.40	1	IFEE	32.35		
Compliance Check	See BREL	% DFEE < TFEE				9.14		
% DPER < TPER	-5.60	DPER	55.60	1	IPER	52.65		
Assessor Details	Mr. Chris Collier					Assessor ID	T176-0001	
Client								
SUMMARY FOR INPUT I	DATA FOR: New Build	(As Designed)						
Orientation		Northwest						
Property Tenture		ND						
Transaction Type		6						
Terrain Type		Suburban						
1.0 Property Type		Flat, Semi-Detache	d					
Position of Flat		Ground-floor flat						
Which Floor		0						
2.0 Number of Storeys		1						
3.0 Date Built		2023						
4.0 Sheltered Sides		1	1					
5.0 Sunlight/Shade		Average or unknow	'n					
6.0 Thermal Mass Parameter		Precise calculation						
7.0 Electricity Tariff		Standard						

 Smart electricity meter fitted
 Yes

 Smart gas meter fitted
 Yes

7.0 Measurements

			Heat Loss Perimeter Ground floor: 31.29 m			er l	nternal Flo 112.00	or Area m²	Average	Storey Height 2.40 m	
8.0 Living Area			36.95					r	1 ²		
9.0 External Walls											
Description	Туре	Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area	Shelter Res	Shelter	Openings	Area Calculation Type
New External Wall 1	Cavity Wall	Cavity wall : plasterb filled cavity, any outs	oard on dabs, AAC block, ide structure	0.14	60.00	75.10	58.80	0.00	None	16.30	Calculate Wall Area
9.1 Party Walls											
Description	Туре	Construc	tion				U-Valu	le Kappa	Area	Shelter	Shelter
Party Wall 1	Filled Cav Edge Sea	ity with Double p ling with/with	asterboard on both sid out sheathing board	les, twin	timber f	rame	(vv/m ² 0.00	K) (KJ/m²K) 20.00	(m²) 29.26	Res	None
9.2 Internal Walls											
Description		Construct	ion							Кар	pa Area (m ²)
Internal Wall 1		Plasterboa	rd on timber frame							(KJ/I 9.0	0 87.40
10.1 Party Ceilings											
Description		Construct	ion							Kap	pa Area (m²)
Party Ceiling 1		Timber I-jo	ists, carpeted							20.0	0 112.00
11.0 Heat Loss Floors											
Description	Туре	Storey Index	Construction			U	-Value	Shelter	r Code	Shelter	Kappa Area (m²)
Heatloss Floor 1	Ground Floor - S	Solid Lowest occupied	Suspended concrete floo	r, carpeted	l	(V	0.12	No	ne	0.00	75.00 112.00
12.0 Opening Types											
Description	Data Sourc	е Туре	Glazing			Glazir	ng Fi	illing G-v	alue F	rame Fra	me U Value



Window (new)	Manufacturer Window	Double Low-E Soft	0.05	Gap	Туре	0.63	Туре	Factor 0.70	(W/m²K) 1.10
13.0 Openings									
Name Opening Opening	Opening Type Window (new) Window (new)	Location New External Wall 1 New External Wall 1		Orient North South	ation East West	Area (8.4 7.8	m²) 5 5	Pi	tch
14.0 Conservatory		None				1			
15.0 Draught Proofin	Ig	100				_ %			
16.0 Draught Lobby		No				j			
47.0 Thormal Bridgin		Colouloto Bridgoo				7			
17.0 Thermal Bridgin 17.1 List of Bridges	ıg	Calculate Bhuges							
Bridge Type E2 Other lintels (ir E3 Sill E4 Jamb E5 Ground floor (r E16 Corner (norm E18 Party wall bet E7 Party floor betw E18 Party wall bet P1 Party wall - Grt P3 Party wall - Int	ncluding other steel lintels) al) ween dwellings ween dwellings (in blocks of flats) ween dwellings ound floor ermediate floor between dwellings	Source Type Independently assessed Table K1 - Default Gov Approved Scheme Gov Approved Scheme Table K1 - Default Gov Approved Scheme Table K1 - Default Gov Approved Scheme Table K1 - Default	Length 10.80 5.80 16.40 31.29 4.80 31.29 4.80 31.29 4.80 12.18	Psi 0.30 0.10 0.01 0.11 0.05 0.24 0.09 0.24 0.03 0.00	Adjusted 1 0.30 0.10 0.01 0.11 0.05 0.24 0.09 0.24 0.03 0.00	Reference	:		Imported Yes No Yes Yes Yes No No No
(in blocks of flats)			12.10	0.00	0.00				
Y-value		0.07				W/m²K			
18.0 Pressure Testin	g	Yes							
Designed AP50		3.00				m³/(h.m	²) @ 50 Pa		
Test Method		Blower Door							
19.0 Mechanical Ven	tilation								
Mechanical Venti	lation	M				7			
Mechanical	ventilation System Present	Yes							
Approved in		NO							
Mechanical	Ventilation data Type	Database							
Type		Balanced mechanical ver	ntilation with I	neat recov	very				
MV Reference	ce Number	500250							
Configuration	n	2							
Manufacture	r SFP	0.54							
Duct Type		Rigid							
MVHR Effici	ency	90.00							
Wet Rooms		2							
SFP from Ins	staller Commissioning Certificate	No							
MVHR Syste	em Location	Inside heated envelope (installed exclu	usively)					
Duct Installa	tion Specification	Level 2							
19.1 Mechanical extr SFP 0.13	act ventilation - Decentralised Fan/Room Type Count In Room Fan 0								
0.11	Kitchen In Room Fan Other 1 Wat Baam								
0.00 0.00	In Duct Fan Kitchen 1 In Duct Fan Other 0								
0.10	Wet Room Through Wall Fan 0								
0.10	Through Wall Fan 0 Other Wet Room								
20.0 Fans, Open Fire	places, Flues								
21.0 Fixed Cooling S	ystem	No]			
22.0 Lighting									
No Fixed Lighting		No							
		Name El	ticacy	Po	wer	Сара	city	Co	ount



	Lighting 1		90.00		10	900		10
24.0 Main Heating 1	None]		
25.0 Main Heating 2	None]		
26.0 Heat Networks	Space and	Water Com	pined]		
Space Community Heating						_		
Distribution Loss	Calculated]		
Distribution Loss Value	2.00]		
SAP Code	2309]		
Heat Source Fuel Type Heating	j Use Efficie	ency Perce H	ntage Of leat	Heat	Heat Ele Power Potio	ctrical Fuel F	actor	Efficiency type
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5					Rallo			
28.0 Water Heating								
Water Heating	Community	/ Heating]		
SAP Code	901]		
Flue Gas Heat Recovery System	No]		
Waste Water Heat Recovery Instantaneous System 1	No]		
Waste Water Heat Recovery Instantaneous System 2	No					1		
Waste Water Heat Recovery Storage System	No					1		
Solar Panel	No					1		
Water use <= 125 litres/person/day	Yes					1		
Cold Water Source	From mains	S				1		
Bath Count	1					j		
Hot Water Controls Manufacturer	N/A]		
Hot Water Controls Model	N/A					1		
28.3 Waste Water Heat Recovery System						-		
29.0 Hot Water Cylinder	HIU					1		
Loss	1.46					- kWh/day		
In Airing Cupboard	No]		
34.0 Small-scale Hydro	None]		
Jan Feb Mar Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Recommendations Lower cost measures None Further measures to achieve even higher standar	ds							
	Typical Cost	Турі	cal saving	s per year	F SAP r 0 0 0 0	Ratings after im ating I))	proveme Environn	ent nental Impact 0 0 0



