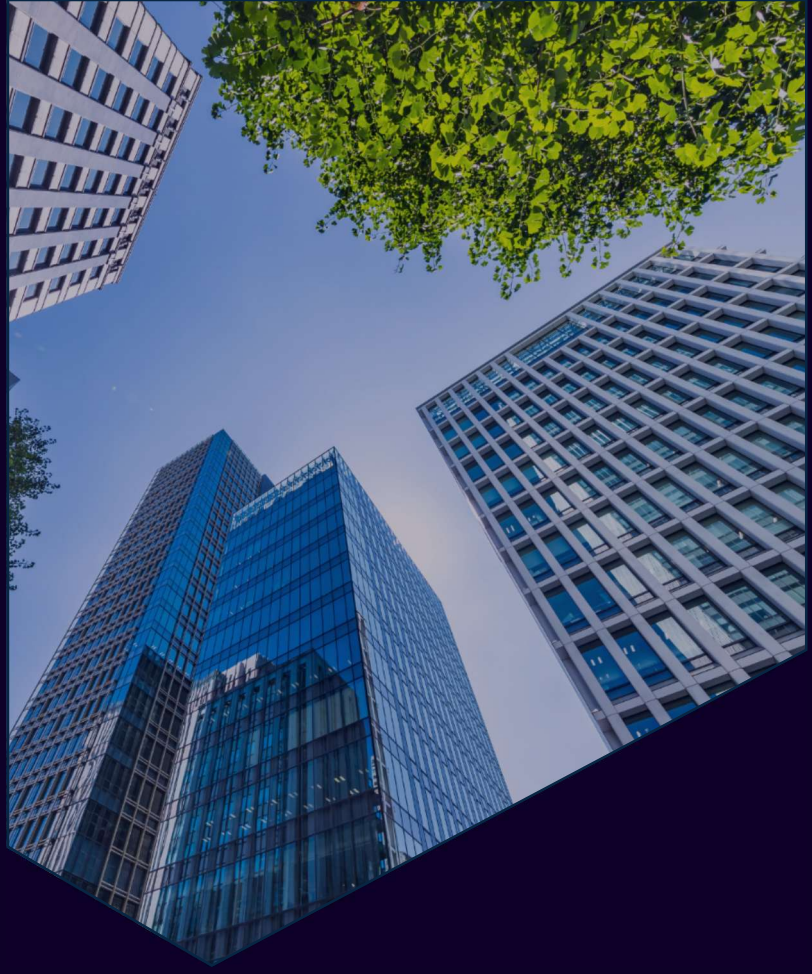


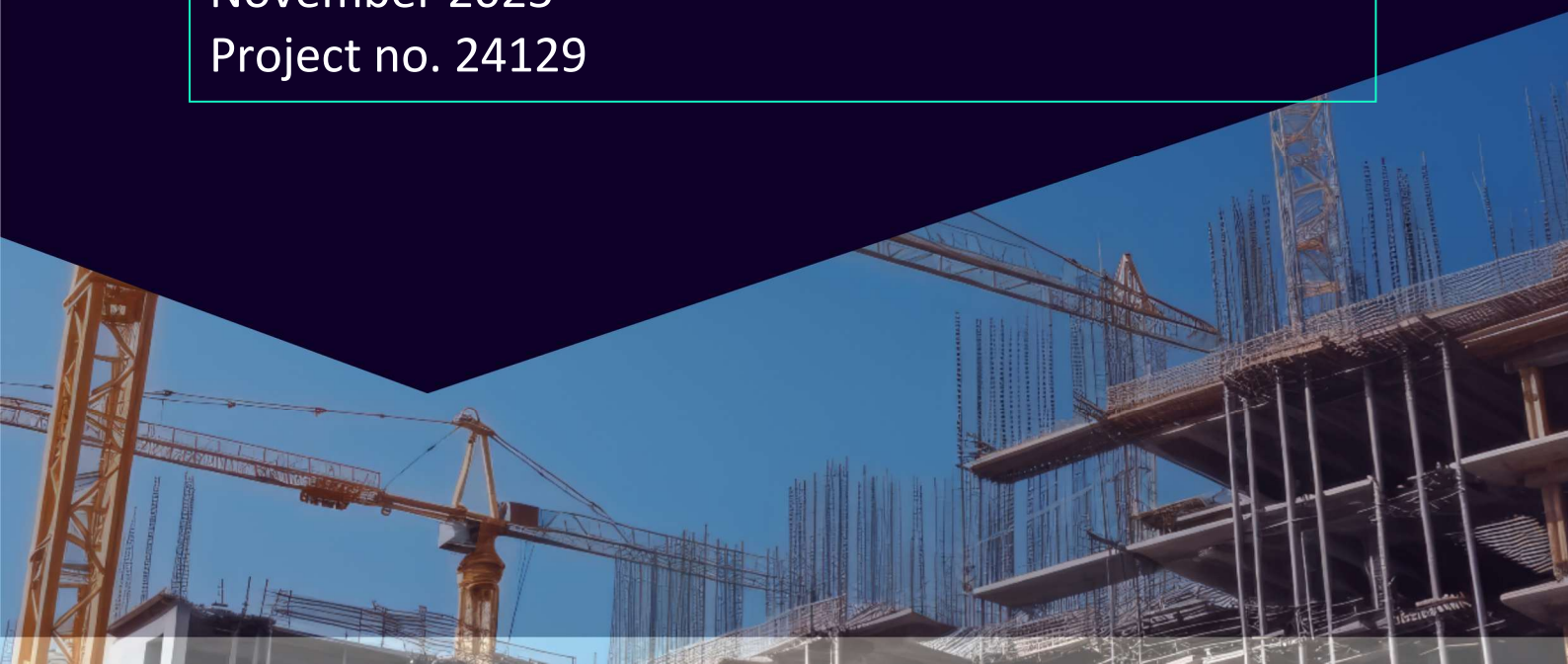
Brunningham's Farm

Heath Ride

Finchampstead

ENERGY STATEMENT

November 2025
Project no. 24129



REVISION	DATE	PREPARED BY	REVIEWED BY	COMMENTS
1	18.11.2025	MC	enevo	For Comment
2	27.11.2025	MC		Updated as per client request

The current report provides a brief overview of the wide range of opportunities for renewable energy and is not intended as detailed design advice. As such data and information should only be treated as INDICATIVE at this stage of the process. Further investigation can be undertaken when more accurate and detailed information is required on specific measures.

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enevo ENABLING EVOLUTION

Contents

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1.0 Introduction

1.1 About enevo Ltd

enevo are independent Sustainability and Energy Consultants providing carbon reduction solutions to help the UK achieve its carbon emission reduction target of 80% by 2050 - as set out in the Government's Climate Change Act 2008.

Our range of affordable but comprehensive solutions for the construction industry are broken down into two sectors; i) Building Compliance and ii) Consultancy.

Building Compliance:

Our Building Compliance services include; Code for Sustainable Homes Assessments, SAP Calculations, On Construction Energy Performance Certificates, Water Efficiency Calculations, SBEM Calculations, Commercial EPCs, BREEAM assessments and Air Tightness Testing.

Consultancy:

Our experience and exposure to building compliance combined with previous experience and IEMA accredited training means we have built up a vast amount of knowledge which enables us to provide our clients with invaluable advice. Our Consultancy services include; Renewable Energy Feasibility Reports, Energy Statements for planning, Sustainability Statements and Building Compliance Advisory Reports.

1.2 Introduction to Developments

enevo have been instructed to prepare an Energy Statement for the proposed residential development.

The development includes the redevelopment of Brunninghams Farm, Finchampstead a former brownfield site into a landscape-led, low-density residential community comprising eight high-quality detached family homes, consisting of three house types.

