

Land West of Selsfield Road, Ardingly Energy & Sustainability Statement

Version 02

N^U PLANET

Project Details

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Land West of Selsfield Road,
Ardingly

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CLIENT

Antler Homes LTD

REPORT

Reserved Matters
Energy & Sustainability
Statement

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Executive Summary

This Energy & Sustainability Statement has been prepared on behalf of Antler Homes PLC to support the Reserved Matters Application in respect of the outline application consent [Ref: DM/22/1575] on Land West of Selsfield Road, Ardingly, West Sussex, for the development of up to 35 dwellings within the Mid Sussex District Council area.

The ambition of the proposed project is to promote a simple approach to energy efficiency and low carbon building that exploits the benefits of current technologies, and delivers performance outcomes in practise, minimising carbon emission now and in the future.

The graphs opposite details how the design has been developed in line with the energy hierarchy, with the top graph confirming the percentage improvement and the bottom graph confirming the reduction in emissions at each stage of the assessment.

Applicable conditions

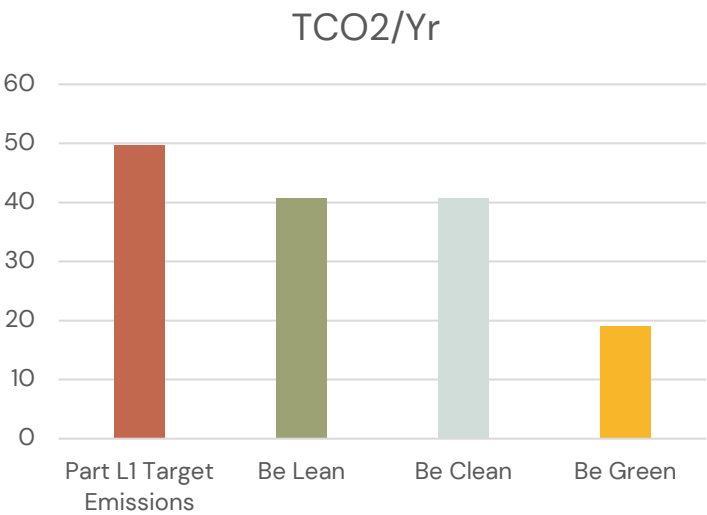
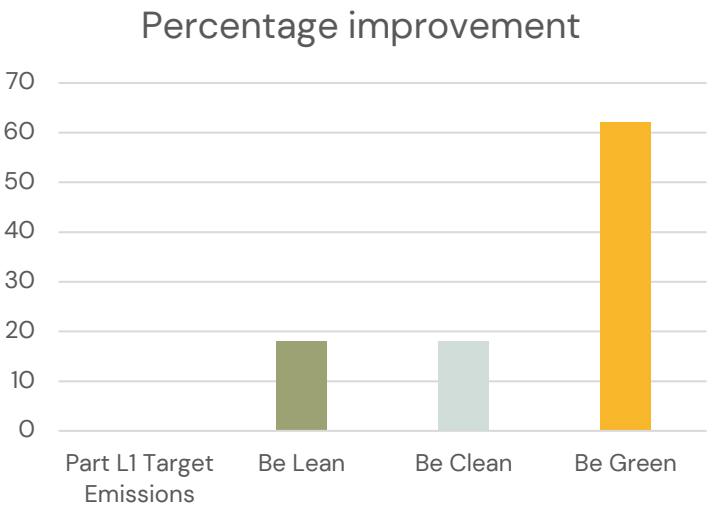
This statement also outlines key sustainable design considerations and addresses the following applicable conditions attached to the outline application:

Condition 26 – The application for reserved matters shall be accompanied by a fully detailed Sustainability and energy report and recommendations which demonstrates how the development will be efficient in its use of energy and water. The development shall only be implemented in accordance with the approved details set out in that report.

Reason: To accord with policy DP39 of the Mid Sussex District Plan 2014-2031 and section 14 of the NPPF.

Response

The energy & sustainability statement demonstrates that the development meets the minimum energy requirement. Also, design stage flow rate targets have been set and a supporting water calculation confirming a water consumption figure of 104.85l/p/d is achievable.



Executive Summary

Development Overview

Description: This application follows the approval of the outline application (Ref: DM/22/1575) in 2023 for the development of up to 35 dwellings, associated landscaping and infrastructure, with all matters except for means of access, at Land West of Selsfield Road, Ardingly, West Sussex

Units: 35 residential units comprising

- 4No. Two-bedroom dwellings
- 10No. Three-bedroom dwellings
- 3No. Three/Four-bedroom dwellings
- 8No. Four-bedroom dwellings
- 4No. Four/Five-bedroom dwellings
- 6No. Five-bedroom dwellings

Affordable housing will be provided at 31% of the 35 proposed units as follow:

- 4No. two-bedroom dwellings
- 7No. three-bedroom dwellings

Twenty-four homes are designed in accordance with M4 Category 2, Accessible and Adaptable dwelling standards.

A total number of 105 parking spaces will be provided, including compliant EVC provision.

There will be a minimum biodiversity net gain of 20.75% for Habitats and 85.60% for Hedgerows across the site.



FIGURE O1 –SITE PLAN [ANTLER HOMES]

Executive Summary

Policy & targets

Key energy and sustainability policies and targets from Mid Sussex District Plan are summarised below with a snapshot of the development’s alignment with these goals:

Mid Sussex District Plan 2014-2031 [March 2018]:

DP39 – Sustainable Design and Construction

Policy DP39 requires all development proposals to improve the sustainability of development by minimising energy consumption through the use of natural lighting and ventilation, using communal heating networks where viable and feasible, using renewable source of energy, and limit water use to 110 litres/person/day

- Minimise energy use and improve residents' comfort through incorporating MVHR and targeting the Air Permeability of 3 m3/hr.m2 @50PA
- Maximum water consumption of 110L/person/day
- Homes to be built with high-performance fabric
- Incorporate low and zero carbon technologies [LZC]
- Enhanced ecological value
- High performance building fabric helps minimise energy consumption
- Heating and hot water delivered by ASHP powered systems.
- Cumulative carbon reduction of 62% CO₂ over Part L1 2021 minimum requirements
- All new dwellings achieve TER in Building Regulations Part L

DP42 – Water Infrastructure and the Water Environment

- Water consumption minimised through low flow fittings
- Maximum water consumption of 110L/person/day

DP21 – Transport

- Cycle parking will be provided for each residential dwelling
- A total number of 105 parking spaces will be provided, including compliant EVC provision
- Appropriate integrated pedestrian and cycle pathways will be provided
- Safe and suitable access to the site will be provided

Executive Summary

Be Lean [Use Less Energy]

- The development incorporates high-performance fabric, energy-efficient lighting, delivering a site wide average of 18% saving in CO₂ emissions through passive design measures.

