

# Energy Statement

Land South of Floran Farm, Hophurst  
Hill, Crawley, West Sussex, RH10 4LP

January 2026

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# Executive Summary

Consult Sustainability Limited has been appointed by WSPA to prepare an Energy Statement for the proposed development located on Land south of Floran Farm, Hophurst Hill, Crawley Down, RH10 4LP. The report has been prepared to outline the energy strategy required to reduce energy demand and CO<sub>2</sub> emissions in support of the planning application.

The development is located within the jurisdiction of Mid Sussex District Council who have established a framework of policies and requirements that aim to achieve carbon reduction and energy efficiency in new developments. These are guided by their Local Plan and ongoing reviews for enhancing standards in line with national objectives.

This Energy Strategy has been prepared to support a full planning application for the erection of nine new dwellings. At this stage, full architectural and construction information is not available to enable detailed SAP modelling. As such, the assessment of energy demand and carbon emissions has been undertaken on an indicative and proportionate basis, appropriate for planning determination.

Indicative energy demand and carbon performance have been informed by reasonable and conservative assumptions, aligned with current Building Regulations Part L standards and typical SAP benchmarks. Full SAP assessments will be undertaken at the detailed design stage to verify compliance with Building Regulations and to confirm the final energy and carbon performance of the development.

Following the energy hierarchy, this development will adopt the following strategy:

**Be lean:** Use less energy and manage demand during operation by constructing to high thermal performance standards with u-values exceeding minimum Building Regulation fabric targets as further detailed within this report.

**Be clean:** Exploit local energy resources and supply energy efficiently and cleanly: No opportunities are deemed feasible under this stage of the hierarchy as detailed within this report.

**Be green:** Maximise opportunities for renewable energy by producing and using renewable energy on-site: Introduce air source heat pumps for heating and hot water to complete the energy strategy as further detailed within this report.

SUMMARY

THE DEVELOPMENT WILL:

- FOLLOW THE ENERGY HIERARCHY
- DEMONSTRATE THE POTENTIAL TO ACHIEVE A MINIMUM 10% REDUCTION IN REGULATED CO<sub>2</sub> EMISSIONS.
- INCORPORATE AIR SOURCE HEAT PUMPS AND PHOTOVOLTAICS TO ACHIEVE A FURTHER ~60% REDUCTION IN REGULATED CO<sub>2</sub> EMISSIONS.
- ACHIEVE AN OVERALL REDUCTION IN REGULATED CO<sub>2</sub> EMISSIONS OF ~70%.

# Introduction

Consult Sustainability Limited has prepared this Energy Statement in support of the proposed residential development located on land south of Floran Farm, Hophurst Hill, Crawley Down, RH10 4LP. The purpose of this document is to outline the project's proposed approach to energy efficiency and carbon reduction, in accordance with relevant national and local planning policy guidance, including that of Mid Sussex District Council.

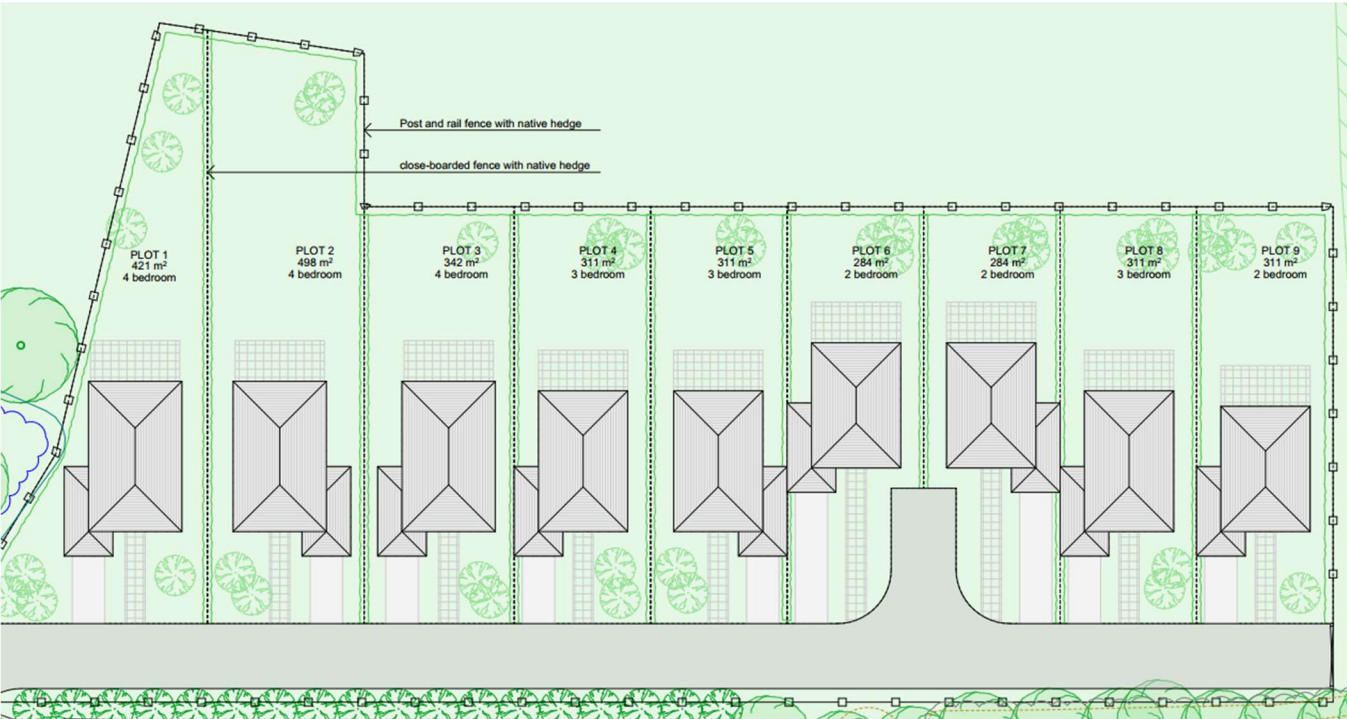
The site is located within the administrative area of Mid Sussex District Council, where a comprehensive suite of planning policies, informed by the adopted District Plan and the national planning policy framework, sets expectations for sustainable development. These policies promote improved energy efficiency and reduce operational carbon emissions in new residential schemes.