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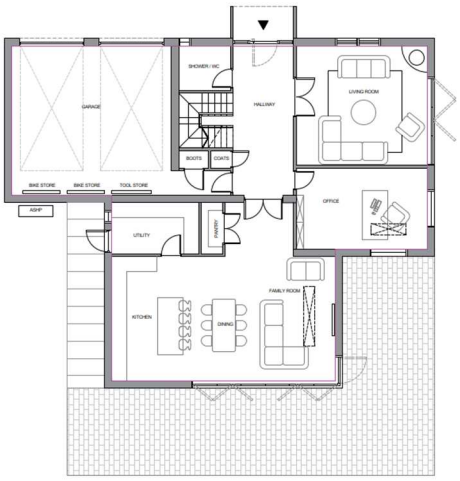
Figure 1 - House Type 1



Proposed Ground Floor Plan
175.0sqm (GIA)

Proposed First Floor Plan
154.6sqm (GIA)

Front Elevation

Rear Elevation

Side Elevation

Side Elevation

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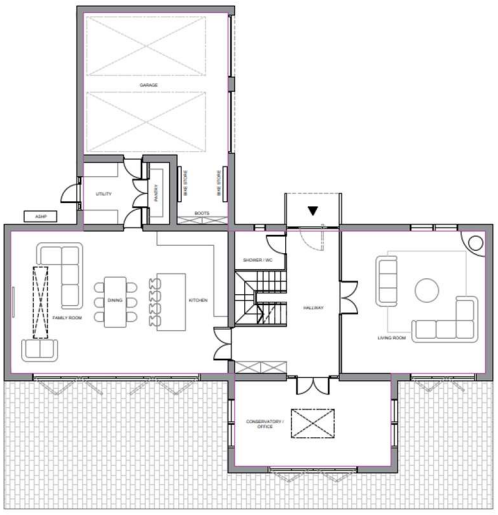
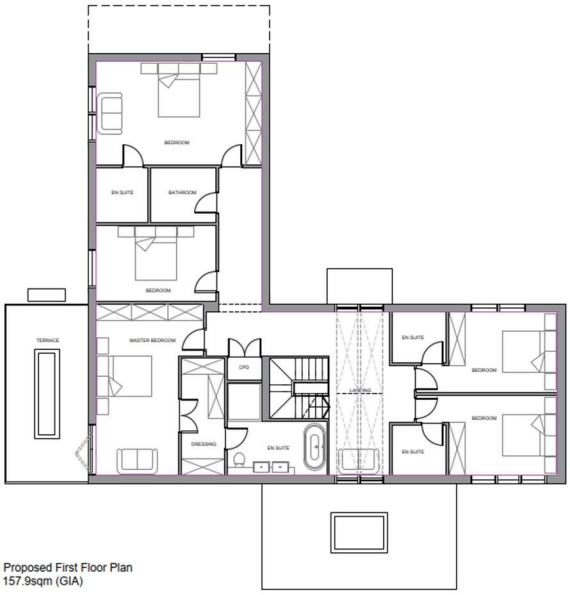
Figure 2 - House Type 2



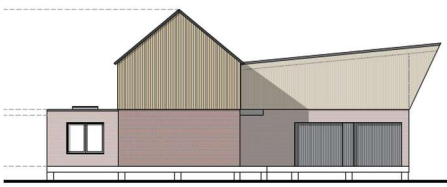
Proposed Ground Floor Plan
201.9sqm (GIA)



Proposed First Floor Plan
157.9sqm (GIA)

