

9. Health and wellbeing



The development puts its residents and occupants at the heart of its design. The proposal includes both the design the homes and community external spaces in which residents can meet and that positively impact their health and wellbeing.

9.1 Daylight and sunlight

While considering the overheating challenges, the design seeks to provide good daylight levels within the proposed dwellings and to not negatively impact daylight levels in neighbouring dwellings. This delivers well lit enjoyable internal spaces and reduces the energy demand for lighting.

A daylight and sunlight analysis shows that the proposed development will not have a noticeable impact on the daylight and sunlight of the majority of the surrounding properties.

The surrounding amenity areas assessed (e.g. neighbouring properties' gardens) will all continue to receive in excess of two hours of sunlight on 21 March and therefore meet the BRE Guidelines target values for overshadowing. The proposed amenity spaces within the scheme will be well sunlit, with more than 50% of their areas receiving at least two hours of sunlight on 21 March.

Internally, across the site, 84% of rooms will meet their target illuminance values for daylight and 100% of dwellings will have at least one room which meets for sunlight exposure. Daylight levels are optimised through the following design measures:

- 85% (all 2 and 3 bed) of units are dual aspect (and in some instances, triple aspect) to maximise outlook and daylight.
- Large windows to all habitable rooms, sized to balance heat gain, heat loss and ventilation requirements.
- The facade to the main living space has been set back by inset balconies to allow for larger glazing area to allow plenty of daylight in, but to reduce overheating by direct sunlight.
- High performance glazing with low g-value has been specified throughout to reduce heat gain through windows.

For further information please refer to the Daylight and Sunlight Report submitted with this application.

9.2 Noise and vibration

An environmental noise survey and noise impact assessment have been undertaken to assess the suitability of the site for residential development. The analysis compares the ambient sound levels incident on the development site with the internal noise level criteria presented within BS8233:2014. Table 7 presents the sound level summary at the proposed development and the minimum sound reduction required of the building envelope in order to achieve appropriate internal noise levels.

To achieve the required internal noise levels, the design will respond to the requirements detailed in the Sound Insulation Scheme, which includes recommendations for the weakest elements of the facade such as the glazing, ventilation and roof construction. For further details on the Sound Insulation Scheme, please refer to the Noise Exposure Assessment submitted with this application.



Figure 24 : Site layout (the proposed development has been separated in Noise Sensitive Receptors (NSR) façades 1 to 3 for the purpose of the specification of building elements and mitigation measures) (Source: NOVA Acoustics)

Facade	Room	Time period	Facade noise level (dBA)	BS8233 Criteria	Min. Sound Reduction Required (dB)	
1	Bedroom / living room	Day time	67	35 dB LAeq,16hour	32	Rw + Ctr
	Bedroom	Night time	60	30 dB LAeq,8hour	30	Rw + Ctr
			78	45 dB LAmix,8hour	33	Rw
2	Bedroom / living room	Day time	63	35 dB LAeq,16hour	28	Rw + Ctr
	Bedroom	Night time	56	30 dB LAeq,8hour	26	Rw + Ctr
			75	45 dB LAmix,8hour	30	Rw
3	Bedroom / living room	Day time	55	35 dB LAeq,16hour	20	Rw + Ctr
	Bedroom	Night time	48	30 dB LAeq,8hour	18	Rw + Ctr
			67	45 dB LAmix,8hour	22	Rw

Table 7.Sound level summary and the minimum sound reduction required of the building envelope in order to achieve appropriate internal noise levels.

9.3 Pollution prevention

An integrated strategy to tackle several forms of pollution, including light and air quality has been put in place in order to reduce impacts on the health and wellbeing of residents and the surrounding area.

