

## **Introduction**

The proposed new dwelling will be designed and constructed in accordance with the energy hierarchy, aiming to incorporate the following, listed in order of importance;

1. Energy Conservation: altering wasteful behaviours and reducing energy demand.
2. Energy Efficiency: the use of technology to reduce demand and eliminate waste.
3. Incorporating renewable and sustainable resources.

## **Design Considerations**

### **Energy Conservation and Efficiencies**

The proposed dwelling will contain a range of passive design principles, these design moves include the inclusion of the following;

- Higher levels of insulation to building fabric.
- Minimal thermal bridging.
- Continuous air barrier, to achieve a higher air tightness.
- Maximise use of solar and internal heat gains.

If the design of the dwelling incorporates passive principles, then the estimated energy demand could be significantly reduced. There is a possibility to exceed the CO2 emissions target from baseline building regulation requirements.

The following principles can also be incorporated during construction, these include;

- The use of FSC Certified Timber.
- Low VOC paints.
- Zero Formaldehyde MDF.
- Zero ODP and GWP Insulation.
- Environmental material policies to be used by contractor.
- Maximise recycled content of materials.

## **Renewable Sources**

Although in terms of hierarchy, it is considered less sustainable to include the use of renewable's, as a standalone. The scheme will aim to utilise renewables in conjunction with the aforementioned principles that promote energy conservation and efficiencies. It is timely to include renewables given the imminent abolishment of mains gas connections within residential schemes. The dwelling will seek the use of ground source.

## Relevant Local Policies

### **CS1 Addressing climate change and carbon reduction**

Development should demonstrate a commitment to reducing carbon emissions, including reducing energy demand through good design, and utilising renewable energy where feasible and viable in line with standards set out in Policy CS2.

### **CS2 Delivering sustainable design and construction**

Require designs that are energy efficient and designed to reduce their energy demands

## National Policies

131. In determining applications, great weight should be given to outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.

149. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures.

151. a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

154. a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and

b) approve the application if its impacts are (or can be made) acceptable\*.

\*Except for applications for the repowering of existing wind turbines, a proposed wind energy development involving one or more turbines should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan; and, following consultation, it can be demonstrated that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing.

## Summary

The proposed dwelling will seek to incorporate a range of passive design principles in response to energy conservation and increasing energy efficiency. Renewables will be utilised through the use of ground source. The dwelling will aim to achieve up to at least a 20% reduction in CO2 emissions from baseline building regulation requirements.