Property Reference	Flat 2				Issu	ued on Date	31/01/2023		
Assessment Reference	Be Lean		Prop	Type Ref	2b3p				
Property	Flat 2, 702 Field End Rd	, Ruislip , Hillingdon,	HA4 0QP						
SAP Rating		80 C	DER	5.78		TER	10.92		
Environmental	96 A	% DER < TER				47.07			
CO ₂ Emissions (t/year)	0.35	DFEE	24.04		TFEE	24.52			
Compliance Check	See BREL	% DFEE < TFEE				1.97			
% DPER < TPER		-7.51	DPER	61.58		TPER	57.28		
Accessor Details	An Chuis Callian					Accessor ID	T170 0001		
	Ar. Chris Collier					Assessorid	1176-0001		
Client									
SUMMARY FOR INPUT D	ATA FOR: New Build	(As Designed)							
Orientation		Southeast							
Property Tenture		ND							
Transaction Type		6							
Terrain Type		Suburban							
1.0 Property Type		Flat, Semi-Detache	b						
Position of Flat		Mid-floor flat							
Which Floor		1							
2.0 Number of Storeys		1							
3.0 Date Built		2023							
4.0 Sheltered Sides		2							
5.0 Sunlight/Shade		Average or unknown							
6.0 Thermal Mass Parameter		Precise calculation							

7.0 Electricity Tariff Standard Smart electricity meter fitted Yes Smart gas meter fitted Yes

7.0 Measurements

			G	Heat Loss Perimeter Ground floor: 17.86 m			r In	ternal Floo 66.00 r	Average Stor 2.40		ey Height m		
8.0 Living Area			37.72						m	2			
9.0 External Walls													
Description	Туре	Construc	tion		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area	Shelter Res	Shelter	Openings	s Area	Calculation Type
New External Wall 1	Cavity Wall	Cavity wa filled cavi	III : plasterboard on dab ty, any outside structure	s, AAC block,	0.14	60.00	42.86	30.85	0.00	None	12.01	Calcu	late Wall Area
9.1 Party Walls													
Description	Туре		Construction					U-Value	e Kappa	Area	Shelter	S	nelter
Party Wall 1	Filled Ca Edge Se	avity with lealing	Double plasterboard with/without sheath	d on both side ing board	es, twin	timber f	rame	0.00) (KJ/m²K) 20.00	(m²) 42.67	Res	1	lone
9.2 Internal Walls													
Description		С	onstruction								Кар	pa	Area (m ²)
Internal Wall 1		Р	lasterboard on timb	er frame							(kJ/n 9.0	n²K))0	37.44
10.1 Party Ceilings													
Description		С	onstruction								Кар	pa	Area (m ²)
Party Ceiling 1		Ti	mber I-joists, carpe	ted							(kJ/n 20.0	n²K) 00	66.00
11.1 Party Floors													
Description		Stor	ey Construction	n							Ka	ppa	Area (m²)
Party Floor 1		Lowe Lowe	x est Precast conc pied	rete planks fl	oor, scre	eed, car	peted				(kJ / 30	m²K)).00	66.00

12.0 Opening Types



Description	Data Source	Туре		Glazing		Glazing	Filling	G-value	Frame	Frame	U Value
Window (new)	Manufacturer	Window		Double Low-E So	oft 0.05	Gap	Туре	0.63	Туре	Factor 0.70	(W/m²K) 1.10
13.0 Openings											
Name Opening Opening	Opening Ty Window (ne Window (ne	/pe ew) ew)		Location New External Wall 1 New External Wall 1		Orient North North	t ation West East	Area 1.2 10.8	(m²) 0 31	Pi	tch
14.0 Conservatory				None				7			
15.0 Draught Proofing				100				%			
16.0 Draught Lobby				No							
17.0 Thermal Bridging 17.1 List of Bridges				Calculate Bridges							
Bridge Type E2 Other lintels (includi E3 Sill E4 Jamb E7 Party floor between E16 Corner (normal) E18 Party wall betweer P3 Party wall - Interme (in blocks of flats)	ing other steel lint dwellings (in bloc n dwellings diate floor betwee	els) ks of flats) n dwellings	Sou Inde Tab Gov Gov Tab Tab	Irce Type spendently assessed le K1 - Default Approved Scheme Approved Scheme le K1 - Default le K1 - Default	Length 8.35 5.85 13.40 35.72 2.40 4.80 35.72	Psi 0.30 0.10 0.01 0.09 0.05 0.24 0.00	Adjusted 0.30 0.10 0.01 0.09 0.05 0.24 0.00	Reference	:		Imported Yes No Yes No Yes No
Y-value				0.18				W/m²K			
18.0 Pressure Testing				Yes				7			
Designed AP ₅₀				3.00				 m³/(h.m	²) @ 50 Pa	а	
Test Method				Blower Door],(, e		
19.0 Machanical Ventilati	<u></u>										
Mechanical Ventilatio	n										
Mechanical Venti	lation System Pre	sent		Yes							
Approved Installa	ition			No							
Mechanical Venti	lation data Type			Database							
Туре				Balanced mechanical v	entilation with	heat recov	very				
MV Reference Nu	umber			500250				7			
Configuration				2				7			
Manufacturer SFI	P			0.54				Ē			
Duct Type				Rigid				Ē			
MVHR Efficiency				90.00				i i			
Wet Rooms				2				i i			
SFP from Installe	r Commissionina	Certificate		No				f			
MVHR System Lo	ocation			Inside heated envelope	e (installed exc	lusivelv)		f			
Duct Installation S	Specification			Level 2		,,		f i			
20.0 Fans, Open Fireplac	es, Flues										
21.0 Fixed Cooling Syste	m			No							
22.0 Lighting											
No Fixed Lighting				No Name Lighting 1	Efficacy 90.00	Pc	ower 10	Capa 90	acity 10	Co	ount 10
24.0 Main Heating 1				None							
25.0 Main Heating 2				None							
26.0 Heat Networks				Space and Water Com	bined						
Space Community He	eating							_			
Distribution Loss				Calculated							
Distribution Loss	Value			2.00							
SAP Code				2309							



Heat Source

Fuel Type Heating Use

Efficiency Percentage Of Heat Heat

Heat Power Ratio

Electrical Fuel Factor Efficiency type

Heat source 1
Heat source 2
Heat source 3
Heat source 4
Heat source 5

28.0 Water Heating Community Heating Water Heating SAP Code 901 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 Cold Water Source From mains Bath Count 1 Hot Water Controls Manufacturer N/A Hot Water Controls Model N/A 28.3 Waste Water Heat Recovery System HIU 29.0 Hot Water Cylinder 1.46 kWh/day Loss No In Airing Cupboard 34.0 Small-scale Hydro None Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Recommendations Lower cost measures None

Further measures to achieve even higher standards

Turning Co	at Turical actions non-user	Ratings af	ter improvement
Typical Co	ist Typical savings per year	SAP rating	Environmental Impact
		0	0
		0	0
		0	0



Property Reference	Flat 4					Issi	ued on Date	31/01/2023
Assessment Reference	Be Lean			Prop 1	Type Ref	1b2p		
Property	Flat 4, 702 Field End Rd	, Ruislip , Hillingdon,	HA4 0QP					
SAP Rating		77 C	DER		7.26		TER	14.13
Environmental		95 A	% DER <	< TER	<u>.</u>			48.62
CO ₂ Emissions (t/year)		0.34	DFEE		30.73		TFEE	32.23
Compliance Check		See BREL	% DFEE	< TFEE				4.68
% DPER < TPER		-3.09	DPER		77.07		TPER	74.76
Assessor Details	r. Chris Collier						Assessor ID	T176-0001
Client								
SUMMARY FOR INPUT DA	ATA FOR: New Build (As Designed)						
Orientation		East						
Property Tenture		ND						
Transaction Type		6						
Terrain Type		Suburban						
1.0 Property Type		Flat, Semi-Detached						
Position of Flat		Top-floor flat						
Which Floor		2						
2.0 Number of Storeys		1						
3.0 Date Built		2023						
4.0 Sheltered Sides		2						
5.0 Sunlight/Shade		Average or unknow	n					
6.0 Thermal Mass Parameter		Precise calculation						
7.0 Electricity Tariff		Standard						
Smart electricity meter fitted		Yes						
Smart gas meter fitted		Yes						