The report has been compiled by Mr L. Quinn who is a certified On-Construction Domestic Energy Assessor & Non-domestic Energy Assessor (OCDEA / NDEA Elmhurst EES/025200).

At this stage, projected energy consumption and carbon performance have been assessed on an indicative basis, informed by industry-standard methodologies and conservative assumptions aligned with the requirements of Building Regulations Part L (2021). Due to the level of design information currently available, full SAP modelling has not been undertaken; however, benchmarked calculations have been used to demonstrate the principle of compliance with relevant planning policy requirements.

Detailed SAP assessments will be completed at the next stage of design, once full architectural drawings, construction build-ups, and building services specifications are available, to confirm compliance with Building Regulations and final energy performance.

FIGURE 1: LAND SOUTH OF FLORAN FARM – SITE PLAN



# Planning Requirements

## National Policy – NPPF

At national level, National Planning Policy Framework (2024) sets out the Governments planning policies for England, identifying how the planning system should support the transition to net zero by 2050 and take account of all climate impacts including overheating, water scarcity, storm and flood risks and coastal change. The NPPF should help to shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure. Local planning authorities must take a proactive approach to mitigating and adapting to climate change, considering the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures in line with the objectives and provisions of the Climate Change Act 2008.

New development should be planned for in ways that:

- a) avoid increased vulnerability to the range of impacts arising from climate change. When a new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
- b)
- c) can help to reduce greenhouse gas emissions, such as through its location, orientation, and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.

To help increase the use and supply of renewable and low carbon energy and heat, plans should:

- a) provide a positive strategy for energy from these sources, which maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts).
- b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
- c) identify opportunities for development to draw its energy supply from decentralised, renewable, or low carbon energy supply systems and for co-locating potential heat customers and suppliers

Local planning authorities should support community-led initiatives for renewable and low carbon energy. This should include developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.

In determining planning applications, local planning authorities should expect new development to:

- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
- b) take account of landform, layout, building orientation, massing, and landscaping to minimise energy consumption.

When determining planning applications for renewable and low carbon development, local planning authorities should:

- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and give significant weight to the benefits associated with renewable and low carbon energy generation and the proposal's contribution to a net zero future
- b) recognise that small-scale and community-led projects provide a valuable contribution to cutting greenhouse gas emissions;
- c) in the case of applications for the repowering and life-extension of existing renewable sites, give significant weight to the benefits of utilising an established site.

## Mid Sussex District Plan (2014-2031)– Adopted July 2018

### Policy DP39: Sustainable Design and Construction

To promote development that makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change. All development proposals must seek to improve the sustainability of development and should where appropriate and feasible according to the type and size of development and location, incorporate the following measures:

- Minimise energy use through the design and layout of the scheme including through the use of natural lighting and ventilation.
- Explore opportunities for efficient energy supply through the use of communal heating networks where viable and feasible.
- Use renewable sources of energy.
- Demonstrate how the risks associated with future climate change have been planned for as part of the layout of the scheme and design of its buildings to ensure its longer-term resilience.