Light

Obtrusive light during night time can cause physiological and ecological problems to the night time environment. Forms of obtrusive lighting are:

- Sky glow: brightening of the sky;
- Glare: uncomfortable brightness of a light source when viewed against a darker background;
- Light intrusion: spilling of light beyond the boundary of the property;

The development will minimise light pollution by providing the minimum amount of light necessary to achieve its purpose and with all external lighting designed to minimise night sky light pollution. Luminaires, lamps and equipment is specified and installed to minimise any direct upward light component to reduce light pollution.

Air quality

The proposed development is not located within an air quality management area and incorporates the following good design and best practice measures to not detrimentally impact the local air quality:

- Electric vehicle charging points are provided, increasing the opportunity for residents to use electric vehicles
- Convenient and secure cycle parking to promote cycling instead of car use.
- Low carbon heating is provided by a ground source heat pump, omitting the need for on-site combustion of fossil fuels.
- Green infrastructure such as trees at ground level and along the building front facing the roads have been introduced to further contribute to localised improvement in external air quality.

9.4 Indoor air quality

Healthy internal environments are created through the specification and installation of appropriate ventilation, equipment and finishes, as well as verification from post construction testing.

The indoor air quality is further taken into account by specifying interior products with low pollutant content and low emission performance will be specified.

9.5 Social inclusivity

The proposed development provides 100% affordable housing. It offers a mix of private gardens and communal amenity spaces for play, relaxation and to promote biodiversity. The offering of communal amenity space has been made more accessible for a diverse range of users by making them more clearly defined, usable and secure. The community space benefits from active overlooking from the surrounding homes to discourage antisocial behaviour. A diverse offering, such as a 'grow your own' allotment area with raised timber planters and an outdoor gym circuit provides more opportunity for residents of all ages to come together.

Accessibility

All homes are designed to meet Building Regulations AD M4(1) Visible dwellings standard as a minimum. However, a number have also been designed to allow for future provision M4(2) Accessible and Adaptable dwellings meeting the AD M4(2) standards such as:

- Minimum corridor widths with minimum clear opening width of doors, including 300mm nib to leading edge.
- Clear access zones in bedrooms and kitchens.
- Bathroom size and layout designed as example set within AD M4(2).

Safety and security

The safety and security measures of the design have been informed by public consultation and a workshop with Kent Police held on the 19th of October 2022. The development design responds in the following ways:

- Homes on ground floor are maximised to increase overlooking and passive natural surveillance to new and existing streets and improved amenity spaces.
- A range of boundary treatments, such as timber fencing and hedges, are proposed, to provide physical separation to private gardens/terraces and to control access to resident area (Figure 25).
- Secure cycle parking and bin stores.
- Improved, continuous external lighting along public footpath that runs through the site.

During public consultation, residents highlighted antisocial behaviour and requested increased CCTV and external lighting. This will be explored as part of detail design stage.



Figure 25 : Proposed boundary treatments (Source: ME Landscape Studio)

10. Sustainable transport



Road transport accounts for around a fifth of the UK’s total greenhouse gas emissions and is a substantial source of air pollutants, being responsible for significant contributions to emissions of carbon dioxide, nitrogen oxides, particulate matter PM10 and PM2.5.

With road traffic in the UK having increased by 29% since 1990 and over three quarters of trips being by private car or taxi, considerable emphasis is being placed on supporting sustainable transport measures to address issues with congestion, roadside air quality, greenhouse gas emissions and quality of life. Sustainable transport benefits from:

- Promotion of public transport and walking initiatives that will keep residents and visitors connected with society.
- Safe and enjoyable access for pedestrians and cyclist.
- Secure cycle parking provision.

10.1 Active travel

The proposal promotes a sustainable and active travel, such as walking and cycling, to a variety of local amenities and the wider public transport network beyond.