Be Clean [Supply Energy Efficiently]

- It is not possible to connect to an existing heat network at this currently time, so no further reductions can be achieved at this stage of the energy hierarchy

Be Green [Use Renewable Energy]

- Heating and hot water will be delivered by ASHP's to houses.

The strategy achieves a total reduction in carbon emissions of 62% across the site.

Introduction

This Energy & Sustainability Statement supports the Reserved Matters Application on Land West of Selsfield Road, Ardingly, West Sussex, for the development of up to 35 dwellings, associated landscaping and infrastructure, with all matters reserved except for means of access.

It outlines the proposed energy & sustainable design statement and demonstrates compliance with relevant energy and sustainability policies for Mid Sussex District Plan 2014-2031.

Development overview

Description: This application follows the approval of the outline application (Ref: DM/22/1575) in 2023 for the development of up to 35 dwellings, associated landscaping and infrastructure, with all matters except for means of access, at Land West of Selsfield Road, Ardingly, West Sussex

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A total number of 105 parking spaces will be provided, including compliant EVC provision.

There will be a minimum biodiversity net gain of 20.75% for Habitats and 85.60% for Hedgerows across the site.

TABLE 01 ACCOMMODATION SCHEDULE	NO. OF BEDROOMS	AFFORDABLE RENT	OPEN MARKET	TOTAL
HOUSE TYPE B	5	-	2	2
HOUSE TYPE C	4	-	2	2
HOUSE TYPE C [WITH BAY WINDOW]	4	-	2	2
HOUSE TYPE D	4	-	4	4
HOUSE TYPE F	5	-	2	2
HOUSE TYPE F [WITH BAY WINDOW]	5	-	2	2
HOUSE TYPE G	5	-	1	1
HOUSE TYPE J	2	4	-	4
HOUSE TYPE K	3	7	-	7
HOUSE TYPE L	3 / 4	-	1	1
HOUSE TYPE N	3 / 4	-	3	3
HOUSE TYPE P	4 / 5	-	1	1
HOUSE TYPE Q	4 / 5	-	2	2
HOUSE TYPE S [WITH BAY WINDOW]	4 / 5	-	1	1
HOUSE TYPE S	4 / 5	-	1	1
TOTAL	-	11	24	35

Objectives

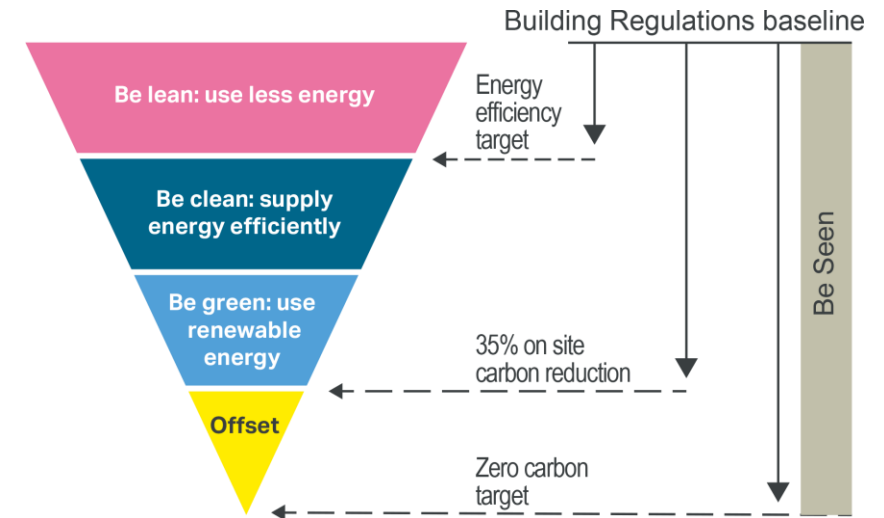
The objectives of this report are to demonstrate how the development responds to national and local planning sustainability policies, and to outline how CO₂ emissions will be minimised in accordance with national Building Regulations requirements. This strategy has considered several important objectives, including:

- A viable reduction in CO₂ emissions with an affordable, deliverable, and technically appropriate strategy.
- Delivering a high-quality development that is adaptable to future changes in climate.
- Minimising the environmental impact of the development, both locally and globally.
- Achieving the highest possible levels of sustainable design and construction.
- Reducing emissions of pollutants such as Nitrogen Oxide [NO_x] and particulate matter.
- Creating a safe, comfortable, and adaptable living environment that meets the needs of future occupants.

Energy hierarchy

The purpose of the Energy Hierarchy is to demonstrate that climate change mitigation measures are a fundamental part of the development's design philosophy.

- Be Lean: Considers passive design and energy efficiency measures.
- Be Clean: Exploit local energy resources [such as secondary heat] and supply energy efficiently and cleanly.
- Be Green: Maximise opportunities for renewable energy producing, storing, and using renewable energy on-site.
- Be Seen: Implementing systems to monitor, verify, and report on energy performance



Methodology

This document follows guidelines set out in the Greater London Authority [GLA] Energy Planning Guidance for the preparation of Energy Assessments [GLA, 06.22].

All calculations are based on drawings and information provided for planning approval. The results provide an initial assessment of the design to ensure compliance with relevant planning policies and requirements.

The assessment has followed the Standard Assessment Procedure [SAP] for the Energy Rating of Dwellings, using versions SAP10.2 of the SAP software to establish both baseline and target efficiencies for the proposed development.

All 15 architypes have been assessed to establish the credentials of the development and provide a thorough representation of the site wide emissions and consumption.

The modelled units are listed in Table 02.