### PLANNING SUMMARY

THE MID SUSSEX DISTRICT PLAN REQUIRES NEW DEVELOPMENT TO REDUCE CARBON EMISSIONS, INCORPORATE SUSTAINABLE DESIGN PRINCIPLES, AND CONSIDER THE USE OF RENEWABLE OR LOW-CARBON ENERGY SYSTEMS WHERE FEASIBLE.

THIS ENERGY STRATEGY HAS BEEN PREPARED TO DEMONSTRATE HOW THE PROPOSED DEVELOPMENT RESPONDS TO THE ABOVE NATIONAL AND LOCAL PLANNING POLICY REQUIREMENTS AND SETS OUT AN ENERGY STRATEGY THAT IS APPROPRIATE TO THE SCALE AND NATURE OF THE SCHEME, SUBJECT TO CONFIRMATION THROUGH DETAILED DESIGN AND ENERGY MODELLING AT BUILDING REGULATIONS STAGE.

# Energy Hierarchy

## Be Lean

**Fabric First: Energy Efficiency Standards** - Use less energy and manage demand during operation through fabric and servicing improvements and the incorporation of flexibility measures. Demand reduction measures specific to the scheme are encouraged at the earliest design stage of a development and aim to reduce to demand of energy.

Measures typically include passive design: both architectural and building fabric measures, and active design: energy efficient services. It is possible to exceed Building Regulations requirements through demand reduction (Be Lean) measures alone.

Improving the envelope performance beyond the minimum Building Regulations standards can help to reduce the annual CO<sub>2</sub> emissions associated with the dwellings' heating demand, by limiting the heat loss through the buildings' fabric.

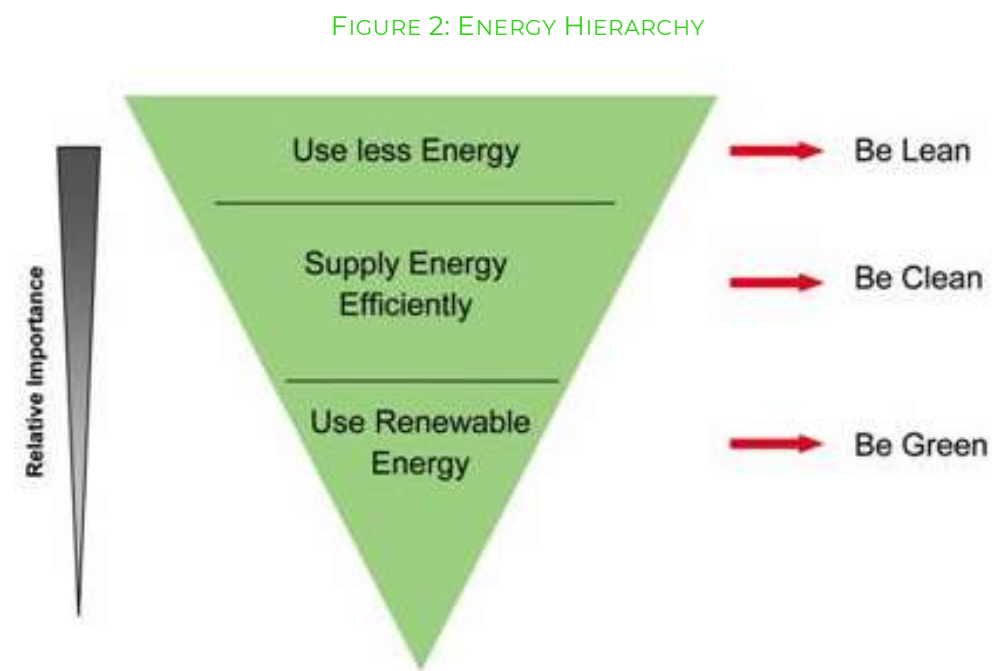
After assessing the contribution of the passive elements to the overall energy balance, the aim is to further reduce CO<sub>2</sub> emissions by selecting efficient mechanical and electrical systems and efficient controls to manage the energy used during operation.

## Be Clean

**Supply Energy Efficiently** - Exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly by connecting to district heating networks. A 'clean' energy supply refers to the energy efficiency of heating, cooling, and power systems.

## Be Green

**Low Carbon/ Renewable Technologies** - Maximise opportunities for renewable energy by producing, storing and using renewable energy on-site. Use of renewable energy in developments is encouraged at the 'Be Green' third stage. Each renewable energy technology technically feasible and each should be considered in the Energy Assessment.



