

PLANNING ENERGY / SUSTAINABILITY

STATEMENT

PROPOSAL: Demolition of existing dwelling and erection of 2 x semi-detached 2-bedroom new build dwellings, with associated subdivision of the site and landscaping, with some internal and external alterations and demolitions.

SITE: No. 22 Goodwood Crescent, Gravesend, Kent DA12 5EL

LOCAL AUTHORITY: Gravesham Borough Council – Planning Dept., Civic Centre, Windmill Street, Gravesend, Kent, DA12 1AU



No. 22 Goodwood Crescent, Gravesend, Kent DA12 5EL
Existing Aerial View

SECTION 1.0 **INTRODUCTION**

- 1.1 This Energy / Sustainability Statement is prepared to meet the requirements of Policy CS18 (Climate Change) and Policy CS19 (Development and Design Principles) within Gravesham Borough Council's adopted Local Plan Core Strategy (September 2014), which sets out the Council's approach to reducing the Borough's carbon footprint, supporting low carbon and renewable energy generation, and managing water demand.
- 1.2 As the project comprises a small residential scheme of 2 dwellings, well below the threshold for "major development," the scheme aims to minimise annual and lifetime energy demand and reduce greenhouse gas emissions in operation, applying a fabric-first approach in line with the objectives of Policy CS18.
- 1.3 In line with Gravesham's Core Strategy, this statement sets out a proportionate, good-practice approach to sustainable design appropriate to a 2-dwelling scheme.
- 1.4 This statement sets out to determine the following:
 - A. The proposed 2 x dwellings have been designed to exceed the minimum fabric performance standards required under Building Regulations Approved Document Part L (2021).
 - B. A reduction in carbon emissions has been sought through the use of energy efficiency measures and renewable technology, in accordance with the general aims of Policy CS18.
 - C. The proposal incorporates water efficiency measures in accordance with the Code for Sustainable Homes water consumption standard (105 litres per person per day) referenced within the Core Strategy.
- 1.5 This statement also explains the proposed strategy towards adhering to the relevant aims of Policy CS18 and CS19, specifically:
 - A. Sustainable construction and fabric-first design.
 - B. Use of low carbon and renewable energy generation.
 - C. Prevention of overheating, in accordance with Building Regulations Approved Document O.
 - D. Water demand management.

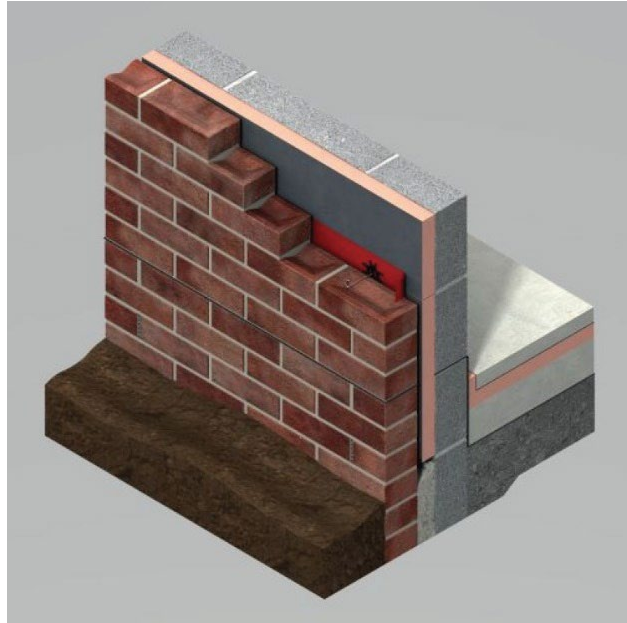
SECTION 2.0 THE PROPOSAL

- 2.1 The proposal comprises the demolition of the existing dwelling at 22 Goodwood Crescent and the erection of 2 x semi-detached, 2-bedroom, 3-person dwellings, with associated subdivision of the site, landscaping, parking and access via new dropped kerbs. The proposal's design intention is to provide a high standard of sustainable construction while remaining sympathetic to the character and massing of neighbouring properties on Goodwood Crescent.
- 2.2 The proposal has carefully considered Gravesham Borough Council's requirements regarding sustainability, as set out within Policy CS18 and CS19 of the adopted Core Strategy. The proposed development is committed to achieving levels of sustainability that meet, and where reasonably practicable exceed, the minimum Building Regulations requirements, through careful design and whole-life performance.
- 2.3 As it is not practically possible to finalise the precise energy performance calculations at this stage, a full SAP (Standard Assessment Procedure) assessment will be undertaken at the appropriate Building Regulations stage, in accordance with Part L, once final specifications are confirmed. In the interim, the anticipated fabric performance has been estimated using the indicative U-values set out below. Further detail on the supporting energy efficiency measures and design features is set out later in this statement.