Table 02

Architype	Assessed unit	Architype	Assessed unit
HOUSE TYPE B	2	HOUSE TYPE K	7
HOUSE TYPE C	2	HOUSE TYPE L	1
HOUSE TYPE C [WITH BAY WINDOW]	2	HOUSE TYPE N	3
HOUSE TYPE D	4	HOUSE TYPE P	1
HOUSE TYPE F	2	HOUSE TYPE Q	2
HOUSE TYPE F [WITH BAY WINDOW]	2	HOUSE TYPE S [WITH BAY WINDOW]	1
HOUSE TYPE G	1	HOUSE TYPE S	1
HOUSE TYPE J	4	TOTAL	35

Planning policy and regulations

Relevant Local Policy – Mid Sussex District Plan 2014-2031 [March 2018]:

DP21 – Transport

DP26 – Character and Design

DP28 – Accessibility

DP29 – Noise, Air and Light Pollution

DP38 – Biodiversity

DP39 – Sustainable Design and Construction

DP41 – Flood Risk and Drainage

DP42 – Water Infrastructure and the Water Environment

Relevant National Policy – NPPF

- Chapter 02. Achieving Sustainable Development
- Chapter 14. Meeting the challenge of climate change, flooding, and coastal change

Building Regulations

- Approved Document Part L
- Approved Document Part O
- Approved Document Part F
- Approved Document Part G

The latest version of the above documents has been used in each case.

Energy Strategy

The Energy Hierarchy provides a structured approach for assessing the energy efficiency of new developments at the planning stage. It prioritises a fabric-first strategy to minimise energy consumption before considering low or zero-carbon technologies and renewable energy solutions.

To accurately measure the improvements beyond the minimum standards set out in Part L1 2021 of the Building Regulations, the proposed scheme has been modelled using the latest SAP10. This approach ensures compliance with UK Building Regulations while providing detailed analysis of the development's energy performance.

The modelling establishes both a Target Emission Rating [TER] and Target Fabric Energy Efficiency [TFEE] for the notional development, serving as baseline benchmarks. These targets are then used to assess improvements across each stage of the Energy Hierarchy.

Details of the specifications and the corresponding reductions in carbon emissions at each stage are outlined in the following sections.



Be Lean

The Be Lean stage of the Energy Hierarchy is a fundamental first step, focusing on reducing energy demand through efficiency measures. Minimising energy waste at design and operation levels can lead to significant reductions in carbon emissions and energy consumption.

Prioritising energy efficiency before incorporating low-carbon or renewable systems ensures that the design is optimised, embedding sustainability into the development from the outset.

As with all good design, the development follows a fabric first approach to ensure energy consumption is minimised before consideration is given to LZC and renewable technologies. The following improvements have been made over the notional building highlighting the commitment to tackle energy consumption through better building practices

- Roofs $0.11\text{W/m}^2\text{K}$ – 0% improvement
- Walls $0.18\text{W/m}^2\text{K}$ - 0% improvement
- Floor $0.13\text{W/m}^2\text{K}$ – 0% improvement
- Windows $1.2\text{W/m}^2\text{K}$ – 0% improvement
- External doors $1.0\text{W/m}^2\text{K}$ – 0% improvement
- Airtightness $3.0\text{m}^3/\text{m}^2.\text{hr}$ – 40% improvement

Be Lean

Following the implementation of passive design and energy efficiency measures set out on the previous page, the ‘Be Lean’ stage delivers a sitewide average of 18% reduction in CO₂ emissions beyond the baseline notional development.

The fabric specifications used in the analysis are given in Table 03; with modelling results provided in Table 04. The heating and hot water systems used in the analysis are taken from the notional building as per conventions for Energy Statements.

In addition to minimising energy consumption across the development, the strategy outlined in this phase will deliver a thermally efficient, comfortable development, with high levels of natural daylight and internal air quality.

Please refer to Appendix 01 for Be Lean SAP worksheets

TABLE 03		BE LEAN
U-VALUES [W/M²K]	GROUND FLOOR	0.13
	EXTERNAL WALLS	0.18
	ROOF	0.11
	WINDOWS	1.2 [0.63 G-VALUE]
	ROOF WINDOWS	1.2 [0.63 G-VALUE]
	EXTERNAL DOORS	1.0 [0.63 G-VALUE]
THERMAL BRIDGING [PSI VALUES]		TARGET PSI VALUES FROM TABLE R1 [SAP10 DOCUMENT]
AIR PERMEABILITY		3 M³/HR.M² @50PA
VENTILATION STRATEGY		MVHR [ZEHRDER COMFOAIR]
HEATING		INDIVIDUAL GAS BOILERS WITH 92.5% EFFICIENCY – UFH / RADIATORS – ZONE CONTROLS
HOT WATER SYSTEM		200L DHW CYLINDER FED FROM BOILER – MAX HEAT LOSS 1.72 KWH/DAY
RENEWABLES		NOT INCLUDED AT THIS STAGE

TABLE 04	BE LEAN
TARGET ENERGY RATING [TER]	49.70 TCO ₂ /yr
DWELLING ENERGY RATING [DER]	40.80 TCO ₂ /yr
SITOWIDE AVERAGE CO ₂ REDUCTION OVER PART L1 2021 [%]	18.00
TARGET FABRIC ENERGY EFFICIENCY [TFEE]	42.7 kWh/m²
DWELLING FABRIC ENERGY EFFICIENCY [DFEE]	41.2 kWh/m²
SITE WIDE AVERAGE IMPROVEMENT OVER PART L [%]	3.50

Be Clean

The specifications used in the analysis are given in Table 05, with modelling results provided in Table 06.

It is not possible to connect to an existing Heat Network, so further reductions in emissions are unachievable at this stage, so the total reduction through the first two stages of the Energy Hierarchy remains as calculated at the Be Lean phase.