7.0 Measurements

			Ground floor	Heat ::	Loss F 14.92	Perimete ? m	er In	ternal F 51.0	loor Are 0 m²	ea Av	verage Sto 2.40	m Height
8.0 Living Area			30.26						m²			
9.0 External Walls												
Description	Туре	Construction		U-Value (W/m²K)	Kappa (kJ/m²K	Gross) Area(m²	Nett) Area	Shelter Res	Shel	ter C	penings Are	a Calculation Type
New External Wall 1	Cavity Wall	Cavity wall : pla filled cavity, any	sterboard on dabs, AAC block, outside structure	0.14	60.00	35.81	26.96	0.00	Nor	ne	8.85 Calc	ulate Wall Area
9.1 Party Walls												
Description	Туре	Cons	truction				U-Value (W/m²K)	Kappa (kJ/m²	a Are K) (m²	a She	lter S es	Shelter
Party Wall 1	Filled Cavi Edge Seal	ty with Doub ing with/v	le plasterboard on both sic vithout sheathing board	les, twin t	timber	f rame	0.00	20.00	35.8	1		None
9.2 Internal Walls												
Description		Const	ruction								Kappa	Area (m ²)
Internal Wall 1		Plaster	board on timber frame								(KJ/II-K) 9.00	21.60
10.0 External Roofs												
Description	Туре	Construc	tion	U-\ (W/	/alue m²K)(l	Kappa ⟨J/m²K)/	Gross Area(m²)	Nett Area	Shelter Code	Shelter Factor	Calculatio Type	onOpenings
External Roof 1	External Flat Roof	Plasterboa	ard, insulated flat roof	0	.10	9.00	51.00	0.00	None	0.00	Enter Gros Area	ss 0.00
11.1 Party Floors												
Description		Storey Index	Construction								Kappa (kJ/m²K	Area (m²)
Party Floor 1		Lowest occupied	Precast concrete planks f	loor, scre	ed, ca	rpeted					30.00	, 51.00



12.0 Opening Types	Dete Course	Turne	Clasing			F illin a	C .ualua	F	F	
Description	Data Source	туре	Giazing		Glazing Gap	Туре	G-value	Туре	Factor	(W/m ² K)
Window (new)	Manufacturer	Window	Double Lov	v-E Soft 0.05			0.63		0.70	1.10
13.0 Openings Name	Opening Ty	ne	Location		Orien	tation	Area	'm²)	Pi	tch
Opening	Window (new	w)	New External Wa	all 1	We	est	1.0	0		
		w)			INO	run	7.8	0		
14.0 Conservatory			None							
15.0 Draught Proofing			100				%			
16.0 Draught Lobby			No							
17.0 Thermal Bridging			Calculate Bridges	S						
17.1 List of Bridges										
Bridge Type E2 Other lintels (inclue	ding other steel linte	els)	Source Type Independently assess	Length sed 6.10	Psi 0.30	Adjusted 0.30	Reference	•		Imported Yes
E3 Sill	5	,	Table K1 - Default	3.60	0.10	0.10				No
E7 Party floor betweel	n dwellings (in blocl	ks of flats)	Gov Approved Schem	ne 14.92	0.01	0.01				Yes
E14 Flat roof E16 Corner (normal)			Table K1 - Default Gov Approved Schem	14.92 ne 2.40	0.16 0.05	0.16 0.05				Yes No
E18 Party wall betwee	en dwellings		Table K1 - Default	4.80	0.24	0.24				Yes
P3 Party wall - Roof (I P3 Party wall - Interme	ediate floor betweer	ievei) n dwellings	Gov Approved Schem Table K1 - Default	14.92 14.92	0.04	0.04				NO NO
(in blocks of flats)										
Y-value			0.09				W/m²K			
18.0 Pressure Testing			Yes							
Designed AP50			3.00				m³/(h.m	²) @ 50 P	а	
Test Method			Blower Door							
19.0 Mechanical Ventilat	ion									
Mechanical Ventilation	on									
Mechanical Vent	tilation System Pres	sent	Yes							
Approved Install	ation		No							
Mechanical Vent	tilation data Type		Database							
Туре			Balanced mecha	nical ventilation with	heat reco	very				
MV Reference N	lumber		500250							
Configuration			2							
Manufacturer SF	P		0.54							
Duct Type			Rigid							
MVHR Efficiency	/		90.00				7			
Wet Rooms			2				Ξ			
SFP from Install	er Commissioning (Certificate	No				٦			
MVHR System L	ocation		Inside heated en	velope (installed exc	lusively)		٦			
Duct Installation	Specification		Level 2							
20.0 Fans, Open Firepla	ces, Flues									
21.0 Fixed Cooling Syste	em		No				7			
22.0 Lighting			L							
No Fixed Lighting			No							
			Name	Efficacy	Po	ower	Capa	city	Co	ount
				90.00		10	90	iu		
24.0 Main Heating 1			INONE							
25.0 Main Heating 2			None							
26.0 Heat Networks			Space and Water	r Combined						
Space Community H	eating		Columbat 1				_			
Distribution Loss	•		Calculated							



Distribu	tion Loss Value			2.00										
SAP Co	ode			2309)									
	Heat Source	Fuel T	ype Heating	Use	Efficienc	y Per	centage Of Heat	Heat	Heat Power	Electric	al Fuel	Factor	Efficiency	/ type
Heat source 2 Heat source 2 Heat source 3 Heat source 4 Heat source 5	1 2 3 4 5								Ratio					
28.0 Water Heati	ing													
Water Heating	g			Com	munity He	eating								
SAP Code				901										
Flue Gas Hea	at Recovery Syste	m		No										
Waste Water	Heat Recovery In	stantanec	us System 1	No										
Waste Water	Heat Recovery In	stantanec	us System 2	No										
Waste Water	Heat Recovery St	torage Sy	stem	No										
Solar Panel				No										
Water use <=	· 125 litres/person/	/day		Yes										
Cold Water S	ource			From	n mains									
Bath Count				1										
Hot Water Co	ontrols Manufactur	er		N/A										
Hot Water Co	ontrols Model			N/A										
28.3 Waste Wate	r Heat Recovery	System												-
29.0 Hot Water C	Cylinder			HIU										
Loss				1.46						kV	Vh/day			
In Airing Cup	board			No										
34.0 Small-scale	e Hydro			None	e									
Jan	Feb	Mar	Apr	Мау	J	un	Jul	Aug	Se	p	Oct	Nov	De	C
Recommendatic Lower cost r None Further mea	ons neasures sures to achieve	even hig	her standard	ds										
				Typical	Cost	Ту	vpical saving	s per year	. sa	Ratin AP rating 0	gs after i I	mprover Enviror	nent nmental Imp 0	pact
										0 0			0	



Property Reference	Flat 1				lss	ued on Date	01/02/2023	
Assessment Reference	Be Green 2			Prop Type Ref	3b6p	2		
Property	Flat 1, 702 Field End Ro	d, Ruislip , Hillingdon,	HA4 0QP					
SAP Rating		85 B	DER	3.37		TER	10.07	
Environmental		97 A	% DER <	TER			66.53	
CO ₂ Emissions (t/year)		0.34	DFEE	29.40		TFEE	32.35	
Compliance Check		See BREL	% DFEE	< TFEE			9.14	
% DPER < TPER		32.39	DPER	35.60		TPER	52.65	
Assessor Details	Mr. Chris Collier					Assessor ID	T176-0001	
Client								
SUMMARY FOR INPUT	DATA FOR: New Build	(As Designed)						
Orientation		Northwest						
Property Tenture		ND						