Front Elevation

Rear Elevation



Side Elevation

Side Elevation

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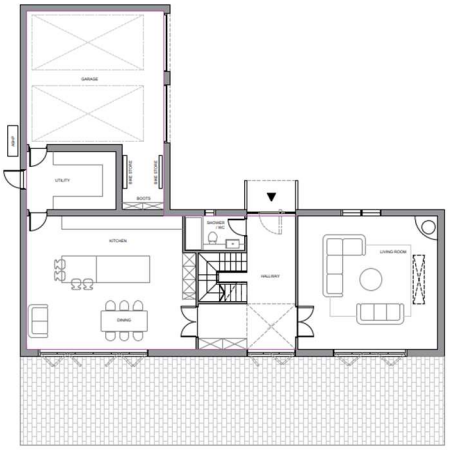
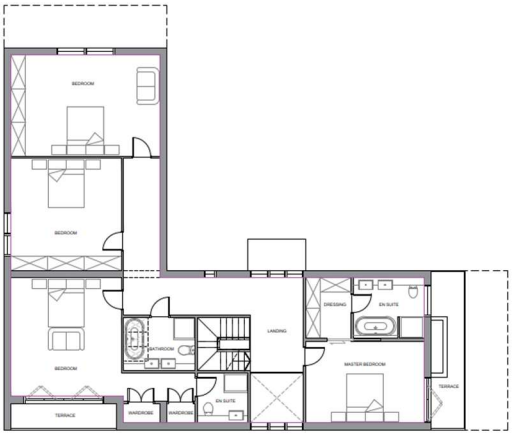
Figure - House Type 3



Proposed Ground Floor Plan
167.5sqm (GIA)



Proposed First Floor Plan
154.0sqm (GIA)

Front Elevation

Rear Elevation

Side Elevation

Side Elevation

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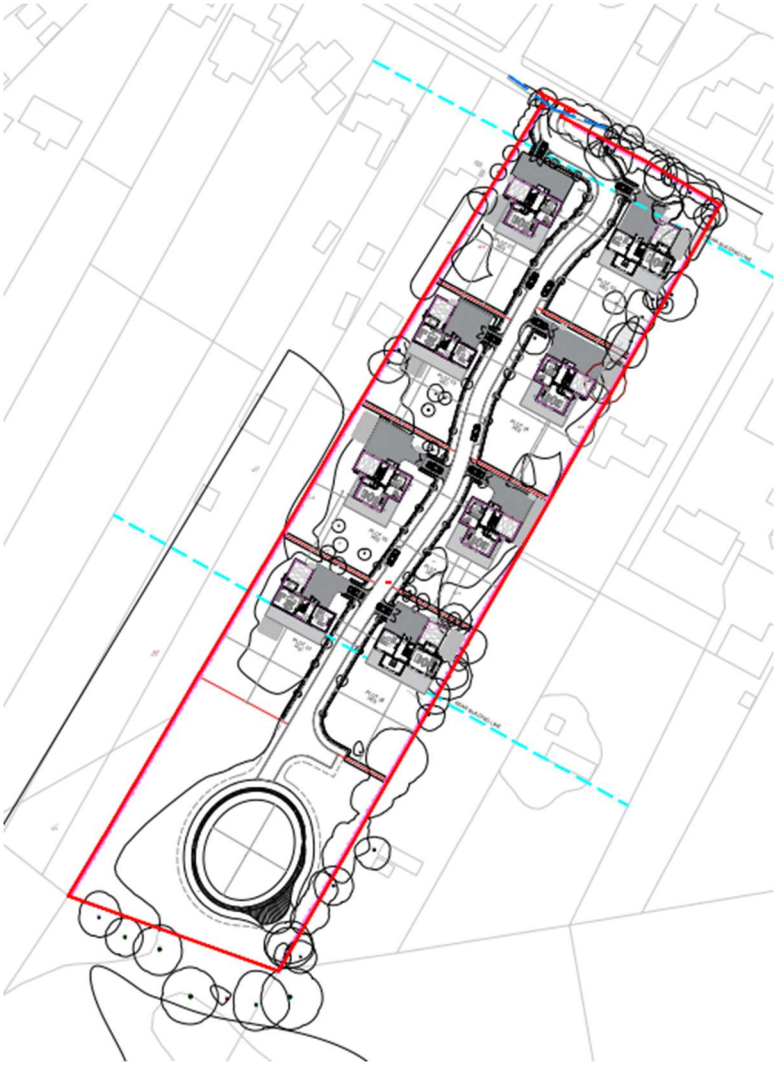
Figure 4 – Site Plan for the proposed development



This statement will demonstrate how the predicted CO2 emissions of the proposed development will be reduced compared with a typical 2021 Building Regulations Part L compliant building

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1.3 Planning Requirements

The following Energy/CO2 related planning requirements are applicable to this development:

CP1 – Sustainable development

Planning permission will be granted for development proposals that:

1) Maintain or enhance the high quality of the environment;
2) Minimise the emission of pollutants into the wider environment;
3) Limit any adverse effects on water quality (including ground water);
4) Ensure the provision of adequate drainage;
5) Minimise the consumption and use of resources and provide for recycling;
6) Incorporate facilities for recycling of water and waste to help reduce per capita water consumption;
7) Avoid areas of best and most versatile agricultural land;
8) Avoid areas where pollution (including noise) may impact upon the amenity of future occupiers;
9) Avoid increasing (and where possible reduce) risks of or from all forms of flooding (including from groundwater);
10) Provide attractive, functional, accessible, safe, secure and adaptable schemes;
11) Demonstrate how they support opportunities for reducing the need to travel, particularly by private car in line with CP6; and
12) Contribute towards the goal of reaching zero-carbon developments[41] as soon as possible by:

a) Including appropriate on-site renewable energy features; and
b) Minimising energy and water consumption by measures including the use of appropriate layout and orientation, building form, design and construction, and design to take account of microclimate so as to minimise carbon dioxide emissions through giving careful consideration to how all aspects of development form.

Policy CC05: Renewable energy and decentralised energy networks

1. Local opportunities to contribute towards decentralised energy supply from renewable and low-carbon technologies will be encouraged
2. Planning permission will only be granted for proposals that deliver a minimum 10% reduction in carbon emissions through renewable energy or low carbon technology where the development is for:
   a) Schemes of more than 10 dwellings (gross), or
   b) Non-residential proposals of more than 1,000 sq m gross floorspace.
3. Proposals for renewable energy and decentralised energy works, including wind turbines, must demonstrate that:
   a) They are appropriate in scale, location and technology type;
   b) Are compatible with the surrounding area, including the impact of noise and odour;
   c) Do not have a damaging impact on the local topography and landscape;
   d) There is no significant impact upon heritage assets, including views important to their setting;
   e) In the case of wind turbines, take account of their cumulative effect and properly reflect their increasing impact on the landscape and on local amenity

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1.4 Methodology

The methodology that has been applied in this report is as follows:

1. Prepare baseline energy calculations for the site based on a Part L 2021 compliant construction specification designed for the development.

2. From the baseline energy calculations, the predicted energy demand for the development in kWh/year and the predicted CO2 emissions in kgCO2/year for the site can be established.

3. **BE LEAN**: Apply energy efficient design principles (improved fabric spec) in order to reduce the energy demand and CO2 emissions of the site. Prepare energy calculations using the improved fabric specification.

4. **BE CLEAN:** Explore opportunities to improve the building services and increase the efficiency in which energy can be delivered to the dwelling.

5. **BE GREEN**: Carry out a renewable energy feasibility study to ascertain which LZC technologies would be suitable for the development, and ascertain the impact of introducing different technologies.

6. Establish the sizing of suitable renewable technologies to ensure the CO2 emission reduction target is met.

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2.0 Predicted Annual Carbon Emissions

Baseline SAP 10 calculations were prepared based on the construction specification shown in table 1 below. This specification is as outline in Approved Document Part L;

Aspect		L1A
	External Walls	0.18 W/m²K
	Communal Walls	N/A
	Insulated Roofs	0.11 W/m²K
	Ground floors	0.13 W/m²K
	Windows (All)	1.2 W/m²K
	External Doors	1.2 W/m²K
	Thermal Bridging	N/A
Ventilation	**Airtightness m3/(hr.m²)**	5
Heating	**Heating**	Gas Boiler
	Hot Water	As Per Heating
	Controls	TTZC
Low energy lighting		100%
Ventilation		Natural ventilation with extracts
Renewables / LZC	**None**	PV (40% of GF Area/6.5)

Part L compliant construction specifications

The conducted SAP calculations have shown the proposed baseline development will generate **26.28 kgCO2/year/m²**.