TABLE 05		BE CLEAN
U-VALUES [W/M²K]	GROUND FLOOR	0.13
	EXTERNAL WALLS	0.18
	ROOF	0.11
	WINDOWS	1.2 [0.63 G-VALUE]
	ROOF WINDOWS	1.2 [0.63 G-VALUE]
	EXTERNAL DOORS	1.0 [0.63 G-VALUE]
THERMAL BRIDGING [PSI VALUES]		TARGET PSI VALUES FROM TABLE R1 [SAP10 DOCUMENT]
AIR PERMEABILITY		3 M³/HR.M² @50PA
VENTILATION STRATEGY		MVHR [ZEHNDER COMFOAIR]
HEATING		INDIVIDUAL GAS BOILERS WITH 92.5% EFFICIENCY – UFH / RADIATORS – ZONE CONTROLS
HOT WATER SYSTEM		200L DHW CYLINDER FED FROM BOILER – MAX HEAT LOSS 1.72 KWH/DAY
RENEWABLES		NOT INCLUDED AT THIS STAGE

TABLE 06	BE CLEAN
TARGET ENERGY RATING [TER]	49.70 TCO ₂ /yr
DWELLING ENERGY RATING [DER]	40.80 TCO ₂ /yr
SITEWIDE AVERAGE CO ₂ REDUCTION OVER PART L1 2021 [%]	18.00
TARGET FABRIC ENERGY EFFICIENCY [TFEE]	42.7 kWh/m²
DWELLING FABRIC ENERGY EFFICIENCY [DFEE]	41.2 kWh/m²
SITEWIDE AVERAGE IMPROVEMENT OVER PART L [%]	3.50

Be Green

Be Green encourages the incorporation of Low and Zero Carbon [LZC] & renewable technologies in a development to reduce site dependency on grid services and lower CO₂ emissions.

A feasibility study, set out over the next few pages, assesses the suitability of each technology for the development and whether they will be adopted as part of the final specification.

LZC Feasibility study

Air source heat pump [ASHP] ASHPs utilise the temperature difference between external and internal spaces. A heat exchanger is used to convert the extracted heat for use in heating and DHW. SUITABILITY Available space– ASHP systems will require external compressor units which could be accommodated within the external space of the houses but not the flats. PROPOSAL It is considered that ASHP systems would be an ideal solution for the houses on this development.	Proposed	Solar thermal [Hot Water] Solar thermal collectors provide hot water by utilising the energy present in sunlight to heat a collector; this is then transferred to a circulating fluid and used to heat hot water. SUITABILITY Potential – Solar thermal is considered a viable technology for the project due to the location and available roof area. PROPOSAL Other technologies may offer further benefits, so this technology has not been included at the preliminary design stage.	Suitable	Photovoltaics [PV] PVs generate electricity from sunlight. PV systems require accessible roof space for the system to be installed and function correctly. SUITABILITY Potential energy generation – A PV array on the proposed development would generate a proficient level of regular solar electricity due to the open surrounding allowing for minimal overshadowing, this would help running costs by reducing the need for grid electricity. PROPOSAL Whilst this technology is considered suitable for this type of development, solar PV has not been included in the energy strategy.	Suitable	Biomass boiler Biomass boilers use a carbon neutral fuel source, such as wood pellets, to generate heat for hot water and space heating. These systems require significant space for both the boilers and storage of the fuel. SUITABILITY Available space – Biomass boiler systems require a storage facility for the fuel and plant space, which is not available on this project. There are several pros and cons for using this technology. Historically this type of system was regarded as a carbon neutral system that will generate the dwellings heat & hot water demand using largely waste material. However, more recent studies have confirmed that burning biomass fuel can lead to high pollution issues. PROPOSAL Biomass has been ruled out given limited space and high pollution issues.	Not Suitable
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LZC Feasibility study

Small scale wind turbines Whilst small scale wind turbines can produce a high degree of energy, this is dependent on a consistent flow of air which makes them difficult to design into most developments. SUITABILITY Available space – There is limited available space on the site to support a wind turbine. PROPOSAL Due to the highly complex requirements for a wind turbine installation to run efficiently, and the potential impact of reverberation and noise on the occupants this technology is not considered appropriate for the development	Not Suitable	Ground source heat pump [GSHP] GSHPs extract heat [or coolth] from the ground. Systems can be installed horizontally in the ground over a large area, or vertically in boreholes. A heat exchanger is used to convert the extracted heat for use in heating and DHW. SUITABILITY Available space – There is limited space for horizontal heat loops, but the site could support vertical borehole loops. GSHPs are regarded as a very efficient way to meet the heating & hot water demand of low energy buildings. PROPOSAL It is considered that a GSHP system is not suitable for this project due to the high installation costs that could impact the viability of the project.	Not Suitable	Exhaust air heat pump Exhaust air heat pumps are a commonly adopted technology for smaller dwellings with lower heat loss, such as flats. Heat is recovered from exhaust air extracted from the kitchen and bathrooms and used to heat the dwelling and hot water. They will also help the property meet ventilation requirements through a built in MEV or MVHR unit. SUITABILITY Available space – Exhaust air heat pumps will provide a heating, hot water and ventilation solution through a single internal unit, with no need for external plant. These systems normally have a built-in electric immersion heater or require an electric boiler to top up the heat demand, which is why they are more suited for efficient buildings to help keep running costs to a minimum. PROPOSAL EA heat pump are more suitable for smaller dwellings and not considered suitable for this development.	Not Suitable	Energy storage Energy storage allows for energy created on site to be captured and stored for use later, this would be achieved through the installation of an accumulator or battery system. Typically, these systems are paired with photovoltaics to maximise on-site energy use before electricity is exported back to the grid. SUITABILITY Battery storage is an ideal partner for PV, allowing solar electricity to be stored during periods when dwellings are unoccupied, for use when the occupant returns. The battery storage systems are normally wall mounted and can be located either internally or externally. PROPOSAL It is considered that battery storage could be viable in the future for the houses within this proposed development but have not been included at this time.	Suitable
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Be Green Results

The feasibility study has highlighted several appropriate Low or Zero Carbon Technologies [LZC] for the proposed development. The following are seen as the most appropriate technologies:

- Residential:
- Air source heat pumps for the houses

The specifications and reductions in carbon emissions are set out in Tables 07 & 08 respectively.

In conjunction with the specifications set out in the preceding phases, Be Green delivers a combined 62% reduction in CO₂ emissions over Part L1 2021 minimum standards across the site. Please refer to Appendix 01 for Be Green SAP worksheets.

Note: Condition 17 of the outline application requires that the noise rating level (LA_r,Tr) of each heat pump operating at the maximum setting shall be at least 5dB below the background noise level (LA₉₀,T) at the nearest residential façade.