# Energy Proposals

## Be Lean – Energy Efficiency Standards

### Fabric Measures

The development will adopt a fabric-first approach. Energy efficiency measures are proposed to reduce overall energy demand and associated CO<sub>2</sub> emissions, in line with planning policy and the principles of Building Regulations Part L.

Table 1 outlines the indicative fabric performance standards proposed for the development, benchmarked against Approved Document L (2021). These values are presented for planning purposes and will be confirmed and refined through detailed design and SAP modelling at Building Regulations stage.

TABLE 1 - PROPOSED FABRIC MEASURES

| Element                | Domestic (New) - Approved Document L1 2021   |                           |                 |
|------------------------|----------------------------------------------|---------------------------|-----------------|
|                        | A                                            | B                         | C               |
|                        | AD L1A 2021 Limiting Fabric U-Values (W/m²K) | Proposed U-Values (W/m²K) | Improvement (%) |
| External Walls         | 0.26                                         | 0.15                      | 42%             |
| Party Walls            | 0.20                                         | 0.00                      | 100%            |
| Roofs                  | 0.16                                         | 0.10                      | 38%             |
| Floors                 | 0.18                                         | 0.10                      | 44%             |
| Windows/Doors          | 1.60                                         | 1.20                      | 25%             |
| Air tightness m³/hr/m² | 8.00                                         | 4.00                      | 50%             |
| Thermal Bridging       | Y = 0.15 (Default)                           | Y = <0.10                 | 33%             |

### Thermal Bridging

In addition to enhanced building fabric standards, the development will be designed to minimise the impacts of thermal bridging. Junctions will be detailed in accordance with recognised industry guidance, such as Recognised Construction Details (RCDs) or equivalent accredited schemes.

Where bespoke junctions are required, these will be assessed at detailed design stage to verify Psi-values and ensure performance consistent with good practice.

### Windows

The contractor will endeavour to install windows with a BFRC or BSI certification to ensure robustness of performance data. The amount of solar radiation entering the building will be balanced against the aim to achieve good daylight levels, by selecting glass with high light transmission but limited solar transmission.

An indicative window g-value range of approximately **0.30 to 0.50** has been considered to mitigate the potential risk of overheating, subject to confirmation at detailed design stage and compliance with Part O requirements.

### Air Tightness

Good site quality standards will be adhered to, to achieve a high-performance building with a low air permeability rate to Passivhaus standards. The buildings will not exceed **4.00m³/hr/m² at 50 Pascals** or less, against the AD L target of 8.00m³/hr/m².

Low air permeability will be achieved through ensuring diligence during construction and making sure all punctures through the building envelope are adequately sealed.

### Lighting

Installing efficient low energy light fittings internally and externally can significantly reduce a building's overall lighting load hence lowering its annual CO<sub>2</sub> emissions. To reduce the energy consumption associated with artificial lighting, energy-efficient fittings will be specified for 100% of internal and external lighting. Lighting throughout will achieve the following minimum lumens per circuit watt: LED **80lm/W**.

### Ventilation

Efficient ventilation strategies will be adopted to support indoor air quality and reduce energy demand. Mechanical ventilation with heat recovery (MVHR) is proposed to serve kitchen, bathroom, and WC areas, subject to confirmation through detailed design and SAP assessment.

### Heating / Hot Water

Heat demand will be reduced through the enhanced fabric standards proposed. Air source heat pumps are proposed to provide space heating and domestic hot water, aligned with the 'Be Green' stage of the energy hierarchy and supporting the use of low-carbon energy sources.

#### BE LEAN SUMMARY

THE PROPOSED DEVELOPMENT ADOPTS A FABRIC-FIRST APPROACH, INCORPORATING ENHANCED INSULATION STANDARDS, REDUCED THERMAL BRIDGING, IMPROVED AIRTIGHTNESS, AND ENERGY-EFFICIENT GLAZING AND LIGHTING TO MINIMISE ENERGY DEMAND.

AT THE BE LEAN STAGE OF THE ENERGY HIERARCHY, THESE FABRIC EFFICIENCY MEASURES ARE ESTIMATED TO DELIVER A **MINIMUM 10%** REDUCTION IN REGULATED CO<sub>2</sub> EMISSIONS, RELATIVE TO A NOTIONAL BUILDING REGULATIONS BASELINE, SUBJECT TO CONFIRMATION THROUGH DETAILED DESIGN AND SAP MODELLING AT BUILDING REGULATIONS STAGE.