	PART L REQUIREMENT	PROPOSED BUILD-UP	COMPLIANCE
WALLS	0.18 W/m ² K	0.17 W/m ² K	
ROOF	0.11 W/m ² K	0.11 W/m ² K	
FLOOR	0.13 W/m ² K	0.11 W/m ² K	

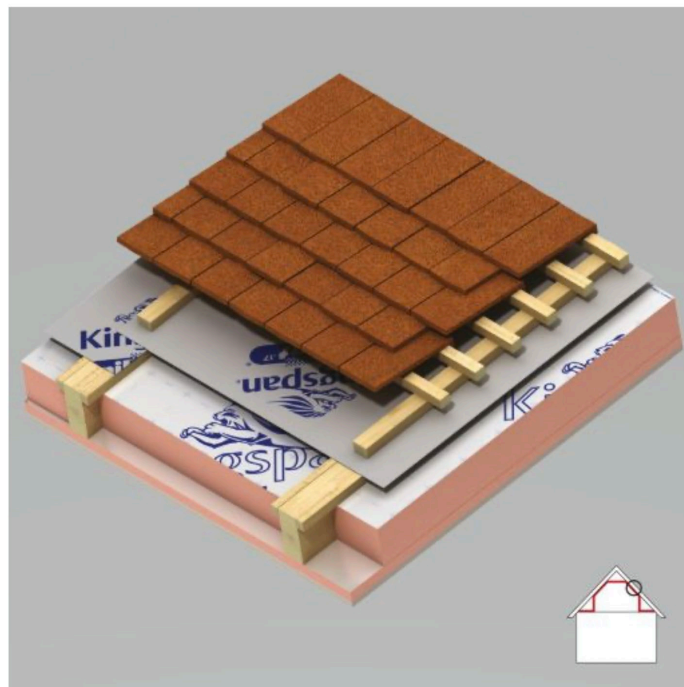
2.4 The proposal seeks to comply with Building Regulation Part L requirements and the proposed wall build-up has been designed to achieve $0.17 \text{ W/m}^2\text{K}$, which exceeds the minimum requirement as shown in the chart above. The wall build-up details have been illustrated below.

2.5



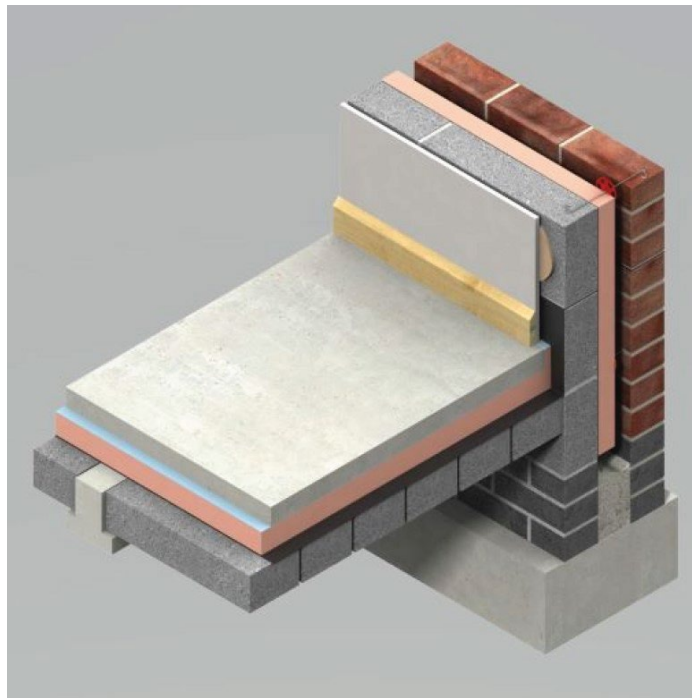
Kingspan Insulation detail – Cavity wall (Full Fill Cavity)

2.5 The roof build-up has been designed to achieve $0.11 \text{ W/m}^2\text{K}$, in accordance with the minimum requirement under Part L. The roof build-up details have been illustrated below.



Kingspan Insulation detail – Between and under (Cold Deck)

- 2.6 The floor build-up has been designed to achieve 0.11 W/m²K, to exceed the minimum requirement under Part L. The beam and block floor build-up details have been illustrated below.