Transaction Type	6	
Terrain Type	Suburban	
1.0 Property Type	Flat, Semi-Detached	
Position of Flat	Ground-floor flat	
Which Floor	0	
2.0 Number of Storeys	1	
3.0 Date Built	2023	
4.0 Sheltered Sides	1	
5.0 Sunlight/Shade	Average or unknown	
6.0 Thermal Mass Parameter	Precise calculation	
7.0 Electricity Tariff	Standard	
Smart electricity meter fitted	Yes	
Smart gas meter fitted	Yes	

7.0 Measurements

				Ground floor	Heat r:	Loss P 31.29	erimete m	er l	nternal Flo 112.00	or Area m²	Average	Stor 2.40 r	ey Height m
8.0 Living Area				36.95					n	n²			
9.0 External Walls													
Description	Туре	Constru	uction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett) Area	Shelter Res	Shelter	Openings	s Area	Calculation Type
New External Wall 1	Cavity Wall	Cavity w filled ca	vall : plasterb vity, any outs	oard on dabs, AAC block, ide structure	0.14	60.00	75.10	58.80	0.00	None	16.30	Calcul	late Wall Area
9.1 Party Walls													
Description	Туре		Construc	tion				U-Valu (W/m ²	ue Kappa K) (k.l/m²K)	Area	Shelter Res	Sł	nelter
Party Wall 1	Filled Ca Edge Se	avity with aling	Double pl with/withc	asterboard on both sic out sheathing board	les, twin	timber f	rame	0.00	20.00	29.26	100	Ν	lone
9.2 Internal Walls													
Description		(Construct	ion							Kap	pa	Area (m²)
Internal Wall 1		F	Plasterboa	rd on timber frame							(KJ /II 9.0	1 -K) 10	87.40
10.1 Party Ceilings													
Description		(Construct	ion							Kap	pa	Area (m ²)
Party Ceiling 1		1	Fimber I-jo	ists, carpeted							20.0	00	112.00
11.0 Heat Loss Floors													
Description	Туре	Store	ey Index	Construction			U	-Value V/m²K)	Shelte	r Code	Shelter Factor	Kapp	a Area (m²)
Heatloss Floor 1	Ground Floor	- Solid Lowe	st occupied	Suspended concrete floo	or, carpeted	ł		0.12	No	one	0.00	75.00	0 112.00
12.0 Opening Types													
Description	Data Sou	rce Тур	е	Glazing			Glaziı	ng Fi	illing G-v	value F	rame Fra	ame	U Value



Window (new) Manufacturer Window	Double Low-E Soft 0.05	Gap	Туре	Ty 0.63	pe Factor (W	// m²K) 1.10
13.0 Openings						
NameOpening TypeOpeningWindow (new)OpeningWindow (new)	Location New External Wall 1 New External Wall 1	Orien North South	tation East West	Area (m²) 8.45 7.85	Pitch	
14.0 Conservatory	None			7		
15.0 Draught Proofing	100			%		
16.0 Draught Lobby	No			Ī		
17.0 Thermal Bridging	Calculate Bridges			7		
17.1 List of Bridges						
Bridge Type E2 Other lintels (including other steel lintels) E3 Sill E4 Jamb E5 Ground floor (normal) E16 Corner (normal) E18 Party wall between dwellings E7 Party floor between dwellings E18 Party wall between dwellings P1 Party wall between dwellings P1 Party wall - Ground floor P3 Party wall - Intermediate floor between dwelling (in blocks of flats)	Source TypeLengttIndependently assessed10.80Table K1 - Default5.80Gov Approved Scheme16.40Gov Approved Scheme31.29Gov Approved Scheme4.80Table K1 - Default4.80Gov Approved Scheme31.29Table K1 - Default4.80Gov Approved Scheme31.29Table K1 - Default4.80Gov Approved Scheme12.18s Table K1 - Default12.18	Psi 0.30 0.10 0.01 0.01 0.01 0.01 0.024 0.03 0.00	Adjusted 0.30 0.10 0.11 0.11 0.05 0.24 0.09 0.24 0.09 0.24 0.03 0.00	Reference:	Imi	yes No Yes Yes Yes Yes No No No No
Y-value	0.07			W/m²K		
18.0 Pressure Testing	Yes					
Designed AP ₅₀	3.00			 m³/(h.m²) @	50 Pa	
Test Method	Blower Door					
19.0 Mechanical Ventilation						
Mechanical Ventilation				_		
Mechanical Ventilation System Present	Yes					
Approved Installation	No					
Mechanical Ventilation data Type	Database					
Туре	Balanced mechanical ventilation wit	h heat reco	very			
MV Reference Number	500250					
Configuration	2					
Manufacturer SFP	0.54					
Duct Type	Rigid					
MVHR Efficiency	90.00					
Wet Rooms	2					
SFP from Installer Commissioning Certificate	No					
MVHR System Location	Inside heated envelope (installed ex	clusively)				
Duct Installation Specification	Level 2					
19.1 Mechanical extract ventilation - Decentralised						
SFP Fan/Room Type Count 0.13 In Room Fan 0 Name Name 0 0.11 In Room Fan Other 1 Name Name Name 0.11 In Room Fan Other 1 Wet Room Name Name 0.00 In Duct Fan Kitchen 1 0.00 In Duct Fan Other 0 Wet Room Name 0 0.10 Through Wall Fan 0 Name Name 0 Other Wet Room 0 0						
20.0 Fans, Open Fireplaces, Flues						
21.0 Fixed Cooling System	No					
22.0 Lighting	Ne			7		
ויט רוגפט בופותוופ	Name Efficacy	Po	ower	Capacity	Count	



	Lighting 1	90.00	10	900	10
24.0 Main Heating 1	Database				
Description	Heat pump				
Percentage of Heat	100.00			%	
Database Ref. No.	103892				
Fuel Type	Electricity				
In Winter	0.00				
In Summer	0.00				
Model Name	AERONA3				
Manufacturer	Grant Engineering	g (UK) Ltd			
System Type	Heat Pump				
Controls SAP Code	2207				
Is MHS Pumped	Pump in heated s	pace			
Heating Pump Age	2013 or later				
Heat Emitter	Underfloor				
Underfloor Heating	Yes - Pipes in thin	screed			
Flow Temperature	Enter value				
Flow Temperature Value	35.00				
25.0 Main Heating 2	None				
26.0 Heat Networks Space Community Heating	None				

	Heat Source	Fuel Type Heating Us	e Efficiency	Percentage Of Heat	Heat	Heat Power Ratio	Electrical	Fuel Factor	Efficiency type
Heat source 1									
Heat source 2									
Heat source 4									
Heat source 5									
28.0 Water Heating	g								
Water Heating			Main Heating 1						
SAP Code			901						
Elue Gas Heat	Pecovery Syster	m	No						

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
Cold Water Source	From mains
Bath Count	1
Immersion Only Heating Hot Water	No
Hot Water Controls Manufacturer	N/A
Hot Water Controls Model	N/A

28.3 Waste Water Heat Recovery System

29.0 Hot Water Cylinder	Hot Water Cylinder	
Cylinder Stat	Yes	
Cylinder In Heated Space	Yes	
Independent Time Control	Yes	
Insulation Type	Measured Loss	
Cylinder Volume	150.00	L
Loss	1.40	kWh/day



Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
34.0 Small-scale	e Hydro			None							
31.0 Thermal Sto	ore			None							
In Airing Cup	board			No							
Pipes insulati	ion			Fully ins	ulated primar	y pipework					

Recommendations

Lower cost measures None

Further measures to achieve even higher standards

Turnical Cost	Typical covingo per vest	Ratings af	Ratings after improvement		
Typical Cost	Typical savings per year	SAP rating	Environmental Impact		
		0	0		
		0	0		
		0	0		
		0	0		



Property Reference	Flat 2					Issu	ied on Date	01/02/2023
Assessment Reference	Be Green 2			Prop	Type Ref	2b3p		
Property	Flat 2, 702 Field End Ro	d, Ruislip , Hillingdon,	HA4 0QP					
SAP Rating		80 C	DER		5.15		TER	10.92
Environmental		96 A	% DER	< TER				52.84
CO ₂ Emissions (t/year)		0.32	DFEE		24.04		TFEE	24.52
Compliance Check		See BREL	% DFEE < TFEE				1.97	
% DPER < TPER		4.40	DPER		54.76		TPER	57.28
Assessor Details	Mr. Chris Collier						Assessor ID	T176-0001
Client								
SUMMARY FOR INPUT	DATA FOR: New Build	(As Designed)						
Orientation		Couthoost						
		Sourieasi						
Property Tenture		ND						
Transaction Type		6						
Terrain Type		Suburban						
1.0 Property Type		Flat, Semi-Detached						
Position of Flat		Mid-floor flat						
Which Floor		1						
2.0 Number of Storeys		1						
3.0 Date Built		2023						
4.0 Sheltered Sides		2						
5.0 Sunlight/Shade		Average or unknow	'n					
6.0 Thermal Mass Parameter		Precise calculation						
7.0 Electricity Tariff		Standard						
Smart electricity meter fitte	d	Yes						
Smart gas meter fitted		Yes						

7.0 Measurements

			Ground floo	Heat r:	Heat Loss Perimeter 17.86 m			nternal Flo 66.00 r	or Area n²	Average S 2.4	torey Height 40 m	
8.0 Living Area			37.72					m	2			
9.0 External Walls												
Description	Туре	Construction		U-Value (W/m²K)	Kappa (kJ/m²K)	Gross Area(m²)	Nett Area	Shelter Res	Shelter	Openings /	Area Calculation Type	
New External Wall 1	Cavity Wall	Cavity wall : pl filled cavity, ar	asterboard on dabs, AAC block, y outside structure	0.14	60.00	42.86	(m-) 30.85	0.00	None	12.01 C	alculate Wall Area	
9.1 Party Walls												
Description	Туре	Con	struction				U-Valu	e Kappa	Area	Shelter	Shelter	
Party Wall 1	Filled Cav Edge Sea	ity with Dou ling with	ble plasterboard on both sid /without sheathing board	asterboard on both sides, twin timber f rame out sheathing board			0.00	20.00	(m ⁻) 42.67	Res	None	
9.2 Internal Walls												
Description		Cons	truction							Kapp	a Area (m ²)	
Internal Wall 1		Plaste	erboard on timber frame							(kJ/m -) 9.00	N) 37.44	
10.1 Party Ceilings												
Description		Cons	truction							Kapp	a Area (m²)	
Party Ceiling 1		Timbe	er I-joists, carpeted							(kJ/m ²) 20.00	66.00	
11.1 Party Floors												
Description		Storey Index	Construction							Kapı (kJ/m	oa Area (m²) ²K)	
Party Floor 1		Lowest occupied	Precast concrete planks t I	floor, scro	eed, car	peted				30.0	0 66.00	
12.0 Opening Types												



Description	Data Source	Туре		Glazing		Glazing	Filling	G-value	Frame	Frame	U Value
Window (new)	Manufacturer	Window		Double Low-E S	oft 0.05	Gap	Туре	0.63	Туре	Factor 0.70	(W/m²K) 1.10
13.0 Openings											
Name Opening Opening	Opening Ty Window (ne Window (ne	ype ew) ew)		Location New External Wall 1 New External Wall 1		Orient North North	ation West East	Area 1.2 10.8	(m²) 0 31	Pi	tch
14.0 Conservatory				None							
15.0 Draught Proofing				100				%			
16.0 Draught Lobby				No							
17.0 Thermal Bridging 17.1 List of Bridges				Calculate Bridges							
Bridge Type E2 Other lintels (inclu E3 Sill E4 Jamb E7 Party floor betwee E16 Corner (normal) E18 Party wall betwe P3 Party wall - Interm (in blocks of flats)	iding other steel lint en dwellings (in bloc en dwellings nediate floor betwee	els) ks of flats) n dwellings	Sor Inde Tab Gov Gov Tab S Tab	urce Type ependently assessed ole K1 - Default v Approved Scheme v Approved Scheme ole K1 - Default ole K1 - Default	Length 8.35 5.85 13.40 35.72 2.40 4.80 35.72	Psi 0.30 0.10 0.01 0.09 0.05 0.24 0.00	Adjusted 0.30 0.10 0.01 0.09 0.05 0.24 0.00	Reference	:		Imported Yes No Yes No No Yes No
Y-value				0.18				W/m²K			
18.0 Pressure Testing				Yes				7			
				3.00				 m³/(h.m	n²) @ 50 Pa	Э	
Test Method				Blower Door],(, e	_	
19.0 Mechanical Ventila	tion										
Mechanical Ventilat	ion										
Mechanical Ver	ntilation System Pre	sent		Yes							
Approved Insta	llation			No							
Mechanical Ver	ntilation data Type			Database							
Туре				Balanced mechanical	ventilation with	heat recov	very	7			
MV Reference I	Number			500250				7			
Configuration				2				Ī			
Manufacturer S	FP			0.54				Ī			
Duct Type				Rigid				i i			
MVHR Efficience	SV.			90.00				Ę			
Wet Rooms	.)			2				4			
SEP from Instal	ler Commissioning	Certificate		No				4			
		Certificate		Inside beated anyelen	o (installed eve	lucivolv)					
Duct Installation						lusively)					
20.0 Eans. Open Eirents											
21.0 Fixed Cooling Syst				No							
221.0 Fixed Cooling Cys											
No Fixed Lighting				No Name Lighting 1	Efficacy 90.00	Po	wer 10	Capa 90	acity 00	Co	ount 10
24.0 Main Heating 1				Database							
Description				Heat Pump				i i			
Percentage of Heat				100.00				%			
Database Ref No				103892				Ξ́			
Euel Type				Flectricity				i i			
In Winter				0.00							
				0.00							
				0.00							



Model Name	AERONA3			
Manufacturer	Grant Engineering (UK) Ltd	_		
System Type	Heat Pump	_		
Controls SAP Code	2207	=		
Is MHS Pumped	Pump in heated space			
Heating Pump Age	2013 or later			
	Ves - Dines in thin screed			
	Enter value			
	35.00			
25.0 Main Heating 2	None			
26.0 Heat Networks	None			
Space Community Heating				
Heat Source Fuel Type Heating U Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	se Efficiency Percentage Of Heat Heat Heat Power Ratio	Electrica	I Fuel Factor	Efficiency type
28.0 Water Heating				
Water Heating	Main Heating 1			
SAP Code	901			
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	=		
Cold Water Source	From mains			
Bath Count	1			
Immersion Only Heating Hot Water	No			
Hot Water Controls Manufacturer	N/A			
Hot Water Controls Model				
28.3 Waste Water Heat Recovery System	[
29.0 Hot Water Cylinder	Hot Water Cylinder			
Cylinder Stat	Yes			
Cylinder In Heated Space	Yes			
Independent Time Control	Yes			
Insulation Type	Measured Loss			
Cylinder Volume	150.00	L		
Loss	1.40	kW	h/day	
Pipes insulation	Fully insulated primary pipework			
In Airing Cupboard	No			
31.0 Thermal Store	None			
34.0 Small-scale Hydro	None			
Jan Feb Mar Apr	May Jun Jul Aug Se	p	Oct Nov	Dec
Recommendations				