## Be Clean – Supply Energy Efficiency

### Consideration of Connection to Local Heat Networks

As part of the energy strategy for the proposed development, careful consideration has been given to the potential for connection to an existing or planned district heat network. Heat networks can provide a highly efficient and cost-effective means of supplying heating and hot water, leveraging centralized energy generation and distribution to multiple buildings or developments. Utilising such networks also supports broader sustainability objectives by maximising energy efficiency and enabling the integration of low-carbon heat sources.

However, a review of local infrastructure has confirmed that there are currently no existing or planned heat networks in the immediate vicinity of the site. As a result, the opportunity to connect to a heat network is not presently available, and this option cannot be pursued further at this stage.

### Exploration of Local and Secondary Energy Sources

The potential to exploit locally available, secondary or renewable energy sources has also been systematically evaluated, with the aim of maximising sustainability and minimising both primary energy consumption and associated carbon emissions. This assessment has encompassed consideration of energy sources such as:

- On-site renewable generation (e.g. solar photovoltaics, solar thermal, wind energy)
- Ground or air source heat pumps
- Waste heat recovery from nearby industrial or commercial activities
- Hydrothermal or geothermal resources, where available

Following a detailed review, no suitable opportunities have been identified within the local context for harnessing such energy sources. Either the necessary resources are not present, or technical, spatial, or economic constraints render these options unviable for this specific development.

### Assessment of Combined Heat and Power (CHP) Options

The use of low-emission combined heat and power (CHP) systems has also been considered as an alternative means of achieving high energy efficiency and reduced carbon emissions. CHP, in principle, offers the advantage of simultaneously generating heat and electricity from a single fuel source, thereby improving overall fuel use efficiency.

However, the installation of a CHP system is not deemed to be economically viable as larger, centralized installations can paradoxically result in increased carbon emissions per unit of electricity generated. Furthermore, contemporary policy guidance and best practice are moving away from fossil fuel-based CHP systems, particularly those reliant on gas engines, due to growing concerns about their impact on local air quality (notably in relation to nitrogen dioxide (NO<sub>2</sub>) and particulate emissions), as well as the evolving carbon intensity of grid electricity.

For these reasons economic, environmental, and regulatory, the incorporation of a conventional gas-engine CHP system has been discounted.

#### BE CLEAN SUMMARY

A THOROUGH REVIEW OF POTENTIAL LOW-CARBON, EFFICIENT HEAT AND ENERGY SUPPLY OPTIONS HAS BEEN UNDERTAKEN AS PART OF THE DESIGN PROCESS. IN THE ABSENCE OF ACCESSIBLE HEAT NETWORKS, VIABLE LOCAL ENERGY OPPORTUNITIES, OR SUITABLE CHP SOLUTIONS, THE DEVELOPMENT WILL FOCUS ON IMPLEMENTING THE MOST EFFICIENT BUILDING SERVICES AND RENEWABLE ENERGY MEASURES FEASIBLE WITHIN ITS SPECIFIC CONTEXT, IN ALIGNMENT WITH RELEVANT SUSTAINABILITY TARGETS AND PLANNING REQUIREMENTS.

Be Green – Low Carbon/ Renewable Technology Consideration

Feasible Renewable Energy Technology

A reduction in carbon emissions through on-site renewable and low-carbon energy technologies may be achieved through a range of options capable of generating heat or power. In determining the most suitable technologies, consideration has been given to carbon reduction potential, cost feasibility, practicality, planning considerations, and site-specific constraints, at a level appropriate to the current stage of design.

Carbon Reduction

This criterion considers the indicative potential for reducing carbon dioxide (CO<sub>2</sub>) emissions associated with the adoption of specific technologies within the proposed development. The assessment draws on industry-standard calculation methodologies and typical performance benchmarks rather than scheme-specific final modelling outputs.

Technologies capable of delivering higher relative carbon savings in typical applications (e.g. photovoltaics and heat pumps) are therefore considered more favourably at this stage, while technologies with limited or marginal impacts may be deprioritised.

Cost Feasibility

Cost feasibility considers the capital outlay required for procurement and installation of the technology, set against the overall budget for the development. This assessment takes into account the upfront investment, potential for long-term operational savings, and available financial incentives or grants. A technology must demonstrate not only value for money but also an acceptable payback period within the context of project financing. Technologies that require disproportionately high capital expenditure, with limited return on investment or extended payback periods, may not be considered appropriate for inclusion at this stage.

Practicality

The practicality criterion evaluates the technical and logistical feasibility of deploying the technology at the proposed site. This encompasses:

- The spatial requirements for equipment and associated infrastructure
- The ease of integration with existing building systems or fabric
- Suitability against the anticipated use and occupancy patterns

For instance, technologies requiring substantial plant space or significant structural adaptations may encounter practical limitations, especially in constrained urban settings or in retrofit projects.

