

Energy and Sustainability Statement

**Garages Rear Of
2 - 28 Campbell Road
Gravesend
Kent**

March 2026

Ref: 1056

1.0 INTRODUCTION

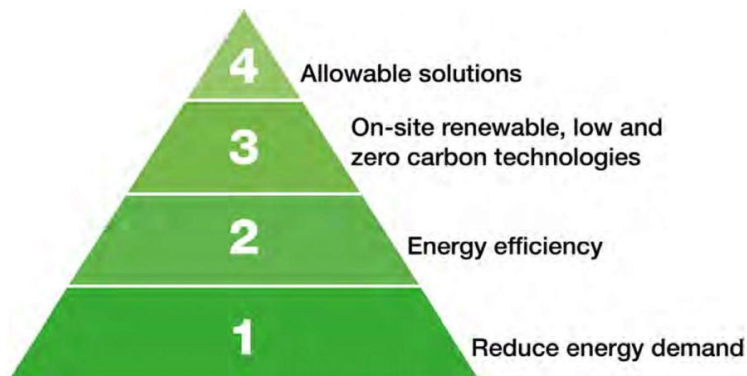
1.1 Condition 16 of planning permission ref 20240611 states:

Notwithstanding the details shown in the approved drawings or other supporting documents, full details of the sustainability measures to be incorporated in the development hereby permitted (including in terms of renewable and low carbon energy and water supply and efficiency) shall be submitted for the approval of the Local Planning Authority before the commencement of any above ground works; the development shall be carried out in accordance with the approved details before the first occupation of any part of the development.

Reason: To ensure that the development of the site promotes sustainability measures, in accordance with adopted Gravesham Local Plan Core Strategy Policy CS18 (Climate Change).

2.0 ENERGY EFFICIENCY

2.1 The Energy Hierarchy sets out the most effective way to reduce a dwelling's CO2 emissions. Firstly, by reducing energy demand, then by using energy efficiently, and lastly by incorporating LDC/Renewable technologies – BE LEAN: BE CLEAN: BE GREEN.



- 2.2 Applied to the development of new housing, this approach is referred to as fabric first and is widely supported by industry and government for some time with previous reports from Zero Carbon Hub and Energy Saving Trust having both stressed the importance of prioritising energy demand as a key factor in delivering resilient low energy homes.

Benefits of the Fabric First Approach	Fabric Energy Efficiency Measures	Bolt on renewable energy technologies
Energy/CO2/fuel bill savings applied to all dwellings	✓	X
Savings built-in for life of dwelling	✓	X
Highly cost-effective	✓	X
Increases thermal comfort	✓	X
Potential to promote energy conservation	✓	✓
Minimal ongoing maintenance / replacement costs	✓	X
Minimal disruption to retrofit post occupation	✓	X

- 2.3 Enhancing the thermal performance of a building is usually more cost effective than providing renewable energy, with more reliable CO2 savings for the long term life cycle of the building without the cost of replacing mechanical or electrical components on a continual basis. Adding renewable technology will then maximize these carbon reductions.
- 2.4 The development will achieve compliance with Part L1A of the Building regulations (2013) without relying on the contribution of renewable energy.
- 2.5 The first and most cost-beneficial action is to reduce the amount of energy needed by the occupants of the dwelling whilst still maintaining or even improving the comfort conditions. A lot can be achieved through passive design, improving the dwelling's external fabric, and following principles to reduce air infiltration.

2.6 The developer is attempting to reduce the energy demand and CO2 emissions of the development by making the following fabric and energy efficiency improvements to their standard Part L 2022 building specification.

2.7 Energy reduction strategies include:

- Incorporating 100% energy-efficient lighting: with the Lumens per Circuit Watt exceeding 80
- All new windows will be double-glazed with Low-E Coatings
- Recognised Construction Thermal Bridging Details

Energy efficiency systems are proposed which provide for clean mechanical and electrical systems, HVAC, hot water, lighting and efficient controls.

2.8 A range of water efficient strategies and products will be implanted throughout the development including:

- Low flow taps
- Low volume flush WCs
- Reduced volume baths
- Low flow showers
- Flow regulators
- Aeration fittings

3.0 USE OF RENEWABLE TECHNOLOGIES

3.1 This section will assess the technical viability of the following renewable energy technologies

for the site to rule out unfeasible options:

- Mast mounted wind turbines
- Roof-mounted wind turbines
- Solar PV (Photovoltaic) Panels
- ASHP (Air Source Heat Pump)
- GSHP (Ground Source Heat Pump)
- Biomass
- CHP

3.2 The following observations have been made concerning the technical feasibility of integrating renewable energy technologies into this development.