Kingspan Insulation detail – Beam and block floor (below screed)

SECTION 3.0 **SUSTAINABLE CONSTRUCTION**

- 3.1 This proposal integrates circular economy principles to enhance resource efficiency, reduce waste, and foster sustainable material utilisation throughout both the construction and lifespan of the building. The proposal aligns with circular economy principles set out below.
- 3.2 The objective is to build the proposed dwellings using traditional construction methods, using insulation which will meet or exceed the minimum U-value requirements. The benefit of traditional methods relates to well-known, reliable techniques, such as cavity walls and beam and block floors, which reduce construction waste when compared to bespoke methods.
- 3.3 High levels of thermal insulation are proposed across walls, roofs, and floor assemblies to minimise heat loss and decrease heating and cooling demand. All materials will be sourced as locally as reasonably possible, to minimise the carbon footprint associated with transport and construction.
- 3.4 The design incorporates durable, long-lasting building materials, including aluminium windows with extended warranties compared to standard products. This approach minimises the need for replacements during the buildings' lifespan, contributing to enhanced resource efficiency.

- 3.5 Double or triple-glazed windows and insulated doors with low-emissivity coatings are proposed to minimise heat transfer, optimise natural light, and ensure comfort and energy efficiency for both dwellings.
- 3.6 The scheme proposes to provide 9 x PV panels on the roof of each of the 2 proposed dwellings (18 panels in total), orientated to the south-facing roof slope to maximise solar gain and assist in producing green energy on site. In addition, energy-efficient heating, cooling, and ventilation systems will be installed to decrease energy consumption while maintaining a comfortable indoor environment for occupants of both properties.

SECTION 4.0 SuDS

- 4.1 The proposed dwellings will incorporate various Sustainable Drainage System (SuDS) components to ensure efficient surface water management and contribute to a more sustainable built environment, in accordance with Policy CS18 of Gravesham's Core Strategy.
- 4.2 Permeable paving is proposed at the front of both dwellings, benefiting the disbursement of rainwater into the ground and mitigating runoff into the local drainage system. This approach promotes groundwater recharge and alleviates the strain on the existing surface water drainage network, consistent with Gravesham's requirement that surface water run-off from new development should have no greater adverse impact than the existing use.
- 4.3 Surface water arising from the roofs and hardstanding of both dwellings will be managed on-site as far as practicable, using a combination of permeable surfacing and, where appropriate, soakaways, prior to any connection to the existing surface water drainage infrastructure serving Goodwood Crescent.

SECTION 5.0 REDUCING CARBON DIOXIDE EMISSIONS

- 5.1 The proposed dwellings have been designed to reduce carbon emissions beyond the minimum Building Regulations Part L (2021) baseline, in line with the Council's broader aim of supporting a reduction in the Borough's carbon footprint and encouraging low carbon and renewable energy generation.
- 5.2 The reduction in regulated carbon emissions will be achieved by prioritising a 'fabric first' approach, using high-grade insulation in the external building fabric, in accordance with the U-values set out in Section 2 of this statement.
- 5.3 The introduction of 9 x PV panels on each of the 2 proposed dwellings (18 panels in total) will contribute towards supplying on-site renewable electricity, further reducing the carbon footprint of both properties in operation.

- 5.4 The design has taken careful consideration of energy efficiency and has adopted energy-efficient heating systems and the specification of energy-efficient appliances internally.
- 5.5 The proposal will exclusively rely on electricity, with no provision for mains gas or other higher-carbon sources of energy generation, consistent with the direction of national policy towards decarbonising heat in new residential development.

SECTION 6.0 ENERGY HIERARCHY

- 6.1 The design has considered and been guided by the widely recognised, good-practice principles that underpin sustainable energy design of the 'Energy Hierarchy', in support of the aims of Policy CS18:
- A. **'BE LEAN'** - The proposal has been designed to minimise lifetime energy consumption through a fabric-first approach, high levels of insulation, and energy-efficient glazing, as set out in Sections 2 and 3 of this statement.
 - B. **'BE CLEAN'** – Efficient heating systems and appliances have been specified throughout both dwellings to reduce operational energy use.
 - C. **'BE GREEN'** – PV panels (9 per dwelling, 18 in total) and efficient heating systems will provide both dwellings with a renewable, low-carbon energy source, further reducing reliance on grid electricity and supporting the Council's aim of encouraging low carbon and renewable energy generation across the Borough.

SECTION 7.0 OVERHEATING

- 7.1 In order to adhere to Building Regulations Approved Document Part O and relevant Gravesham planning policies (Policy CS19), the proposal for the 2 x new dwellings incorporates reasonable measures to control undesired solar gains and ensure effective heat removal through passive design strategies, set out below.
- 7.2 The proposed windows are carefully orientated to manage solar gain: the larger glazed openings and bi-fold doors are positioned on the north elevation of both dwellings, away from direct sun, while windows on the south elevation are of a standard, traditional size, limiting the extent of south-facing glazing exposed to peak solar gain. This is a deliberate design choice, separate from the roof-mounted PV panels (which face south specifically to maximise solar energy generation), ensuring that solar gain through glazing is minimised while solar electricity generation is maximised.
- 7.3 Both proposed dwellings benefit from dual aspect layouts, with north-facing glazing (including the bi-fold doors) and standard south-facing windows facilitating effective cross ventilation throughout.