Pedestrian access

The existing public footpath that passes through the site is retained and improved within the new proposal (Figure 26). The new access road to the site provide a generous 2.5m footway on the northern side. These make the area easily accessible and invite residents to walk to local amenities and public transport links by connecting to the network of



Figure 26 : Proposed alignment of public footpath NGX30 through the site (Source SWECO, Transport Statement).

footways on St Patrick’s Gardens and Valley Drive on the east of the site. On the other side of the development the resurfaced footpath connects to an existing crossings with street lighting ensuring safety and accessibility for all users.

Cycle parking and access

External cycle stores are proposed to be integrated into the communal amenity to the rear of the flat blocks. Houses are provided with individual dedicated cycle stores. All cycle stores are covered and secured. Cycle parking spaces are provided in accordance with the minimum standards

Type	No. of dwellings	Proposed cycle parking spaces
Houses	12	32
Flats	34	14
Total	46	70

Table 8. A summary of the proposed cycle parking provision

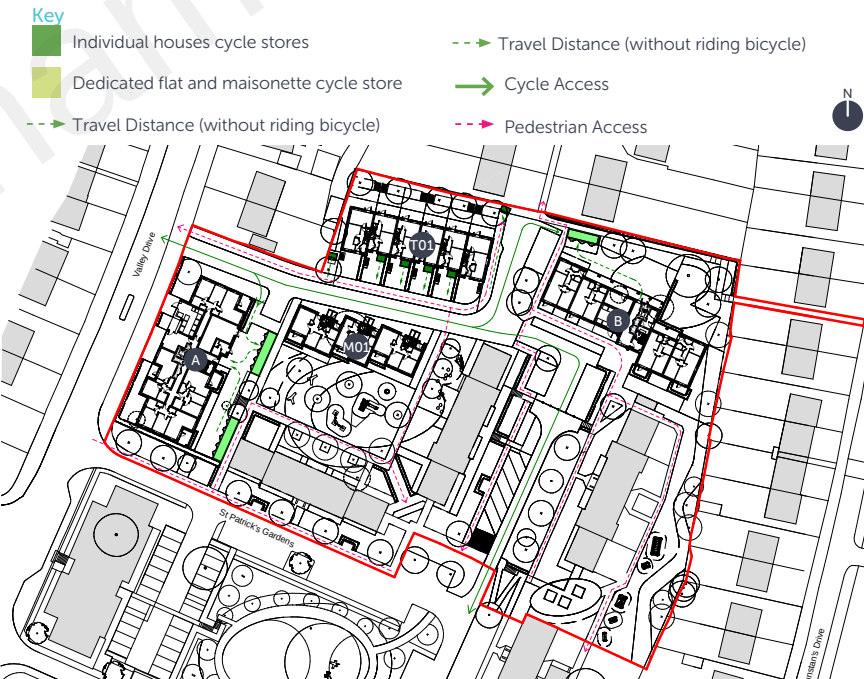


Figure 27 : Proposed cycle strategy and parking (Source: BPTW's Design and Access Statement).

set out in the Kent Vehicle Parking Standards SPG 4 (July 2006) (see Table 8 for number of spaces). Charging infrastructure for electric cycles is provided at 5% of the total number of cycle parking spaces.

The nearest railway station, Gravesend station, is located approximately a 12 minutes cycle ride from the site. This offers a great opportunity for sustainable travel and commute for residents. The new access route is designed to provide enough space and visibility for cyclist to safely enter and exit the site.

10.2 Electric charging provision

Electric car charging infrastructure is provided to support the transition away from fossil fuel cars. The proposed terrace houses have 1 electric vehicle charging space provided per dwelling. For the proposed flats (Block A and B), 20% of car parking spaces has active electric vehicle charging infrastructure at the outset, and 80% have passive provision to enable conversion to active charging points at a later date.

10.3 Public transportation

Residents are encouraged to take advantage of the local, public transport network by ensuring a seamless continuation of the existing foot networks and cycle appropriate roads, and provision of appropriate facilities on site (bike parking).