Renewable Technology	Feasibility	Reasons
Mast mounted wind turbine	No	- The site is situated in an urban area. Surrounding properties are not far enough away to be unaffected by turbine noise, reflections, and shadow flicker. - The site area is surrounded by trees and nearby dwellings that could cause uneven and turbulent wind patterns. Turbulent air conditions may reduce the lifespan of components. - Currently, the BWEA suggests a large wind turbine to be viable where wind speed is 7m/s or above. According to the NOABL database, the average wind speeds for the site are between 3.8-5.6m/s at 25m high and 4-5.8 m/s at 45m high at postcode (DA11 0JY).

		Therefore, the wind speeds are not sufficient for a mast-mounted wind turbine to be viable.
Roof Mounted (micro) Wind Turbine	No	- The site is situated in an urban area. Surrounding properties are not far enough away to be unaffected by turbine noise, reflections, and shadow flicker. - The site area is surrounded by trees and nearby dwellings that could cause uneven and turbulent wind patterns. Turbulent air conditions may reduce the lifespan of components. - Currently, the BWEA suggests a large wind turbine to be viable where wind speed is 7m/s or above. According to the NOABL database, the average wind speeds for the site are between 3.8-5.6m/s at 25m high and 4-5.8 m/s at 45m high at postcode (DA11 0JY). Therefore, the wind speeds are not sufficient for a roof-mounted wind turbine to be viable.
Solar PV panels / tiles	Yes	- The proposed development has a sufficient pitched roof area for solar panel accommodation. - Most of the roofs will be free from overshadowing for most of the day by other buildings, structures, or trees.
Solar hot water	No	- Relies on energy from the sun therefore only producing hot water during daylight hours

		- Poor servicing and badly programmed controls can make this operate less efficiently than a standard boiler. - Predominantly not feasible for dwellings with combination boilers.
Air Source Heat Pump	No	- The proposed development cannot accommodate the space for a hot water cylinder and associated pipework - The buildings are not suitable for a low-grade heat distribution system (e.g. underfloor water system, oversized radiators). - Condenser units can be noisy and also blow out colder air to the immediate environment causing a nuisance to the residents and there is not the availability on the site to position the systems away from neighbouring residents. - An external ASHP would have to be installed close to the bedrooms, causing noise issues.
Ground Source Heat Pump	No	- It would not be possible to drill vertical boreholes or horizontal loops for a GSHP on the site. - The development can not accommodate a low-grade heat distribution system (e.g. underfloor water system, oversized radiators). - There is insufficient space inside the proposed dwelling for the heat pump equipment.
Biomass boiler	No	- There is an established fuel supply chain for the area. - There insufficient space for a delivery vehicle (vehicular access to fuel storage, turning circle, etc). - There is not sufficient space in the proposed buildings for a wood-fuel boiler and associated auxiliary equipment. - There is not sufficient space for fuel storage to allow a reasonable number of deliveries. This is undesirable in a urban setting.

		- Biomass systems are management intensive (fuel sourcing, transport, storage) and require adequate expertise from users.
CHP	No	- Given the proposed building use there won't be a high demand for heat for most of the year, therefore CHP won't be suitable. - A CHP unit only generates economic and environmental savings when it is running at least 4,500 hours per year. This equates to an average heat demand of about 17 hours a day for five days a week throughout the year. The proposed development energy and heat demand profile do not match this requirement due to low energy requirements because of fabric optimization. - CHP is typically utilized on buildings with high electricity and heating demand for most of the year such as local authority buildings, leisure centers, universities, hotels, and district heating schemes where CHP is used to provide electricity, space, and water heating. - CHP should be considered wherever there is a demand for electricity and an appropriate demand for heat in the near vicinity.

3.3 Based on the feasibility study above, the following technologies have been identified as being feasible for the proposed development.

- Solar P.V.

4.0 CONCLUSION

4.1 Measures to improve the sustainability of the development include fabric and energy efficiency improvements to the standard Part L 2022 building specification:

- Measures to Incorporate 100% energy-efficient lighting: with the Lumens per Circuit Watt exceeding 80
- All new windows will be double-glazed with Low-E Coatings
- Recognised Construction Thermal Bridging Details

4.2 Additionally the developer is proposing to install PV panels on the roof of the development and EV charging points to achieve a reduction in CO2 output.

4.3 A range of water efficiency measures will be implemented throughout the dwellings.

4.4 These measures will ensure that the development of the site promotes sustainability measures, in accordance with adopted Gravesham Local Plan Core Strategy Policy CS18 (Climate Change) as required by condition 16 of the planning consent.