TABLE 07		BE CLEAN
U-VALUES [W/M²K]	GROUND FLOOR	0.13
	EXTERNAL WALLS	0.18
	ROOF	0.11
	WINDOWS	1.2 [0.63 G-VALUE]
	ROOF WINDOWS	1.2 [0.63 G-VALUE]
	EXTERNAL DOORS	1.0 [0.63 G-VALUE]
THERMAL BRIDGING [PSI VALUES]		TARGET PSI VALUES FROM TABLE R1 [SAP10 DOCUMENT]
AIR PERMEABILITY		3 M³/HR.M² @50PA
VENTILATION STRATEGY		MVHR [ZEHNDER COMFOAIR]
HEATING		ASHP 300% EFFICIENCY ZONE CONTROLS
HOT WATER SYSTEM		200L DHW CYLINDER FED FROM BOILER – MAX HEAT LOSS 1.72 KWH/DAY
RENEWABLES		NOT INCLUDED AT THIS STAGE

TABLE 08	BE LEAN
TARGET ENERGY RATING [TER]	49.70 TCO ₂ /yr
DWELLING ENERGY RATING [DER]	19.00 TCO ₂ /yr
SITEWIDE AVERAGE CO ₂ REDUCTION OVER PART L1 2021 [%]	62.00
TARGET FABRIC ENERGY EFFICIENCY [TFEE]	42.7 kWh/m²
DWELLING FABRIC ENERGY EFFICIENCY [DFEE]	41.2 kWh/m²
SITEWIDE AVERAGE IMPROVEMENT OVER PART L [%]	3.50

Be Seen

Monitoring and reporting

Energy display devices that can monitor electricity and primary heating fuel consumption will be provided to each dwelling. These will be installed in a visible location such as a hallway or a kitchen. This can empower occupants to be more aware of their usage and therefore make energy and cost savings, where possible.

Operational cost

When evaluating Energy Strategy options, it's essential to consider operational costs for the end user. While the energy hierarchy prioritizes carbon emissions, this can sometimes lead to higher energy bills.

The proposed development is expected to reduce CO₂ emissions by 18% at the Be Lean stage through passive design measures, lowering heat demand and resulting in energy and cost savings.

The Be Green stage identifies PV as an effective LZC technology, reducing grid electricity reliance and offering additional financial savings for the end user.

Unregulated Energy

Unregulated energy includes electricity from devices like computers, entertainment appliances, washing machines, refrigeration, and cooking equipment. As Building Regulation Part L evolves, improving building efficiency, the proportion of unregulated energy use is expected to rise significantly compared to regulated energy.

Therefore, selecting and using appliances efficiently will become crucial for improving energy performance in homes and workplaces. Educating users on reducing energy consumption through equipment choices will also play a key role. This can be achieved through user guides offering advice on selecting energy-efficient white goods, energy-star-rated computers, and installing voltage optimization or power factor equipment.

Overheating

Consideration to the overheating of buildings during the Summer months has become more prominent in recent times and will continue to be so as Summers become warmer due to climate change.

In order to limit the risk of overheating, the cooling hierarchy will be followed. Mitigation measures are highlighted in Table 09.

The proposals will comply with Part O of the Approved Documents and will include a formal assessment at the Building Regulations stage.

TABLE 09

THE COOLING HIERARCHY	1: REDUCE THE AMOUNT OF HEAT ENTERING THE BUILDING	- GLAZING AREA, PARTICULARLY WEST AND SOUTH FACING, WILL BE MINIMISED WHERE POSSIBLE - LOW-E GLAZING WITH G-VALUE OF 0.63 COULD POTENTIALLY BE USED IN CONJUNCTION WITH SOLAR SHADING.
	2: MINIMISE INTERNAL HEAT GENERATION THROUGH ENERGY EFFICIENT DESIGN	- ALL PRIMARY PIPEWORK WILL BE INSULATED TO REDUCE HEAT LOSS. - LOW ENERGY LIGHTING TO BE INSTALLED THROUGHOUT. - HEAT DISTRIBUTION PIPEWORK LENGTHS TO BE MINIMISED.
	3: MANAGE HEAT WITHIN THE BUILDING THROUGH EXPOSED INTERNAL THERMAL MASS AND HIGH CEILINGS	CEILING HEIGHTS COULD BE MAXIMISED TO REDUCE HEAT BUILDUP.
	4: PROVIDE PASSIVE VENTILATION	OPPOSING OPENING WINDOWS AND DOORS HAVE BEEN CONSIDERED WHERE POSSIBLE TO ALLOW FOR PASSIVE VENTILATION.
	5: PROVIDE MECHANICAL VENTILATION	MECHANICAL VENTILATION WITH HEAT RECOVERY [MVHR] UNITS ARE PROPOSED IN ORDER TO PROVIDE ADEQUATE VENTILATION INTERNALLY.
	6: PROVIDE ACTIVE COOLING SYSTEMS	THE USE OF ACTIVE COOLING SYSTEMS IS NOT INTENDED OR ENCOURAGED, AND SHOULD ONLY BE CONSIDERED ONCE PASSIVE MEASURES HAVE BEEN PRIORITISED,

Sustainability Statement

The purpose of this section of the report is to demonstrate that this development is considered a high quality and sustainable development, as measured against relevant local and national planning policies.

The proposal is to create a high quality, highly sustainable development, which is sympathetic to the local area, whilst also considering its commitments to climate and environmental responsibility.

The following chapters of the report will help demonstrate how the proposed scheme has been designed to adapt to climate change through the incorporation of sustainable design and construction methods, energy and water saving measures, sustainable transport methods, waste reduction techniques, and measures to protect the ecological value of the site.



Flood risk & drainage

The risk of flooding in both rural & urban areas has increased over recent years through a mix of climate change bringing high levels of rain fall which are closer to 100-year storm levels, and extensive development of greenfield sites resulting in the reduction of permeable surfaces. This has led to increased surface water run-off into an already over loaded drainage system.

Flood Risk

The site is within Flood Zone 1 and is considered a very low risk of flooding from groundwater which could be mitigated with an appropriate strategy that directs flows away from properties.

Please refer to the opposing flood risk maps [Figures 02].

Sustainable drainage design

The proposed drainage strategy for the site will be a design based around Surface Water drainage [SuDS] principles and will be controlled and restricted to the Qbar greenfield run-off rate and attenuation and storage to accommodate the 1 in 100-year climate change storm event.

The surface water drainage system will include the following SuDS features:

- Discharge the surface water to an existing ditch to the west
- Use gravity drainage, with a pumping station for lower areas
- Attenuation basin

Further information can be found in the Drainage Statement prepared by GTA Civils & Transport Ltd for this application.