Planning Restrictions

Certain locations are subject to planning constraints, such as conservation areas or properties that are Listed (i.e., protected for their historic or architectural value). These constraints may limit or outright prohibit visible changes to the exterior, noise, structural alterations, or the use of certain materials. Thus, the assessment must confirm whether proposed technologies (e.g., external heat pumps, rooftop solar panels, or flue terminals) require planning consent and whether the likelihood of approval is high or subject to significant risk of refusal due to local planning policies or heritage protections.

Site-Related Constraints

This criterion investigates whether specific characteristics of the site (layout, orientation, topography, shading, available utility connections, etc.) could prevent the optimal function or even installation of a technology. Examples include:

- Heavy shading from adjacent structures or trees decreasing PV output
- Limited roof area
- Ground conditions unsuitable for ground-source heat pump arrays

- Inadequate ventilation for biomass boilers

The assessment should identify these site-specific constraints early in the decision-making process to prevent specification of unworkable solutions.

Operating Noise Consideration

Some low-carbon technologies, particularly HVAC equipment (e.g., air source heat pumps, fans, CHP engines), generate varying levels of operational noise. This is a key concern where the development is in close proximity to residential dwellings or other noise-sensitive uses, as excessive noise can lead to disturbance and may breach statutory requirements for noise pollution.

The final specification and siting of equipment will be confirmed at detailed design stage, with due regard given to acoustic performance to ensure compliance with relevant noise standards and the protection of residential amenity.

Ground Source Heating Pumps:

|                                          |                                                                                                                                                                                                                                                                                    |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO <sub>2</sub> reduction effectiveness: | Estimated potential 60-70% reduction in CO <sub>2</sub> emissions.                                                                                                                                                                                                                 |
| Cost feasibility:                        | High.                                                                                                                                                                                                                                                                              |
| Practicality:                            | Practical for new buildings with high fabric efficiency standards and low energy demand.                                                                                                                                                                                           |
| Planning restrictions:                   | No abnormal planning restrictions.                                                                                                                                                                                                                                                 |
| Site related constraints:                | Insufficient space exists within the development boundaries for the incorporation of horizontal ‘Slinky’s’. Thermogeological assessment of ground conditions plus identification of underground services would need to be established to determine the suitability for bore holes. |
| Operating noise:                         | Low.                                                                                                                                                                                                                                                                               |
| Ongoing maintenance:                     | Medium - None to boreholes, annual maintenance requirement for heat pumps.                                                                                                                                                                                                         |
| Overall Feasibility:                     | Not considered proportionate or feasible for this development due to high capital costs, spatial constraints, and the scale of the proposed scheme.                                                                                                                                |

Air Source Heat Pumps / Exhaust Air Heat Pumps (ASHP/EAHPs):

|                                          |                                                                                                                                                                                                                                                       |
|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO <sub>2</sub> reduction effectiveness: | Estimated potential 40-60% reduction in CO <sub>2</sub> emissions.                                                                                                                                                                                    |
| Cost feasibility:                        | Medium - dependent on detailed design.                                                                                                                                                                                                                |
| Practicality:                            | Practical for new buildings with high fabric efficiency standards and low energy demand.                                                                                                                                                              |
| Planning restrictions:                   | Consideration of location of internal and/or externally mounted plant & equipment and operating noise. ASHPs would need to be located externally, in proximity to the dwellings, either disguised or discreetly hidden to reduce their visual impact. |
| Site related constraints:                | None.                                                                                                                                                                                                                                                 |
| Operating noise:                         | Low - consideration will be required to the siting of the heat pumps to ensure disturbance is not caused to the occupiers or neighboring properties.                                                                                                  |
| Ongoing maintenance:                     | Medium - Annual maintenance requirement for heat pumps.                                                                                                                                                                                               |
| Overall Feasibility:                     | Considered feasible for this development.                                                                                                                                                                                                             |

Solar Photovoltaics (PV)

|                                          |                                                                                                                                                                                                                          |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO <sub>2</sub> reduction effectiveness: | Significant percentage reductions in regulated CO <sub>2</sub> emissions can be achieved, subject to available roof area.                                                                                                |
| Cost feasibility:                        | Low – Circa £1k-1.5k/kWp.                                                                                                                                                                                                |
| Practicality:                            | PV easy to install and can be fed to the building to provide a reduction in the energy demand, fuel bills and CO <sub>2</sub> emissions. Space exists to the main pitched roofs for each dwelling to accommodate panels. |
| Planning restrictions:                   | Consideration of externally mounted panels.                                                                                                                                                                              |
| Site related constraints:                | None.                                                                                                                                                                                                                    |
| Operating noise:                         | None.                                                                                                                                                                                                                    |
| Ongoing maintenance:                     | Low – Annual cleaning of panels.                                                                                                                                                                                         |
| Overall Feasibility:                     | Considered feasible for this development.                                                                                                                                                                                |