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3.0 Predicted Annual Energy Demand

Based on using the specification outlined in table 1 above, this would create a total predicted energy demand for the development of **49182.31 kWh/year**. The breakdown of this predicted energy demand can be seen in table 2 below. The figures quoted have been derived from the Design Stage SAP 10 Calculations for the development.

			Total Predicted Energy Requirement (kWh/yr)			
			Space Heating	Water Heating	Lighting, Pumps, Fans	Total Predicted Energy Requirement (kWh/yr)
Plot	No.	Units	Electric	Electric	Electric	
Plot 1	1	kWh/yr	12416.92	3060.78	462.5	15940.2
Plot 2	2	kWh/yr	14328.28	3080.49	482.77	17891.54
Plot 3	3	kWh/yr	11836.71	3058.01	455.85	15350.57
Total			38581.91	9199.28	1401.12	49182.31

Table 2: Baseline Predicated Annual Energy Demand

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4.0 Reducing Carbon Emissions through Energy Reduction

The Energy Hierarchy sets out the most effective way to reduce a dwelling's CO_2 emissions. Firstly by reducing energy demand, then by using energy efficiently and lastly by incorporating LZC/Renewable technologies.

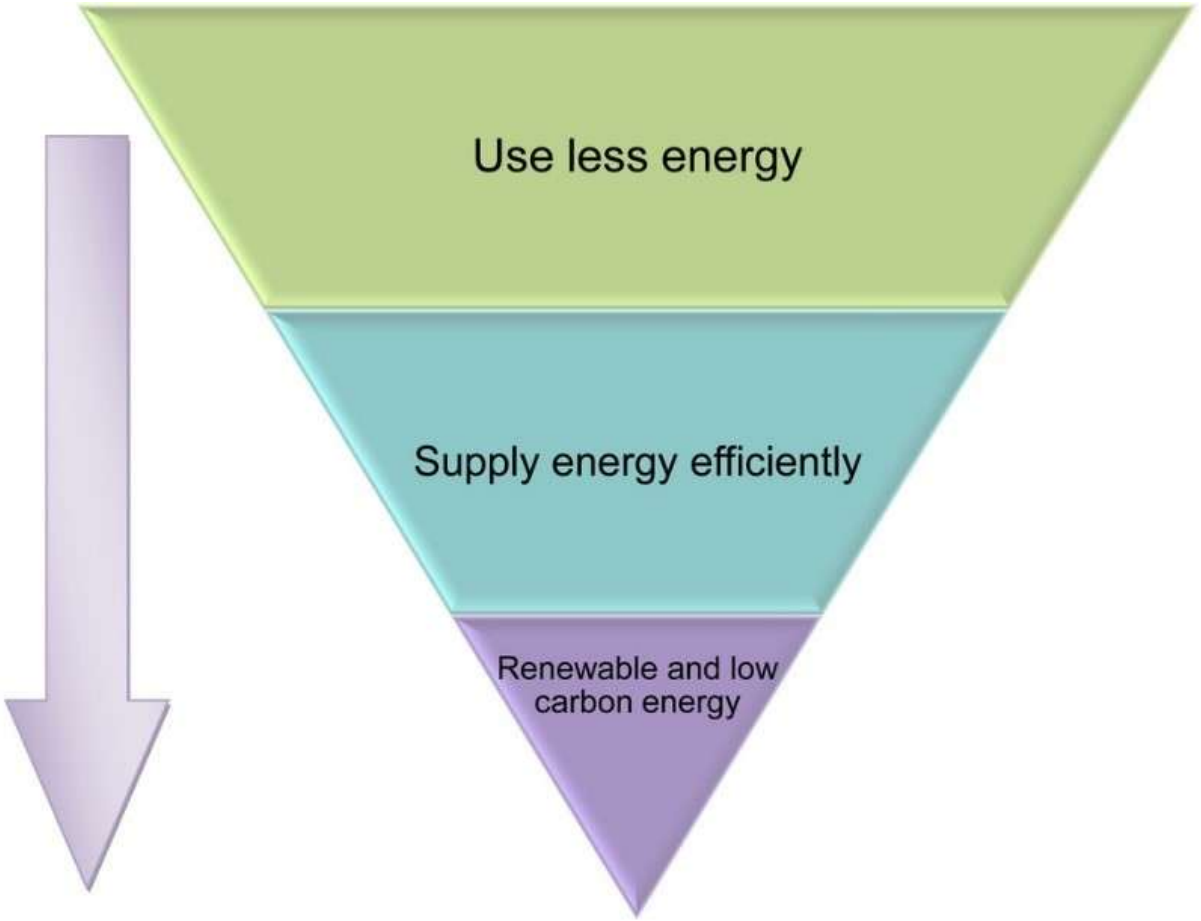

Figure 3: The Energy Hierarchy

Reducing the need for energy usage in the dwelling's design:

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.

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 2021 building specification:

Energy reduction strategies include:

- Adopting enhanced fabric specifications

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- Installing high efficiency heating systems
- Incorporating energy-efficient lighting: 100% of all new lighting to be energy efficient
- Adopting principles of airtight construction
- All new windows will be double -glazed
- Passive Solar Design – Solar gain, solar shading, thermal mass
- Natural / Passive Ventilation strategy

5.0 Feasibility Study of Renewable Technologies

This section will assess the technical viability of the following renewable energy technologies for the site in order to rule out unfeasible options:

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

The following observations have been made with regard to the technical feasibility of integrating renewable energy technologies into this development.

Renewable Technology	Feasible	Reasons
Mast Mounted Wind Turbine	No	There is no sufficient open land for a mast mounted wind turbine to be installed on site.
		The site is situated in a densely populated area. Surrounding properties aren't far enough away to be unaffected by turbine noise, reflected light and shadow flicker.
		The site area is surrounded by buildings and other obstructions that could cause uneven and turbulent wind patterns. Turbulent air conditions may reduce 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 is: 5 m/s at 10m, 5.7 m/s at 25m and 6.2 m/s at 45m height for the property postcode. Therefore, the wind speeds are