- 7.4 The proposed 'glazing-to-floor' area ratios adhere to the specifications in Table 1.1 and 1.2 of Approved Document O, regulating solar gain limitations.

Table 1.1 Limiting solar gains for buildings or parts of buildings with cross-ventilation⁽¹⁾				
Largest glazed façade orientation	High risk location		Moderate risk location	
	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)	Maximum area of glazing (% floor area)	Maximum area of glazing in the most glazed room (% floor area of room)
North	15	37	18	37
East	18	37	18	37
South	15	22	15	30
West	18	37	11	22
NOTE:				
1. Floor area and floor area of room are as defined in Appendix A.				

Table 1.1 – Building Regulations Approved Document O

- 7.5 The living rooms within each dwelling, benefiting from the larger north-facing glazed openings and bi-fold doors, are the most glazed rooms. As these openings face north rather than south, solar gain is naturally limited, and the rooms benefit from effective cross ventilation, maintaining a glazing ratio of 34%, which falls below the maximum permissible limit under Part O.
- 7.6 Glazing specifications include a maximum G-value of 0.4 and a minimum light transmittance of 0.7 where needed, to further mitigate solar gains. Elevated ceiling heights of 2.5m+ allow for the potential retrofitting of cooling fans in either dwelling, should this be required in the future.
- 7.7 The proposed insulation has been designed to offer thermal retention which is beneficial in the winter months and cross ventilation and mechanical systems will assist with cooling in the summer months.

SECTION 8.0 **WATER CONSUMPTION**

- 8.1 The proposed mains water consumption for both dwellings will be substantially reduced through the incorporation of water-efficient products, in compliance with the mandatory standards referenced within Gravesham's Core Strategy. The Council's adopted Local Plan requires all new homes to be built to a standard equivalent to Level 3/4 of the Code for Sustainable Homes in terms of water use, targeting a maximum of 105 litres per person per day.

This can be achieved by introduce the following reduction methods:

- A. Showers to have 8 litres/minute flow restrictors
- B. Shallow Bath sizes to be 180 litres to overflow
- C. Washbasin taps to have a flow limit to 3.5 litres/minute
- D. Kitchen taps to have a flow limit to 4 litres/minute
- E. Dual Flush for all toilet cisterns at 4/2 litre

F. Washing machine to be 9 litres per kg

The proposed specification will result in a usage below 105 litres per person per day per dwelling, meeting the mandatory criteria set out within Gravesham's Core Strategy.

SECTION 9.0 CONCLUSION

- 9.1 This Sustainability Statement demonstrates that the proposed development has been designed with sustainability and energy efficiency as a core consideration throughout, in accordance with the relevant policies of Gravesham's Local Plan Core Strategy and national Building Regulations.
- 9.2 In terms of energy and carbon, the proposal incorporates a fabric-first approach alongside renewable technologies, including south-facing roof-mounted PV panels, to reduce operational carbon emissions in line with the Future Homes Standard.
- 9.3 Overheating risk has been carefully managed through orientation-led design; the larger glazed openings and bi-fold doors are positioned on the north elevation, away from direct solar gain, while south-facing windows are of standard, traditional size, and each dwelling benefits from effective cross ventilation, keeping glazing below the maximum limits set under Part O of the Building Regulations.
- 9.4 Water consumption has been addressed through the specification of water-efficient fittings and appliances across both dwellings, ensuring compliance with the mandatory standard of 105 litres per person per day set out in Gravesham's Core Strategy, equivalent to Code for Sustainable Homes Level 3/4.
- 9.5 Taken together, these measures demonstrate that the proposed development represents a sustainable form of development that responds positively to national and local planning policy, minimises its environmental impact, and provides a high standard of residential amenity for future occupants.
- 9.6 These endeavours collectively, aim to minimise the environmental impact of a scheme of this scale and future proof the design by adopting a sustainable construction strategy through a 'fabric first' approach.
- 9.7 This design approach incorporates sustainable construction and design practices, circular economy principles, innovative construction methods, and water conservation initiatives which all contribute towards providing a carefully considered scheme with lifelong energy efficient values.
- 9.8 Further assessment is intended to be established following a planning decision and will be undertaken as the Building Regulation stage of the project. Further information can be provided or reserved by planning condition.