Lower cost measures None

Further measures to achieve even higher standards

Typical Cost

Typical savings per year

Ratings afte	r improvement
SAP rating	Environmental Impact
0	0
0	0
0	0





Property Reference	Flat 4					Issu	ued on Date	01/02/2023
Assessment Reference	Be Green 2			Prop 1	Type Ref	1b2p		
Property	Flat 4, 702 Field End Rd	, Ruislip , Hillingdon,	HA4 0QP					
SAP Rating		76 C	DER		6.92		TER	14.13
Environmental		95 A	% DER <	< TER				51.03
CO ₂ Emissions (t/year)		0.33	DFEE		30.73		TFEE	32.23
Compliance Check		See BREL	% DFEE < TFEE				4.68	
% DPER < TPER		1.71	DPER		73.48		TPER	74.76
Assessor Details	Ar Chris Collier						Assessor ID	T176 0001
Client								1170-0001
SUMMARY FOR INPUT D	AIA FOR: New Build	(As Designed)						
Orientation		East						
Property Tenture		ND						
Transaction Type		6						
Terrain Type		Suburban						
1.0 Property Type		Flat, Semi-Detache	d					
Position of Flat		Top-floor flat						
Which Floor		2						
2.0 Number of Storeys		1						
3.0 Date Built		2023						
4.0 Sheltered Sides		2						
5.0 Sunlight/Shade		Average or unknow	n					
6.0 Thermal Mass Parameter		Precise calculation						
7.0 Electricity Tariff		Standard						
Smart electricity meter fitted		Yes						
Smart gas meter fitted		Yes						

7.0 Measurements

			Heat Loss Perimeter Ground floor: 14.92 m			er In	Internal Floor Area 51.00 m²			Average Storey H 2.40 m		
8.0 Living Area			30.26						m²			
9.0 External Walls												
Description	Туре	Construction		U-Value (W/m²K)	Kappa (kJ/m²K	Gross () Area(m²	Nett) Area	Shelter Res	Shel	ter C	penings Are	a Calculation Type
New External Wall 1	Cavity Wall	Cavity wall : pla filled cavity, any	asterboard on dabs, AAC block, / outside structure	0.14	60.00	35.81	26.96	0.00	Nor	ie	8.85 Calc	ulate Wall Area
9.1 Party Walls												
Description	Туре	Cons	struction				U-Value (W/m²K)	Kappa (kJ/m²	a Are K) (m²	a She) Re	lter S es	Shelter
Party Wall 1	Filled Cavi Edge Seal	ty with Doub ing with/	le plasterboard on both sic without sheathing board	les, twin	timber	f rame	0.00	20.00	35.8	1		None
9.2 Internal Walls												
Description		Const	ruction								Kappa	Area (m²)
Internal Wall 1		Plaste	rboard on timber frame								(KJ/M²K) 9.00	21.60
10.0 External Roofs												
Description	Туре	Construc	tion	U-\ (W/	/alue /m²K)(l	Kappa kJ/m²K)/	Gross Area(m²)	Nett Area	Shelter Code	Shelter Factor	Calculatio Type	onOpenings
External Roof 1	External Flat Roof	Plasterbo	ard, insulated flat roof	0	.10	9.00	51.00	0.00	None	0.00	Enter Gros Area	s 0.00
11.1 Party Floors												
Description		Storey Index	Construction								Kappa (kJ/m²K	Area (m²)
Party Floor 1		Lowest occupied	Precast concrete planks f	loor, scre	ed, ca	rpeted					30.00	, 51.00



12.0 Opening Types	Dete Course	Turne	Clasica		Clasing	Filling	Cualua	F	F	
Description	Data Source	Type	Giazing	0.4005	Gazing Gap	Туре	G-value	Туре	Factor	(W/m ² K)
Window (new)	Manufacturer	Window	Double Low-E	Soft 0.05			0.63		0.70	1.10
13.0 Openings Name	Opening Ty	ne	Location		Orient	ation	∆ rea	(m²)	Pi	tch
Opening	Window (ne	w)	New External Wall 1		We	st	1.0	0		
Opening	Window (ne	w)	New External Wall 1		Noi	th	7.8	5		
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 E2 Other lintels (includi E3 Sill E4 Jamb	ng other steel linte	els)	Source Type Independently assessed Table K1 - Default Gov Approved Scheme	Length 6.10 3.60 10.20	Psi 0.30 0.10 0.01	Adjusted 0.30 0.10 0.01	Reference	:		Imported Yes No Yes
E7 Party floor between	dwellings (in bloc	ks of flats)	Gov Approved Scheme	14.92	0.09	0.09				Yes
E16 Corner (normal)			Gov Approved Scheme	2.40	0.05	0.05				No
E18 Party wall between P4 Party wall - Roof (in:	dwellings sulation at ceiling	level)	Table K1 - Default Gov Approved Scheme	4.80 14.92	0.24 0.04	0.24 0.04				Yes No
P3 Party wall - Intermed (in blocks of flats)	diate floor betwee	n dwellings	Table K1 - Default	14.92	0.00	0.00				No
Y-value			0.09				W/m²K			
18 0 Pressure Testing			Yes							
			3.00				 m ³ /(h m	1²) @ 50 P	a	
Test Method			Blower Door					.)@0011	4	
			Biower Door							
19.0 Mechanical Ventilation	on									
Mechanical Ventilation	n ation System Pres	sent	Yes				7			
	tion	Sent	No							
Approved Installa			No							
	ation data Type		Database							
Туре			Balanced mechanica	I ventilation with	heat recov	ery				
MV Reference Nu	ımber		500250				_			
Configuration			2							
Manufacturer SFF	0		0.54							
Duct Type			Rigid							
MVHR Efficiency			90.00							
Wet Rooms			2							
SFP from Installer	r Commissioning	Certificate	No							
MVHR System Lo	ocation		Inside heated envelo	pe (installed exc	lusively)					
Duct Installation S	Specification		Level 2							
20.0 Fans, Open Fireplace	es, Flues									
21.0 Fixed Cooling Syster	m		No							
22.0 Lighting										
No Fixed Lighting			No							
			Name Lighting 1	Efficacy 90.00	Po	wer 10	Cap a 90	acity 00	Co	bunt 10
24.0 Main Heating 1			Database							
Description			Heat Pump							
Percentage of Heat			100.00				%			
Database Ref. No.			103892							
Fuel Type			Electricity				ī			