The site is within walking and cycling distance to a variety of local amenities and well connected to the public transport network to London and beyond. The nearest bus stops are adjacent to the site on Valley Drive (within 1-2 minutes’ walk). Bus services operating from the stops provide a connection to Gravesend train station in under 15 minutes. Gravesend station features regular services to London St Pancras, London Charing Cross, and other destinations in Kent. The station is operated by Southeastern and provides car parking and 280 sheltered cycle storage lockers and it's (within a 40 minute walk or 12 minute cycle) from the site.

Appendix A : Building Regulations England Part L (BREL) Compliance Reports

Gravesend Borough Council

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:00:35

Project Information			
Assessed By	Test User	Building Type	Maisonette, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	116 m ²
Site Reference	A_Terrace_4B6P	Plot Reference	A_Terrace_4B6P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	13.75 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	5.01 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	73.54 kWh _{PE} /m ²		
Dwelling primary energy	52.46 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	46 kWh/m ²		
Dwelling fabric energy efficiency	43.9 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	141.99765	0.13	(!)
Party wall: Party	64.5	0.2	
Ground floor: Ground Floor	48.5	0.11	
Exposed roof: External Roof	24.962	0.1	(!)

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]
1, Doors	1.8942	South	N/A	1.2
2, Windows (1)	5.049	North	0.8	1.2
3, Windows (1)	4.05405	West	0.8	1.2
4, Windows (1)	8.4051	South	0.8	1.2
5, Roof windows (1)	4.438	South	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	204.6%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	180 litres	
Declared heat loss	1.5 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:01:25

Project Information			
Assessed By	Test User	Building Type	Maisonette, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	104 m ²
Site Reference	B_Terrace_3B5P	Plot Reference	B_Terrace_3B5P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	14.49 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	5.1 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	78.47 kWh _{PE} /m ²		
Dwelling primary energy	53.5 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	44.6 kWh/m ²		
Dwelling fabric energy efficiency	43.2 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	80.8362	0.13 (!)
Party wall: Party Wall	114.6	0.2
Ground floor: Ground Floor	42.7	0.11
Exposed roof: External Roof	21.04	0.1 (!)

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]
1, Doors	2.1462	South	N/A	1.2
2, Windows (1)	3.69765	North	0.8	1.2
3, Windows (1)	8.41995	South	0.8	1.2
4, Roof windows (1)	3.96	South	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)	OK
Air permeability test certificate reference	Not Provided	

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	208.9%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	180 litres	
Declared heat loss	1.5 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:01:33

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	63 m ²
Site Reference	C_Maisonette_2B3P	Plot Reference	C_Maisonette_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15.1 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	7.21 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	79.41 kWh _{PE} /m ²
Dwelling primary energy	75.93 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	47.7 kWh/m ²
Dwelling fabric energy efficiency	46.2 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	62.70445	0.13 (!)
Party wall: Party Wall	36.8	0.2
Ground floor: Ground Floor	62.6	0.11
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.1462	North	N/A	1.2
2, Windows (1)	2.36115	North	0.8	1.2
3, Windows (1)	6.3855	South	0.8	1.2
4, Windows (1)	2.7027	East	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	192.3%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:01:45

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	53 m ²
Site Reference	D_Maisonette_1B2P	Plot Reference	D_Maisonette_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	16.23 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	7.57 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	85.64 kWh _{PE} /m ²
Dwelling primary energy	79.91 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	48.2 kWh/m ²
Dwelling fabric energy efficiency	46.7 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	41.37335	0.13 (!)
Party wall: Party Wall	52	0.2
Ground floor: Ground Floor	52.8	0.11
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.1462	North	N/A	1.2
2, Windows (1)	2.3463	North	0.8	1.2
3, Windows (1)	5.03415	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	188.6%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	110 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:01:56

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	70 m ²
Site Reference	E_Maisonette_2B3P	Plot Reference	E_Maisonette_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	13.97 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	6.64 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	73.33 kWh _{PE} /m ²
Dwelling primary energy	70.01 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	45.2 kWh/m ²
Dwelling fabric energy efficiency	43.8 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	67.01125	0.13 (!)
Party wall: Party Wall	20.6	0.2
Upper floor: Party Floor	70.5	0 (!)
Exposed roof: External Roof	70.5	0.1 (!)