Solar Thermal

|                                          |                                                                                                                                                                                                                                                            |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO <sub>2</sub> reduction effectiveness: | Reduction in CO <sub>2</sub> emissions is limited by available roof space and demand for hot water. Estimated potential 5-10% reduction in CO <sub>2</sub> emissions.                                                                                      |
| Cost feasibility:                        | Medium.                                                                                                                                                                                                                                                    |
| Practicality:                            | Panels are easy to install, and heat generated can be fed to the building to provide a reduction in the hot water energy demand, fuel bills and CO <sub>2</sub> emissions. Space exists to the main pitched roofs for each dwelling to accommodate panels. |
| Planning restrictions:                   | Consideration of externally mounted panels.                                                                                                                                                                                                                |
| Site related constraints:                | None.                                                                                                                                                                                                                                                      |
| Operating noise:                         | Negligible.                                                                                                                                                                                                                                                |
| Ongoing maintenance:                     | Medium – Annual maintenance requirements of mechanical plant.                                                                                                                                                                                              |
| Overall Feasibility:                     | Considered feasible for this development.                                                                                                                                                                                                                  |

Wind Turbines

|                                          |                                                                                                                                                                                                                                                    |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CO <sub>2</sub> reduction effectiveness: | Estimated potential 3-5% reduction in CO <sub>2</sub> emissions                                                                                                                                                                                    |
| Cost feasibility:                        | Medium – High.                                                                                                                                                                                                                                     |
| Practicality:                            | The standalone wind turbine would require sufficient open space on the site to locate the turbine and be far enough away from buildings to be able to work effectively. Building mounted wind turbines have not been shown to be highly effective. |
| Planning restrictions:                   | Consideration of higher impact externally mounted plant and effect on neighbouring properties.                                                                                                                                                     |
| Site related constraints:                | Limitations on available roof space, wind speed and efficiency of this technology.                                                                                                                                                                 |
| Operating noise:                         | Medium-High                                                                                                                                                                                                                                        |
| Ongoing maintenance:                     | High – Annual maintenance of motors.                                                                                                                                                                                                               |
| Overall Feasibility:                     | Not considered feasible for this development.                                                                                                                                                                                                      |

Selected Technology

In consideration of the above, photovoltaics in combination with electric air source heat pumps are identified as the most appropriate and feasible low-carbon technology solution for the proposed development, at a level appropriate to the current stage of design.

Role of Air Source Heat Pumps in combination with Photovoltaics

**Core Technology:** ASHPs operate by extracting heat from the outside air to provide heating and hot water for buildings. They are considered a renewable technology because they utilize ambient energy, significantly reducing reliance on fossil fuels. Photovoltaic (PV) panels generate renewable electricity on-site, from solar energy.

**Policy Support:** The Mid Sussex District Plan supports the integration of air source heat pumps and photovoltaic systems as part of its broader strategy for reducing carbon emissions and supporting low-carbon energy solutions. While the strategy prioritises minimising energy demand and improving energy efficiency (Be Lean), it then promotes the use of technologies such as ASHPs and PV to meet residual space heating, hot water, and electricity demands.

**Planning Requirements:** Developments are encouraged, and in some cases required, to demonstrate how renewable and low-carbon energy technologies, including air source heat pumps and photovoltaics, are incorporated to support carbon reduction targets at both local and national levels.

**Efficiency and Impact:** By displacing traditional gas or oil boilers, ASHPs offer a lower-carbon alternative and contribute to reduced operational carbon emissions. When combined with on-site photovoltaic generation, electricity demand associated with building services can be partially offset, reducing reliance on grid electricity. Their inclusion at the ‘Be Green’ stage ensures these technologies are applied once energy demand has been minimised, supporting an effective and proportionate strategy.

Implementation Considerations

ASHPs are especially supported in new developments and major refurbishments, where their integration can be planned from the outset. The implementation of PV panels requires suitable unshaded roof areas, appropriate structural capacity, and provision for safe installation and maintenance access to ensure optimal performance and long-term reliability. Planning authorities may encourage or require performance standards for renewable technologies, and grant permission for ASHP installations if there are no significant adverse impacts on local amenities or the environment. Final system specification, layout, and performance will be confirmed at detailed design stage, subject to compliance with Building Regulations and any relevant planning conditions.