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		not sufficient for a mast mounted wind turbine to be viable.
Roof Mounted Wind Turbine	No	The site area is surrounded by buildings and other structures that could cause uneven and turbulent wind patterns. Turbulent air conditions may reduce lifespan of components.
		Roof mounted wind turbines are not yet a proven technology and a number of technical problems have been identified by manufacturers which are being investigated to rectify these issues. Vibration that can be transmitted to the building structure. Noise from a turbine may cause irritation to occupants of the dwelling and adjacent buildings. Noise may also adversely affect ventilation strategy.
		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 is: 5 m/s at 10m, 5.7 m/s at 25m and 6.2 m/s at 45m height for the property postcode. Therefore, the wind speeds are not sufficient for a roof mounted wind turbine to be viable
Solar PV (Photovoltaic) Panels/Tiles	Yes	The proposed development does have sufficient flat roof area for solar panels accommodation.
		Most of the roofs should be free from overshadowing for most of the day from other buildings, structures or trees.
		The site is located in the region with high level of global horizontal irradiation (1,000-1050 kWh/m2/year)
Solar Thermal Collectors	No	The proposed development has sufficient flat roof area that can accommodate solar thermal panels.

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		Most of the roofs should be free from overshadowing for most of the day from other buildings, structures or trees.
		The site is located in the region with high level of global horizontal irradiation (1,000-1050 kWh/m2/year)
		Solar thermal collectors would be compatible with the planned heating system.
		There will be a year round hot water demand.
		In practical domestic solar hot water systems, the solar hot water system is usually run in conjunction with, rather than instead of, a backup conventional boiler and as a result the carbon intensity of the combined system is high relative to other renewables. Moreover the high efficiency of modern condensing boilers, which can convert over 90% of means that the carbon intensity of these heat sources is relatively low at 200-300 gCO2/kWhth. As a result domestic solar water heating systems are a relatively expensive way of mitigating carbon emissions when they replace heat from efficient modern boilers. For this reason they are not recommended.
ASHP (Air Source Heat Pump)	Yes	The proposed development has been designed to accommodate the space for a hot water cylinder.
		The building is 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 nuisance to the residents. Furthermore the noise generated could cause disruption, as plant equipment will need to be fitted to external walls near bedroom and windows.