In Summer	0.00		
Model Name	AERONA3		
Manufacturer	Grant Engineering (UK) Ltd		
System Type	Heat Pump		
Controls SAP Code	2207		
Is MHS Pumped	Pump in heated space		
Heating Pump Age	2013 or later		
Heat Emitter	Underfloor		
Underfloor Heating	Yes - Pipes in thin screed		
Flow Temperature	Enter value		
Flow Temperature Value	35.00		
25.0 Main Heating 2	None		
26.0 Heat Networks	None		
Space Community Heating			
Heat source 1 Heat source 2 Heat source 3 Heat source 4 Heat source 5	Ratio		
8.0 Water Heating	[<u></u>]	I	
Water Heating	Main Heating 1		
SAP Code	[901		
Flue Gas Heat Recovery System	No		
vvaste Water Heat Recovery Instantaneous System 1			
waste water Heat Recovery Instantaneous System 2			
vvaste vvater Heat Recovery Storage System			
Solar Panel	No		
vvater use <= 125 litres/person/day			
Cold Water Source			
Immercion ()nly Heating Lat Water			
Immersion Only Heating Hot Water			
Immersion Only Heating Hot Water Hot Water Controls Manufacturer			
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 8.3 Waste Water Heat Recovery System	N/A N/A		
Hot Water Controls Manufacturer Hot Water Controls Model Hot Water Water Heat Recovery System Hot Water Cylinder	N/A N/A Hot Water Cylinder		
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat	N/A N/A Hot Water Cylinder Yes		
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 8.3 Waste Water Heat Recovery System 9.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space	N/A N/A Hot Water Cylinder Yes Yes		
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 8.3 Waste Water Heat Recovery System 9.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control	N/A N/A Hot Water Cylinder Yes Yes Yes		
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type	N/A N/A N/A Hot Water Cylinder Yes Yes Yes Measured Loss		
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type Cylinder Volume	N/A N/A N/A Hot Water Cylinder Yes Yes Yes Interview Yes Interview Interview<		
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type Cylinder Volume Loss	N/A N/A N/A Hot Water Cylinder Yes Yes Yes Measured Loss 150.00 1.40	L kWh/day	
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type Cylinder Volume Loss Pipes insulation	N/A N/A N/A Hot Water Cylinder Yes Yes Yes Measured Loss 150.00 1.40 Fully insulated primary pipework	L kWh/day	
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type Cylinder Volume Loss Pipes insulation In Airing Cupboard	N/A N/A N/A Hot Water Cylinder Yes Yes Yes Measured Loss 150.00 1.40 Fully insulated primary pipework No	L kWh/day	
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type Cylinder Volume Loss Pipes insulation In Airing Cupboard 31.0 Thermal Store	N/A N/A N/A Hot Water Cylinder Yes Yes Yes Measured Loss 150.00 1.40 Fully insulated primary pipework No None	L kWh/day	
Immersion Only Heating Hot Water Hot Water Controls Manufacturer Hot Water Controls Model 28.3 Waste Water Heat Recovery System 29.0 Hot Water Cylinder Cylinder Stat Cylinder In Heated Space Independent Time Control Insulation Type Cylinder Volume Loss Pipes insulation In Airing Cupboard 1.0 Thermal Store 4.0 Small-scale Hydro	N/A N/A N/A N/A Hot Water Cylinder Yes Yes Yes Measured Loss 150.00 1.40 Fully insulated primary pipework No None None	L kWh/day	



Lower cost measures None Further measures to achieve even higher standards

Typical Cost

Typical savings per year

	Ratings after improvement			
SAP	rating	Environmental Impact		
	0	0		
	0	0		
	0	0		

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

COMMERCIAL UNIT - BE LEAN

As designed

Date: Wed Feb 01 18:44:20 2023

Administrative information

Building Details

Address: Addison Estate, 702 Field End Road, Ruislip, HA4

Certifier details

Name: Chris Collier Telephone number: Address: , ,

Certification tool

Calculation engine: SBEM Calculation engine version: v6.1.b.0 Interface to calculation engine: Virtual Environment Interface to calculation engine version: v7.0.15 BRUKL compliance check version: v6.1.b.0

Foundation area [m²]: 574

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	3.62	
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum	3.13	
Target primary energy rate (TPER), kWh/m2annum	38.26	
Building primary energy rate (BPER), kWh/m ² annum	33.6	
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	Ua-Limit	Ua-Calc	U i-Calc	First surface with maximum value
Walls*	0.26	0.26	0.26	RM000000_W-1
Floors	0.18	0.15	0.15	RM000000_F
Pitched roofs	0.16	-	-	No heat loss pitched roofs
Flat roofs	0.18	0.18	0.18	RM000000_C
Windows** and roof windows	1.6	1.6	1.6	RM000001_W-1_O0
Rooflights***	2.2	-	-	No external rooflights
Personnel doors^	1.6	1.6	1.6	RM000000_W-1_O0
Vehicle access & similar large doors	1.3	1.3	1.3	RM000000_W-1_O1
High usage entrance doors	3	-	-	No external high usage entrance doors
Ua-Limit = Limiting area-weighted average U-values [W/(m ² K)]			U i-Calc = Ca	alculated maximum individual element U-values [W/(m ² K)]

U a-Limit = LIMITING area-weighted average U-values [W/(m²K)] U a-Calc = Calculated area-weighted average U-values [W/(m²K)]

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check.

^ For fire doors, limiting U-value is 1.8 W/m²K

N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m³/(h.m²) at 50 Pa	8	8

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values	YES
Whole building electric power factor achieved by power factor correction	<0.9

1- Main system

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR efficiency
This system	2.69	5.89	-	-	-
Standard value	2.5*	5	N/A	N/A	N/A
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES					
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.					

1- SYST0000-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

General lighting and display lighting	General luminaire	Display light source		
Zone name	Efficacy [Im/W]	Efficacy [Im/W]	Power density [W/m ²]	
Standard value	95	80	0.3	
Room 001	95	-	-	
Room 002	95	-	-	
Room 003	95	-	-	

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%) Internal blir	
Room 001	N/A	N/A
Room 002	NO (-89.4%)	NO
Room 003	NO (-70.2%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional	% Ar
Floor area [m ²]	1722	1722	
External area [m ²]	2264.8	2264.8	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	8	5	100
Average conductance [W/K]	602.62	770.45	
Average U-value [W/m ² K]	0.27	0.34	
Alpha value* [%]	25.56	65.45	

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services Restaurants and Cafes/Drinking Establishments/Takeaways
General Industrial and Special Industrial Groups
Storage or Distribution
Hotels
Residential Institutions: Hospitals and Care Homes
Residential Institutions: Residential Schools
Residential Institutions: Universities and Colleges
Secure Residential Institutions
Residential Spaces
Non-residential Institutions: Community/Day Centre
Non-residential Institutions: Libraries, Museums, and Galleries
Non-residential Institutions: Education
Non-residential Institutions: Primary Health Care Building
Non-residential Institutions: Crown and County Courts
General Assembly and Leisure, Night Clubs, and Theatres
Others: Passenger Terminals
Others: Emergency Services
Others: Miscellaneous 24hr Activities
Others: Car Parks 24 hrs
Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	6.41	11.81
Cooling	2.82	3.3
Auxiliary	0	0
Lighting	8.55	6.17
Hot water	4.24	4.24
Equipment*	29.87	29.87
TOTAL**	22.02	25.52

* Energy used by equipment does not count towards the total for consumption or calculating emissions. ** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	0	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	0	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	105.53	164.51
Primary energy [kWh/m ²]	33.6	38.26
Total emissions [kg/m ²]	3.13	3.62

ŀ	HVAC Systems Performance									
Sys	stem Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST	[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity									
	Actual	60.9	44.7	6.4	2.8	0	2.64	4.4	2.69	5.89
	Notional	112.2	52.3	11.8	3.3	0	2.64	4.4		

Key to terms

Heat dem [MJ/m2] Cool dem [MJ/m2] Heat con [kWh/m2] Cool con [kWh/m2] Aux con [kWh/m2] Heat SSEFF Cool SSEER Heat gen SSEFF Cool gen SSEER ST HS HS	 Heating energy demand Cooling energy demand Heating energy consumption Cooling energy consumption Auxiliary energy consumption Heating system seasonal efficiency (for notional building, value depends on activity glazing class) Cooling system seasonal energy efficiency ratio Heating generator seasonal efficiency Cooling generator seasonal energy efficiency ratio System type Heat source Heating fuel type
HFT	= Heating fuel type
CFT	= Cooling fuel type