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]
1, Doors	2.2029	North	N/A	1.2
2, Windows (1)	3.69765	North	0.8	1.2
3, Windows (1)	2.7027	West	0.8	1.2
4, Windows (1)	6.3855	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	193.2%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:02:05

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	61 m ²
Site Reference	E1_Maisonette_1B2P	Plot Reference	E1_Maisonette_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	14.75 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	6.96 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	77.65 kWh _{PE} /m ²
Dwelling primary energy	73.41 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	44.7 kWh/m ²
Dwelling fabric energy efficiency	43.3 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	55.9653	0.13 (!)
Party wall: Party Wall	27.7	0.2
Upper floor: Party Floor	60.6	0 (!)
Exposed roof: External Roof	60.6	0.1 (!)

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]
1, Doors	2.2029	North	N/A	1.2
2, Windows (1)	3.69765	North	0.8	1.2
3, Windows (1)	5.03415	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	189.8%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	110 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	0.5 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	78%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:02:14

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	70 m ²
Site Reference	F_BlockA_2B4P	Plot Reference	F_BlockA_2B4P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	17.01 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	7.31 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	90.88 kWh _{PE} /m ²		
Dwelling primary energy	76.65 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	50.7 kWh/m ²		
Dwelling fabric energy efficiency	48.4 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	63.3982	0.13 (!)	
Party wall: Party Wall	38.3	0.2	
Ground floor: Ground Floor	70.3	0.11	
Exposed roof: Exposed Roof	0	0 (!)	

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]
1, Doors	2.121	South	N/A	1.2
2, Windows (1)	5.049	North	0.8	1.2
3, Windows (1)	3.69765	West	0.8	1.2
4, Windows (1)	5.03415	East	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	201.6%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 lm/W	OK
External lights control	N/A	
8 Mechanical ventilation		
System type: N/A		
Maximum permitted specific fan power	N/A	
Specific fan power	N/A	N/A
Minimum permitted heat recovery efficiency	N/A	
Heat recovery efficiency	N/A	N/A
Manufacturer/Model		
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

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:02:23

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	61 m ²
Site Reference	G_BlockA_2B3P	Plot Reference	G_BlockA_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	17.02 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	7.11 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	91.19 kWh _{PE} /m ²
Dwelling primary energy	75.02 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	46.7 kWh/m ²
Dwelling fabric energy efficiency	45.3 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	25.94215	0.13 (!)
Party wall: Party Wall	68.3	0.2
Ground floor: Ground Floor	61.4	0.11
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.121	West	N/A	1.2
2, Windows (1)	7.73685	East	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	189.9%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:02:33

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	51 m ²
Site Reference	H_BlockA_1B2P	Plot Reference	H_BlockA_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	19.63 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	8.12 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	105.36 kWh _{PE} /m ²
Dwelling primary energy	85.56 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	54.2 kWh/m ²
Dwelling fabric energy efficiency	52.1 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	44.6837	0.13 (!)
Party wall: Party Wall	64.9	0.2
Ground floor: Ground Floor	50.9	0.11
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.121	East	N/A	1.2
2, Windows (1)	7.3953	West	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	189.0%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:02:44

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	70 m ²
Site Reference	I_BlockA_2B4P	Plot Reference	I_BlockA_2B4P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15.3 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	6.29 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	81.68 kWh _{PE} /m ²
Dwelling primary energy	66.39 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	42.6 kWh/m ²
Dwelling fabric energy efficiency	40.5 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	63.3982	0.13 (!)
Party wall: Party Wall	38.3	0.2
Upper floor: Party Floor	70.3	0 (!)
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.121	South	N/A	1.2
2, Windows (1)	5.049	North	0.8	1.2
3, Windows (1)	3.69765	West	0.8	1.2
4, Windows (1)	5.03415	East	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	190.4%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:02:52