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		There is sufficient outdoor space to locate a condenser away from bedroom spaces
GSHP (Ground Source Heat Pump)	No	It will not be possible to drill a limited number of vertical or horizontal boreholes for GSHP on the site.
		It is possible for developments to accommodate a low-grade heat distribution system (e.g. underfloor water system, oversized radiators).
		The site and neighbourhood contain mature trees. Drilling boreholes on the site create the risk of damaging their roots.
		There is not sufficient space inside the proposed plant room that can service the main dwelling and all outbuildings/annexes.
Biomass Boiler	No	There is an established fuel supply chain for the area.
		There isn't sufficient space for a delivery vehicle (vehicular access to fuel storage, turning circle etc)
		There isn't sufficient space in the proposed buildings for a wood-fuel boiler and associated auxiliary equipment.
		There isn't sufficient space for fuel storage to allow a reasonable number of deliveries.
		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

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		and heat demand profile does not match this requirement.
		CHP is typically utilized on buildings with high electricity and heating demand for most of the year such as local authority buildings, leisure centres, universities, hotels, and district heating schemes where CHP is used to provide electricity, space and water heating.
		CHP should be considered wherever there is demand for electricity and an appropriate demand for heat in the near vicinity.
Hot Water Heat Pump	No	Dwelling has been designed to include space for a water immersion cylinder.
		There is sufficient external wall area to provide intake and exhaust vents to the external air.
		There is a sufficient predicted hot water demand to allow a system of this nature to run efficiently.
		Cost of these systems are a fraction of traditional heat pumps and they provide the same level of efficient delivery to all dwellings.

Table 4: Feasibility Study of Renewable Technologies

Based on the feasibility study in table 4 above, the following technologies have been identified as being feasible for the proposed development:

- Air source Heat pump
- Solar PV with battery Storage

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6.0 Improvements to Provide Energy Reduction

The developer is proposing the following measures to improve the energy performance of the building:

Be Lean;

Improved Fabric U-values to-

- Walls: 0.13 W/m²K
- Floors: 0.11 W/m²K
- Roof: 0.10 W/m²K
- Double Glazed Windows: 1.2 W/m²K

Be Lean:

Currently, there are no available heat networks to connect to.

Be Green

Renewable Energy Sources-

- Installation of Solar PV (5kWp to each unit with 10kWh Battery Storage)

Table 2 below shows the percentage reduction in energy usage following the proposed heating and fabric improvements.

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	Total regulated emissions (Tonnes CO_2 / year)	CO_2 savings (Tonnes CO_2 / year)	Percentage savings (%)
Part L 2021 baseline	7.6		
Be lean	7.5	0.1	2%
Be clean	7.5	0.0	0%
Be green	1.0	6.5	85%
Total Savings	-	6.6	87%
	-	**CO_2 savings off-set (Tonnes CO_2)**	-
Off-set	-	**30.2**	-

As can be seen from the above table, this development is achieving an 87% reduction in predicted emissions, exceeding the desired minimum of 35%.

Policy CC05 (Section 2) of the Managing Development Delivery Plan (MDD) , mandates a minimum 10% reduction in carbon emissions using renewable energy or low-carbon technology for major developments. The proposed energy strategy adopts a "Be Green" approach, incorporating Air Source Heat Pumps (ASHP) for space heating and hot water, alongside a rooftop Solar Photovoltaic (PV) array. Detailed SAP calculations confirm that these technologies, when combined, achieve a CO_2 reduction significantly in excess of the 10% threshold required by the Local Plan.

With its fabric first approach and use of LZC technologies, this proposed development promotes the goals of the Wokingham Council, in its ability to reduce heat demand, and then meet that demand by the most efficient means. The concentration on improving the fabric of the design to exceed best practice for the current times will not only help in the short term by reducing energy demands and CO2 emissions now but also allows the building to be future proofed and net-zero ready to meet further targets and needs that may be required in years to come.

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