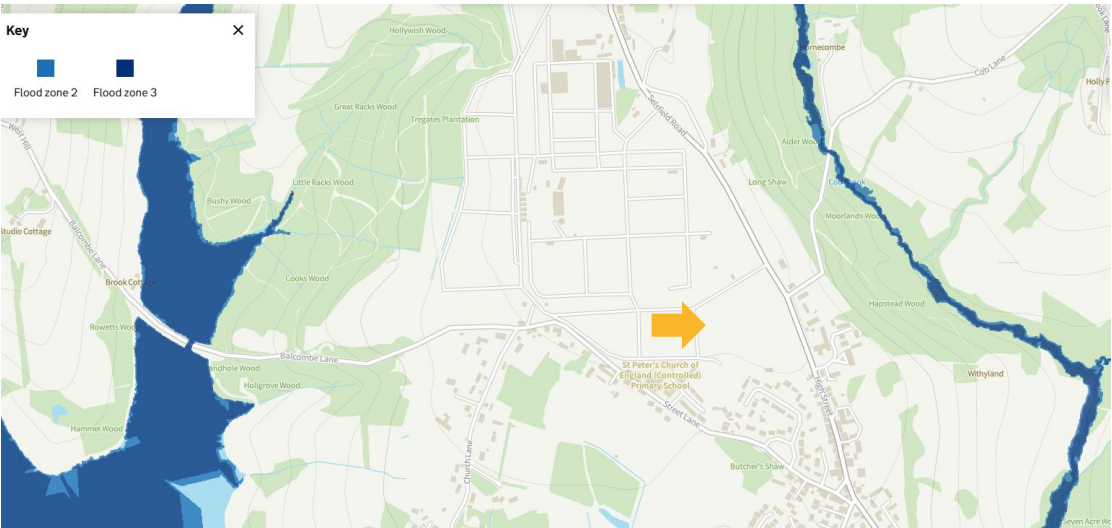


FIGURE 02 – FLOOD RISK ZONES 2 & 3 [GOV.UK]

Water consumption

Conserving water is crucial for sustainable development, as the processing of fresh drinking water consumes significant energy. Domestic water usage contributes approximately 35 million tonnes of CO₂ annually, averaging 1.5 tonnes per household. Additionally, climate change has led to more frequent and prolonged droughts in recent years.

Under Part G of the Building Regulations, new homes are required to limit water consumption to 125 litres per person per day [l/p/d], with an optional target of 110 l/p/d. The Mid Sussex District Policy DP39 mandates that all new dwellings achieve a minimum water efficiency of 110 l/p/d.

Table 10 outlines the flow and flush rate targets for sanitary fittings and appliances to ensure compliance with these water efficiency standards.

The Part G Water Use Calculator [following page] confirms the flow and flush rate targets will achieve a total water consumption figure of 104.85l/p/d.

TABLE 10	TARGET
DUAL FLUSH TOILET FLUSH RATE	6 / 3L
TAP FLOW RATE [BATHROOMS / ENSUITES / W.C.]	5L/MIN
TAP FLOW RATE [KITCHENS]	5L/MIN
BATH VOLUME TO OVERFLOW	170L
SHOWER FLOW RATES	87L/MIN
WASHING MACHINE CONSUMPTION	8.17L/KG OF WASHING
DISHWASHER CONSUMPTION	1.0L PER PLACE SETTING
TOTAL	105L/PERSON/DAY

Part G water efficiency calculator

INSTALLATION	UNIT OF MEASURE	CAPACITY / FLOW RATE	USER FACTOR	FIXED USE [L/PERSON/DAY]	L/PERSON/DAY
W.C. [SINGLE FLUSH]	FLUSH VOLUME [LITRES]	0.00	4.42	0.00	0.00
W.C.[DUAL FLUSH	FULL FLUSH VOLUME [LITRES]	6.00	1.46	0.00	8.76
	PART FLUSH VOLUME [LITRES]	3.00	2.96	0.00	8.88
W.C [MULTIPLE FITTINGS]	AVERAGE FLUSHING VOLUME [LITRES]	0.00	4.42	0.00	0.00
TAPS [EXCLUDING KITCHEN / UTILITY]	FLOW RATE [LITRES / MINUTE]	5.00	1.58	1.58	9.48
BATH	CAPACITY TO OVERFLOW	170.00	0.11	0.00	18.7
SHOWER	FLOW RATE [LITRES / MINUTE]	7.00	4.37	0.00	30.59
BATH [ONLY]	CAPACITY TO OVERFLOW	0.00	0.50	0.00	0.00
SHOWER [ONLY]	FLOW RATE [LITRES / MINUTE]	0.00	5.60	0.00	12.56
KITCHEN / UTILITY TAPS	FLOW RATE [LITRES / MINUTE]	0.00	0.44	10.36	12.56
WASHING MACHINE	LITRES / KG DRY LOAD	8.17	2.10	0.00	17.16
DISHWASHER	LITRES / PLACE SETTING	1.00	3.60	0.00	3.60
WASTE DISPOSAL	LITRES / USE	0.00	3.08	0.00	0.00
WATER SOFTENER	LITRES / PERSON / DAY	0.00	1.00	0.00	109.73
				TOTAL CALCULATED USE	0.00
				CONTRIBUTION FROM GREYWATER [LITRES / PERSON / DAY]	0.00
				CONTRIBUTION FROM RAINWATER [LITRES / PERSON / DAY]	0.00
				NORMALISATION FACTOR	0.91
				TOTAL INTERNAL WATER CONSUMPTION	99.85
				EXTRENAL WATER USE	5.00
				TOTAL WATER CONSUMPTION	104.85

White goods

The EU Energy Labelling Scheme was updated in March 2021 and now uses A to G rankings only, instead of A+++ to D ratings as before.

The new regulations incorporate updated standards with stricter performance requirements and calculations, making it easier to compare efficiency across products.

The proposed development will set the following minimum standards:

- Fridges, freezers, and fridge-freezers – C rating
- Washing machines – C rating
- Dishwashers – C rating

Lighting

Quality lighting design enhances comfort and well-being in both homes and workplaces. The proposed development will ensure adequate lighting access and control within the dwelling, contributing to healthy living.

Lighting levels will adhere to CIBSE and SLL guidelines, with targets outlined in Table 11.

All internal lighting will be energy-efficient, with a maximum average wattage of 10W/m² and luminous efficacy above 75 lumens per circuit watt.

External and communal lighting will be controlled via motion sensors, dusk-to-dawn sensors, and timers.