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	61 m ²
Site Reference	J_BlockA_2B3P	Plot Reference	J_BlockA_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15.25 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	6.33 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	81.69 kWh _{PE} /m ²		
Dwelling primary energy	67.02 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	38.4 kWh/m ²		
Dwelling fabric energy efficiency	37.2 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	25.94215	0.13 (!)	
Party wall: Party Wall	68.3	0.2	
Upper floor: Party Floor	61.4	0 (!)	
Exposed roof: Exposed Roof	0	0 (!)	

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]
1, Doors	2.121	West	N/A	1.2
2, Windows (1)	7.73685	East	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	187.5%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:01

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	51 m ²
Site Reference	K_BlockA_1B2P	Plot Reference	K_BlockA_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	18.19 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	7.48 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	97.62 kWh _{PE} /m ²
Dwelling primary energy	79.01 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	47.4 kWh/m ²
Dwelling fabric energy efficiency	45.6 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	44.6837	0.13 (!)
Party wall: Party Wall	72.3	0.2
Upper floor: Party Floor	50.9	0 (!)
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.121	East	N/A	1.2
2, Windows (1)	7.3953	West	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	187.5%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:10

Project Information			
Assessed By	Test User	Building Type	Maisonette, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	104 m ²
Site Reference	L_BlockA_3B5P	Plot Reference	L_BlockA_3B5P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	14.36 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	5 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	77.05 kWh _{PE} /m ²		
Dwelling primary energy	52.44 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	45.9 kWh/m ²		
Dwelling fabric energy efficiency	43.3 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Part Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	120.0418	0.13 (!)	
Party wall: Party Wall	55.2	0.2	
Upper floor: Part Floor	70.3	0 (!)	
Exposed roof: External Roof	32.58	0.1 (!)	

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]
1, Doors	2.121	South East	N/A	1.2
2, Windows (1)	5.4054	North	0.8	1.2
3, Windows (1)	3.69765	West	0.8	1.2
4, Windows (1)	5.03415	East	0.8	1.2
5, Roof windows (1)	1.32	South	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	211.7%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	180 litres	
Declared heat loss	1.5 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:16

Project Information			
Assessed By	Test User	Building Type	Maisonette, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	61 m ²
Site Reference	M_BlockA_3B5P	Plot Reference	M_BlockA_3B5P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	20.2 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	7.06 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	108.29 kWh _{PE} /m ²
Dwelling primary energy	74.11 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	61.2 kWh/m ²
Dwelling fabric energy efficiency	58.5 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	96.319875	0.13 (!)
Party wall: Party Wall	106.2	0.2
Upper floor: Party Floor	61.3	0 (!)
Exposed roof: External Roof	40.278	0.1 (!)

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]
1, Doors	2.121	West	N/A	1.2
2, Windows (1)	7.759125	East	0.8	1.2
3, Roof windows (1)	0.422	South East	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	219.4%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	180 litres	
Declared heat loss	1.5 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:23

Project Information			
Assessed By	Test User	Building Type	Maisonette, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	105 m ²
Site Reference	N_BlockA_3B5P	Plot Reference	N_BlockA_3B5P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	14.98 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	5.11 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	80.74 kWh _{PE} /m ²		
Dwelling primary energy	53.65 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	47 kWh/m ²		
Dwelling fabric energy efficiency	44.4 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	118.081	0.13 (!)	
Party wall: Party Wall	85.8	0.2	
Upper floor: Party Floor	60.2	0 (!)	
Exposed roof: External Roof	44.3	0.1 (!)	