BRUKL Output Document

HM Government

Compliance with England Building Regulations Part L 2021

Project name

COMMERCIAL UNIT - BE GREEN

As designed

Date: Tue Jan 31 17:15:19 2023

Administrative information

Building Details

Address: Addison Estate, 702 Field End Road, Ruislip, HA4

Certifier details

Name: Chris Collier Telephone number: Address: , ,

Certification tool

Calculation engine: SBEM Calculation engine version: v6.1.b.0 Interface to calculation engine: Virtual Environment Interface to calculation engine version: v7.0.15 BRUKL compliance check version: v6.1.b.0

Foundation area [m²]: 574

The CO₂ emission and primary energy rates of the building must not exceed the targets

Target CO ₂ emission rate (TER), kgCO ₂ /m ² annum	3.62	
Building CO ₂ emission rate (BER), kgCO ₂ /m ² annum 2.32		
Target primary energy rate (TPER), kWh/m²annum38.26		
Building primary energy rate (BPER), kWh/m2annum 24.63		
Do the building's emission and primary energy rates exceed the targets?	BER =< TER	BPER =< TPER

The performance of the building fabric and fixed building services should achieve reasonable overall standards of energy efficiency

Fabric element	Ua-Limit	Ua-Calc	U i-Calc	First surface with maximum value	
Walls*	0.26	0.26	0.26	RM000000_W-1	
Floors	0.18	0.15	0.15	RM000000_F	
Pitched roofs	0.16	-	-	No heat loss pitched roofs	
Flat roofs	0.18	0.18	0.18	RM000000_C	
Windows** and roof windows	1.6	1.6	1.6	RM000001_W-1_O0	
Rooflights***	2.2	-	-	No external rooflights	
Personnel doors^	1.6	1.6	1.6	RM000000_W-1_O0	
Vehicle access & similar large doors	1.3	1.3	1.3	RM000000_W-1_O1	
High usage entrance doors	3	-	-	No external high usage entrance doors	
Ua-Limit = Limiting area-weighted average U-values [W/(m ² K)] Ui-Calc = Calculated maximum individual element U-values [W/(m ² K)]					

 $U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)] U_{a-Calc} = Calculated area-weighted average U-values [W/(m²K)]$

* Automatic U-value check by the tool does not apply to curtain walls whose limiting standard is similar to that for windows.

** Display windows and similar glazing are excluded from the U-value check. *** Values for rooflights refer to the horizontal position.

^ For fire doors, limiting U-value is 1.8 W/m²K

N.B.: Neither roof ventilators (inc. smoke vents) nor swimming pool basins are modelled or checked against the limiting standards by the tool.

Air permeability	Limiting standard	This building
m³/(h.m²) at 50 Pa	8	8

Building services

For details on the standard values listed below, system-specific guidance, and additional regulatory requirements, refer to the Approved Documents.

Whole building lighting automatic monitoring & targeting with alarms for out-of-range values		
Whole building electric power factor achieved by power factor correction	<0.9	

1- Main system

	Heating efficiency	Cooling efficiency	Radiant efficiency	SFP [W/(I/s)]	HR eff	iciency
This system	3.6	5	-	-	-	
Standard value	2.5*	5	N/A	N/A	N/A	
Automatic monitoring & targeting with alarms for out-of-range values for this HVAC system YES						S
* Standard shown is for all types >12 kW output, except absorption and gas engine heat pumps.						

1- SYST0000-DHW

	Water heating efficiency	Storage loss factor [kWh/litre per day]
This building	1	-
Standard value	1	N/A

"No zones in project where local mechanical ventilation, exhaust, or terminal unit is applicable"

General lighting and display lighting	General luminaire	Displa	y light source
Zone name	Efficacy [Im/W]	Efficacy [Im/W]	Power density [W/m ²]
Standard value	95	80	0.3
Room 001	95	-	-
Room 002	95	-	-
Room 003	95	-	-

The spaces in the building should have appropriate passive control measures to limit solar gains in summer

Zone	Solar gain limit exceeded? (%)	Internal blinds used?
Room 001	N/A	N/A
Room 002	NO (-89.4%)	NO
Room 003	NO (-70.2%)	NO

Regulation 25A: Consideration of high efficiency alternative energy systems

Were alternative energy systems considered and analysed as part of the design process?	YES
Is evidence of such assessment available as a separate submission?	YES
Are any such measures included in the proposed design?	YES

Technical Data Sheet (Actual vs. Notional Building)

Building Global Parameters

	Actual	Notional	% Ar
Floor area [m ²]	1722	1722	
External area [m ²]	2264.8	2264.8	
Weather	LON	LON	
Infiltration [m ³ /hm ² @ 50Pa]	8	5	100
Average conductance [W/K]	602.62	770.45	
Average U-value [W/m ² K]	0.27	0.34	
Alpha value* [%]	25.56	65.45	

* Percentage of the building's average heat transfer coefficient which is due to thermal bridging

Building Use

% Area Building Type

Retail/Financial and Professional Services
Restaurants and Cafes/Drinking Establishments/Takeaways
Offices and Workshop Businesses
General Industrial and Special Industrial Groups
Storage or Distribution
Hotels
Residential Institutions: Hospitals and Care Homes
Residential Institutions: Residential Schools
Residential Institutions: Universities and Colleges
Secure Residential Institutions
Residential Spaces
Non-residential Institutions: Community/Day Centre
Non-residential Institutions: Libraries, Museums, and Galleries
Non-residential Institutions: Education
Non-residential Institutions: Primary Health Care Building
Non-residential Institutions: Crown and County Courts
General Assembly and Leisure, Night Clubs, and Theatres
Others: Passenger Terminals
Others: Emergency Services
Others: Miscellaneous 24hr Activities
Others: Car Parks 24 hrs
Others: Stand Alone Utility Block

Energy Consumption by End Use [kWh/m²]

	Actual	Notional
Heating	4.79	11.81
Cooling	3.32	3.3
Auxiliary	0	0
Lighting	8.55	6.17
Hot water	4.24	4.24
Equipment*	29.87	29.87
TOTAL**	20.9	25.52

* Energy used by equipment does not count towards the total for consumption or calculating emissions. ** Total is net of any electrical energy displaced by CHP generators, if applicable.

Energy Production by Technology [kWh/m²]

	Actual	Notional
Photovoltaic systems	4.84	0
Wind turbines	0	0
CHP generators	0	0
Solar thermal systems	0	0
Displaced electricity	4.84	0

Energy & CO₂ Emissions Summary

	Actual	Notional
Heating + cooling demand [MJ/m ²]	105.53	164.51
Primary energy [kWh/m ²]	24.63	38.26
Total emissions [kg/m ²]	2.32	3.62

HVAC Systems Performance										
Sys	stem Type	Heat dem MJ/m2	Cool dem MJ/m2	Heat con kWh/m2	Cool con kWh/m2	Aux con kWh/m2	Heat SSEEF	Cool SSEER	Heat gen SEFF	Cool gen SEER
[ST] Split or multi-split system, [HS] ASHP, [HFT] Electricity, [CFT] Electricity										
	Actual	60.9	44.7	4.8	3.3	0	3.53	3.74	3.6	5
	Notional	112.2	52.3	11.8	3.3	0	2.64	4.4		

Key to terms

Heat dem [MJ/m2] Cool dem [MJ/m2] Heat con [kWh/m2] Cool con [kWh/m2] Aux con [kWh/m2] Heat SSEFF Cool SSEER Heat gen SSEFF Cool gen SSEER ST HS HS	 Heating energy demand Cooling energy demand Heating energy consumption Cooling energy consumption Auxiliary energy consumption Heating system seasonal efficiency (for notional building, value depends on activity glazing class) Cooling system seasonal energy efficiency ratio Heating generator seasonal efficiency Cooling generator seasonal energy efficiency ratio System type Heat source Heating fuel type
HFT	= Heating fuel type
CFT	= Cooling fuel type