TABLE 11	LUX LEVELS
ENTRANCE LOBBIES AND STAIRWELLS	150
KITCHENS	500
LIVING SPACE	200
BATHROOMS	200
BEDROOMS	150
HOME OFFICE	500
CIRCULATION SPACE AND STORES	100

Sustainable transport

The applicant has commissioned Ardent Consulting Engineers [ACE] to undertake a Transport Plan Statement in support of the Reserved Matters application. There is a commitment by the applicant to ensure that a sustainable transport policy is adopted.

Sustainable transport links play a key role in the sustainability conversation, contributing positively to both environmental and economic well-being in the areas they serve.

By providing alternative transport options and associated facilities, we can reduce reliance on fossil fuel-powered cars, yielding several benefits:

- Promoting active travel, which enhances health and well-being.
- Reducing congestion and improving air quality through cleaner travel.
- Offering cost savings compared to the maintenance and operation of traditional vehicles.

The site is located approximately 60m to the north of the centre of Ardingly. The site benefits from being with easy walking/ cycling distance of a number of local Facilities. South of the site, there are footways in place on both sides of the road, thereby ensuring there is an existing link with facilities to the south.

Given the rural nature of the site there is little in the way of cycling infrastructure. However, many of the roads are lightly trafficked and suitable for more competent cyclists.

Public transport

The nearest bus stops are located approximately 250m (2-minute walk) to the south of the site on Selsfield Road. These stops are served by route 272 which connects the site with Brighton, Crawley and Haywards Heath. It operates approximately every 2 hours with a higher frequency to the south during the AM peak.

The nearest railway station is Balcombe, which is approximately 6km cycle distance (22-minute cycle). Balcombe Station is on the Brighton Main Line and is served by rail services between Cambridge and Brighton. 2 trains operate every hour in each direction and also stop at Haywards Heath, Gatwick Airport, East Croydon, London Bridge, London St Pancras International and Stevenage.

Cycling and walking

- Cycle parking will be provided for each residential dwelling
- Appropriate integrated pedestrian and cycle pathways will be provided
- Safe and suitable access to the site will be provided

Electric Vehicle [EV] charging

- A total number of 105 parking spaces will be provided, including compliant EVC provision

Pollution

Noise Pollution

The Applicant is committed to reducing noise disturbance to internal and external areas of dwellings to improve the health and wellbeing of the occupants and to help protect community cohesion.

The impact of breakout noise on the surrounding environment can be reduced and absorbed through an effective planting programme.

Air Quality

Poor air quality is the greatest environmental risk to public health in the UK and is known to exacerbate the impact of pre-existing health conditions. It is not only a major risk to human health but also has significant damaging impacts on both plants and animals.

Between 1990 and 2017, the UK’s estimated emissions of nitrogen oxides reduced by 70%, and the estimated emissions of PM10 particulate matter reduced by 55% (DEFRA, 2018). This must continue to fall in future years. The applicant is committed to reducing the proposed development’s negative impact on air quality during construction and operation.

This development has considered its potential impact on air pollution and has moved to minimise this at the operational stage through implementing a series of embedded design measures comprising an all-electric energy strategy [which includes exhaust air heat pumps and PV], the installation of electric vehicle charging points, energy efficiency measures, provision of cycle parking and implementation of a travel plan to encourage sustainable transport modes.

Ventilation

To avoid problems associated with the build-up of pollutants and humidity levels within the dwellings, whilst avoiding excessive heat loss, ventilation will be designed to meet the requirements of Approved Documents L & F.

Light Pollution

Lighting pollution is a 20th century problem, created by the adoption of poor design and installed electric lighting. It can have a disruptive impact on both diurnal and nocturnal wildlife, contributes to CO² emissions, disrupts human sleep, and obscures the stars in the night sky.

The development is committed to reducing the effect of light pollution by following Dark Skies design principles to minimise the impact on the night-time sky.

A compliant design will be developed at the detailed design stage for all private space and security lighting.



Design criteria for external lighting:

- Lights will provide downlighting only.
- Wall lights will have a 36-degree beam angle and be mounted no higher than 1500mm from the floor.
- Ramp and step lighting will illuminate only the deck or tread.
- Lighting will offer warm light [3000K] with a maximum illuminance of <500 Lux.
- Controls will include dusk-to-dawn sensors and timers to limit usage.
- Lighting will be fitted with a master switch to allow all external lighting to be switched off when the site is not occupied.
- All windows to be fitted with curtains / shades to reduce light pollution

Sustainable materials

Responsible sourcing of materials

Whilst not a component of UK planning or building regulations legislation, material choice can have a significant effect on the carbon footprint of a development.

The applicant is committed to minimising the developments environmental impact through best practice procurement management.

All timber products will be sourced from FSC or PEFC sources, with all other materials to be purchased from suppliers/manufacturers that have an accredited Environmental Management System [EMS] [BES6001, ISO14001 or BS8555] for the extraction and manufacturing process of the proposed material.

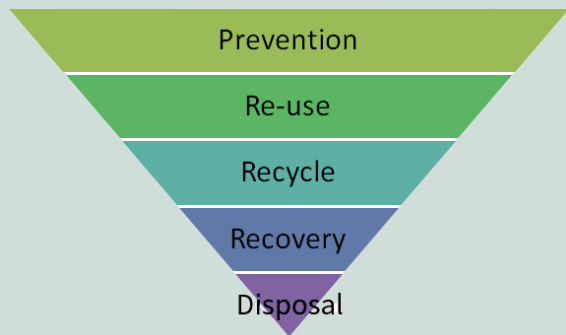
Green Guide rated materials

All construction materials will be considered to maximise the selection of materials with low embodied energy that score highly in the Building Research Establishment (BRE) Green Guide for Building Specification.



Waste management

- Reduce, reuse, recycle
- Waste reduction and recycling is another key challenge of sustainable development. The Waste Hierarchy below illustrates the priorities waste management should follow to reduce impact on the environment.



–Household waste management

The applicant is committed to following the above waste hierarchy to help reduce waste sent to landfill.

Suitable internal storage containers for household waste will be provided in each dwelling; containers will allow for waste and recycling separation to encourage sustainable recycling habits by the occupants.

Adequate storage is to be provided throughout the site, where both recyclable and non-recyclable waste can be stored in accordance with Mid Sussex District waste collection service.