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]
1, Doors	2.121	East	N/A	1.2
2, Windows (1)	10.098	West	0.8	1.2
3, Roof windows (1)	0.4	South East	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	211.0%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	180 litres	
Declared heat loss	1.5 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:33

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	62 m ²
Site Reference	O_BlockB_2B3P	Plot Reference	O_BlockB_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15.78 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	6.92 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	83.63 kWh _{PE} /m ²		
Dwelling primary energy	73.07 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	45.1 kWh/m ²		
Dwelling fabric energy efficiency	43.1 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	64.334725	0.13 (!)	
Party wall: Party Wall	27.7	0.2	
Ground floor: Ground Floor	62.2	0.11	
Exposed roof: Exposed Roof	0	0 (!)	

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]
1, Doors	2.121	East	N/A	1.2
2, Windows (1)	1.35135	North	0.8	1.2
3, Windows (1)	1.35135	West	0.8	1.2
4, Windows (1)	5.041575	South	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	189.7%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:40

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	62 m ²
Site Reference	P_BlockB_1B2P	Plot Reference	P_BlockB_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	6.61 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	79.43 kWh _{PE} /m ²
Dwelling primary energy	69.87 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	41.3 kWh/m ²
Dwelling fabric energy efficiency	40.3 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0.11	Ground Floor (0.11)	OK
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	29.2837	0.13 (!)
Party wall: Party Wall	51.8	0.2
Ground floor: Ground Floor	51.3	0.11
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.121	North	N/A	1.2
2, Windows (1)	2.353725	North	0.8	1.2
3, Windows (1)	5.041575	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	188.7%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:47

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	62 m ²
Site Reference	Q_BlockB_2B3P	Plot Reference	Q_BlockB_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	14.04 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	6.15 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	74.25 kWh _{PE} /m ²
Dwelling primary energy	65.13 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	36.8 kWh/m ²
Dwelling fabric energy efficiency	35 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	64.334725	0.13 (!)
Party wall: Party Wall	27.7	0.2
Upper floor: Party Floor	62.2	0 (!)
Exposed roof: Exposed Roof	0	0 (!)

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]
1, Doors	2.121	East	N/A	1.2
2, Windows (1)	1.35135	North	0.8	1.2
3, Windows (1)	1.35135	West	0.8	1.2
4, Windows (1)	5.041575	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	187.3%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:03:54

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	51 m ²
Site Reference	R_BlockB_1B2P	Plot Reference	R_BlockB_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15.46 kgCO ₂ /m ²		
Dwelling carbon dioxide emission rate	6.7 kgCO ₂ /m ²		OK

1b Target primary energy rate and dwelling primary energy			
Target primary energy	82 kWh _{PE} /m ²		
Dwelling primary energy	70.95 kWh _{PE} /m ²		OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency			
Target fabric energy efficiency	38.5 kWh/m ²		
Dwelling fabric energy efficiency	37.6 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	N/A	N/A	N/A
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	29.2837	0.13 (!)	
Party wall: Party Wall	51.8	0.2	
Upper floor: Party Floor	51.3	0 (!)	
Exposed roof: Exposed Roof	0	0 (!)	

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]
1, Doors	2.121	North	N/A	1.2
2, Windows (1)	2.353725	North	0.8	1.2
3, Windows (1)	5.041575	South	0.8	1.2

2d Thermal bridging (better than typically expected values are flagged with a subsequent (!))	
Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m ² K) used for thermal bridging	

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	3 m ³ /hm ² , Design value (!)		
Air permeability test certificate reference	Not Provided		

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	186.0%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:04:02

Project Information			
Assessed By	Test User	Building Type	Flat, End-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	62 m ²
Site Reference	S_BlockB_2B3P	Plot Reference	S_BlockB_2B3P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	15.59 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	6.88 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	82.6 kWh _{PE} /m ²
Dwelling primary energy	72.61 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	44.2 kWh/m ²
Dwelling fabric energy efficiency	42.6 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	64.334725	0.13 (!)
Party wall: Party Wall	27.7	0.2
Upper floor: Party Floor	62.2	0 (!)
Exposed roof: External Roof	62.2	0.1 (!)