Benefits of ASHPs and Photovoltaic Panels

Renewable Source Utilisation: Uses freely available ambient air to generate heat. While PV converts solar energy to on-site renewable energy which can be utilised to offset reliance on fossil fuels.

- Reduced Emissions: Supports district and national carbon budgets.
- Synergy with Efficient Design: Most effective when paired with high building insulation and low energy demand.

BE GREEN SUMMARY

AIR SOURCE HEAT PUMPS, IN COMBINATION WITH ON-SITE PHOTOVOLTAIC GENERATION, ARE IDENTIFIED AS THE MOST FEASIBLE AND APPROPRIATE LOW-CARBON ENERGY SOLUTION FOR THE PROPOSED DEVELOPMENT. AT THE *BE GREEN* STAGE OF THE ENERGY HIERARCHY, THE INCORPORATION OF THESE TECHNOLOGIES IS ESTIMATED TO DELIVER AN INDICATIVE REDUCTION OF UP TO **APPROXIMATELY 60%** IN REGULATED CARBON EMISSIONS, RELATIVE TO A NOTIONAL FOSSIL FUEL-BASED HEATING BASELINE, SUBJECT TO CONFIRMATION THROUGH DETAILED DESIGN AND SAP MODELLING AT BUILDING REGULATIONS STAGE.

# Conclusion

In accordance with the energy hierarchy and the requirements of the Mid Sussex District Plan, this Energy Strategy sets out a proportionate and policy-led approach to reducing energy demand and carbon emissions for the proposed development.

## *Fabric First Approach*

The development is proposed to adopt a fabric-first strategy, incorporating enhanced levels of thermal insulation, reduced thermal bridging, and improved airtightness relative to minimum Building Regulations standards. High-performance glazing and energy-efficient LED lighting are proposed to further support reductions in overall energy demand.

These measures are intended to reduce space heating and cooling requirements and support improved operational energy efficiency, contributing to reduced regulated carbon emissions and increased resilience to future climate conditions. Fabric efficiency measures at the be lean stage are estimated to deliver a minimum 10% reduction in regulated CO<sub>2</sub> emissions.

## *Low and Zero Carbon Technologies*

Air source heat pumps, in combination with on-site photovoltaic energy generation, are proposed to provide low-carbon space heating and domestic hot water. This approach aligns with national and local policy objectives to phase out fossil fuel-based heating systems in new development and supports the transition to lower-carbon energy sources.

At the Be Green stage of the energy hierarchy, the incorporation of these technologies is estimated to deliver indicative reductions of up to approximately 60% in regulated carbon emissions, relative to a notional fossil fuel-based heating baseline, subject to confirmation through detailed design and SAP modelling at Building Regulations stage.

## *Summary & Policy Compliance*

The Energy Strategy demonstrates that the proposed development is capable, in principle, of achieving significant reductions in energy demand and regulated carbon emissions through a combination of fabric efficiency measures and low-carbon technologies.

The approach set out within this report is consistent with the objectives of Policy DP39 of the Mid Sussex District Plan and relevant national planning policy. Final energy performance and carbon reductions will be confirmed through detailed SAP assessments once full design information is available.

### STRATEGY SUMMARY

THE PROPOSED DEVELOPMENT ADOPTS A FABRIC-FIRST, LOW-CARBON ENERGY STRATEGY TO MINIMISE ENERGY DEMAND AND REDUCE REGULATED CARBON EMISSIONS.

FABRIC EFFICIENCY MEASURES AT THE BE LEAN STAGE ARE ESTIMATED TO DELIVER A MINIMUM 10% REDUCTION IN REGULATED CO<sub>2</sub> EMISSIONS, WHILE LOW-CARBON TECHNOLOGIES AT THE BE GREEN STAGE, INCLUDING AIR SOURCE HEAT PUMPS AND ON-SITE PHOTOVOLTAIC ENERGY GENERATION, ARE ESTIMATED TO DELIVER UP TO APPROXIMATELY 60% ADDITIONAL REDUCTIONS.

TOGETHER, THESE MEASURES DEMONSTRATE THAT THE DEVELOPMENT IS CAPABLE OF ACHIEVING AN OVERALL INDICATIVE REDUCTION OF APPROXIMATELY 70% IN REGULATED CARBON EMISSIONS, SUBJECT TO CONFIRMATION THROUGH DETAILED DESIGN AND SAP MODELLING AT BUILDING REGULATIONS STAGE.



*Building a brighter, more sustainable environment.*



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