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]
1, Doors	2.121	East	N/A	1.2
2, Windows (1)	1.35135	North	0.8	1.2
3, Windows (1)	1.35135	West	0.8	1.2
4, Windows (1)	5.041575	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	189.5%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	160 litres	
Declared heat loss	1.4 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.6 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Building Regulations England Part L (BREL) Compliance Report

Approved Document L1 2021 Edition, England assessed by Stroma SAP 10.2 SAP 10 program, 10.2

Date: Thu 13 Oct 2022 13:04:09

Project Information			
Assessed By	Test User	Building Type	Flat, Mid-terrace
OCDEA Registration	STRO000006	Assessment Date	2022-10-10

Dwelling Details			
Assessment Type	As designed	Total Floor Area	51 m ²
Site Reference	T_BlockB_1B2P	Plot Reference	T_BlockB_1B2P
Address	29 St. Columbas Close, GRAVESEND, DA12 4AH		

Client Details	
Name	Gravesham Council
Company	Not Provided
Address	Not Provided, Not Provided

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	17.03 kgCO ₂ /m ²
Dwelling carbon dioxide emission rate	7.63 kgCO ₂ /m ² OK

1b Target primary energy rate and dwelling primary energy

Target primary energy	90.45 kWh _{PE} /m ²
Dwelling primary energy	80.58 kWh _{PE} /m ² OK

1c Target fabric energy efficiency and dwelling fabric energy efficiency

Target fabric energy efficiency	45.9 kWh/m ²
Dwelling fabric energy efficiency	45.2 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	0.13	External Wall (0.13)	OK
Party walls	0.2	0.2	Party Wall (0.2)	OK
Curtain walls	1.6	0.2	N/A	N/A
Floors	0.18	0	Party Floor (0)	N/A
Roofs	0.16	0.1	External Roof (0.1)	OK
Windows, doors, and roof windows	1.6	1.2	1 (1.2)	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: External Wall	29.2837	0.13 (!)
Party wall: Party Wall	51.8	0.2
Upper floor: Party Floor	51.3	0 (!)
Exposed roof: External Roof	51.3	0.1 (!)

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]
1, Doors	2.121	North	N/A	1.2
2, Windows (1)	2.353725	North	0.8	1.2
3, Windows (1)	5.041575	South	0.8	1.2

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

Building part 1 - Main Dwelling: SAP default y-value (0.2 W/m²K) used for thermal bridging

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	3 m ³ /hm ² , Design value (!) OK
Air permeability test certificate reference	Not Provided

4 Space heating		
Main heating system 1: Heat pump with radiators or underfloor heating - Electricity		
Efficiency	187.8%	
Emitter type	Radiators	
Flow temperature	45°C	
System type		
Manufacturer		
Model		
Commissioning		
Secondary heating system: N/A		
Fuel	N/A	
Efficiency	N/A	
Commissioning		
5 Hot water		
Cylinder/store - type: Cylinder		
Capacity	150 litres	
Declared heat loss	1.3 kWh/day	
Primary pipework insulated	No	
Manufacturer		
Model		
Commissioning		
Waste water heat recovery system 1 - type: N/A		
Efficiency		
Manufacturer		
Model		
6 Controls		
Main heating 1 - type: Room thermostat only		
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	100 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	0.8 W/(l/s)	OK
Minimum permitted heat recovery efficiency	73%	
Heat recovery efficiency	85%	OK
Manufacturer/Model		
Commissioning	Not Provided / Not Provided	
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: Name:	Assessor ID: Date:
b. Client Declaration	
N/A	

Gravesend Borough Council



16 Chart Street, London, N1 6DD
info@klhsustainability.com
www.klhsustainability.com