- Composting
- Managing green waste through onsite composting allows some kitchen and garden waste to be re-used to enrich the soil, whilst also reducing CO₂ emissions by limiting the need to transport waste from site. It is proposed to include composting bins in the gardens of each house.
- An internal 8l caddy bin will also be provided in each new dwelling along with an information leaflet outlining what should and should not be composted.



Build Quality

–Security

- The applicant is committed to ensuring the development is safe & secure for the residents, which will reduce the fear of crimes being committed and the risk and associated costs of crime.

–Sound insulation

- To reduce the likelihood of noise complaints and to ensure a high-quality development is created, the development will be aiming to achieve airborne sound insulation values that will improve upon the performance standards outlined in Building Regulation Approved Document Part E.

– Inclusive design

- Twenty-four of the dwellings are designed in accordance with M4[2] Category 2, ensuring accessible and adaptable living spaces for all, regardless of age, mobility, or disability. This approach provides flexibility and futureproofing, allowing the accommodation to adapt to changing needs and technologies.
- In light of recent global events, the design includes provisions for remote working, with dedicated space, extra power sockets, and reliable Wi-Fi connectivity as per Approved Document Part R.

–Daylight & Sunlight

- The promotion of good daylighting levels contributes to sustainability through improving the occupant's quality of life and reducing the building's energy consumption by minimising the need for artificial lighting.



Health & Wellbeing

Internal air quality

Air quality in modern homes is becoming a bigger consideration in new development design. The reality is that poor air quality will impact on the homeowner's health, leading to respiratory illnesses.

All internal and external finishes within the development will aim to have low volatile organic compound [VOC] content.

The proposed MVHR systems will improve internal air quality by providing a consistent supply of filter fresh air to all habitable rooms.

Amenity space

Access to flexible external amenity space is a key consideration of health and wellbeing. This development has focused on providing a mix of private and communal spaces, providing residents with a range of options to entertain, work on personal fitness or just relax.

Private amenity space

All dwellings will have access to a mixture of private and communal amenity spaces. All houses will have direct access to private gardens.

The gardens will allow homeowners to undertake a range of activities, such as growing their own vegetables, play space, and outdoor cooking, within a secure and safe environment.

Public

The proposed design includes several open public areas.



FIGURE 03 – SITE PLAN – ANTLER HOMES

Ecology

Existing Ecological value

GreenLink Ecology Ltd was commissioned to carry out a tree survey of the site. The report demonstrates that the site is dominated by amenity grassland, along with gravel paths, ruderal vegetation, boundary hedgerows and scattered trees. Furthermore, it confirms there are no Tree Preservation Orders (TPOs) on the site, and the site is not within a Conservation Area (CA). The results confirms that:

- The trees within the survey area vary considerably in terms of condition and amenity value within the context of the local area.
- A total of nine individual trees, one group of trees and part of one hedgerow will be removed to facilitate the proposed development. Through the specified tree protection measures and construction techniques, it will be possible to minimise the impact of the proposed development on the retained trees.
- Overall, there are no significant arboriculturally constraints preventing the proposed development from , subject to the recommendations made within the report.

Enhanced Ecological value

The applicant has committed to improving the ecological value of the site by following the recommendations set out in the Ecological reports in association with the proposed landscape design. aLyne Ecology Ltd was commissioned to undertake a Biodiversity Net Gain (BNG) Assessment. The BNG report confirms the following proposed ecological enhancement features:

- Habitats: The creation of 35 dwellings and associated hard standing and vegetated gardens will be offset via the creation of a significant area of other neutral grassland, mixed scrub, SUDS, ground level planters, vegetated gardens and the planting of individual trees. This will result in a net gain of 20.75%.
- Hedgerows: Under current proposals, approximately 15m of line of trees habitat will be lost to facilitate a new access road on the northern site boundary. Approximately 4m of native hedgerow habitat will also be lost on the eastern boundary to facilitate two new footpath access points. All native hedgerow with trees will be retained. This will be off-set via the planting of 0.186 km of native hedgerows within the front gardens of residential dwellings as well as the planting of 0.292 km of species-rich native hedgerows around site boundaries. This will result in a net gain of 85.60%.
- Installation of bat and bird boxes.
- Installation of Insect, Hedgehog and Frog & Toad Houses.
- Installation of Reptile Hibernacula
- A biodiversity net gain for habitats and hedgerows and compliance with trading rules (i.e., habitats and hedgerows are like-for-like or better) can be achieved under the current proposals.

Reducing construction impact

Minimising Development Impact on the Community

To ensure seamless integration into the local area, minimising the development's impact on the neighbouring community is a priority.

Construction Site Impact Monitoring

During construction, measures will be implemented to control noise, dust, and debris on roads. These procedures, approved by the development team, will be backed by commercial agreements to ensure compliance.

Additional steps will limit air and water pollution following best practices. Construction traffic will be managed by restricting delivery times, and noise will be minimised from construction activities. Work hours will be agreed upon with the council to further reduce impact on surrounding residents.

Construction Waste Management

Construction waste accounts for approximately 40% of all waste. To reduce landfill contributions, two main strategies will be employed:

- Efficient construction methods and management
- Re-use and recycling of materials on-site

A Site Waste Management Plan [SWMP] will be developed, setting targets for waste minimisation through efficient material ordering and waste segregation.

Site waste segregation streams

- Mix construction, and demolition waste
- Mixed concrete, brick, tiles and ceramics
- Mixed metal
- Plasterboard
- Hazardous
- Soil and Stone
- Waste paint and varnish
- Wooden packaging
- Plastics
- Paper/cardboard

Landscape

Huskisson Brown Associates [HBA] was commissioned to provide a landscape proposal, which confirms the development has successful integration with the surrounding context, with the focus on sustainability. The proposal demonstrates the landscape design is sustainable as follow:

- Prioritise native and climate-adapted species to enhance biodiversity and resilience to climate change
- Specify a diverse range of species to avoid monocultures and reduce susceptibility to pests and diseases
- All planting contributes to the SuDS strategy
- Lighting has been designed to minimise ambient light levels and light spill

Further information can be found in the Landscape Sustainability Notes prepared by Huskisson Brown Associates [HBA] for this application



FIGURE 03 – LANDSCAPE STRATEGY – HUSKISSON BROWN ASSOCIATES

Conclusion

The proposed development demonstrates a robust and policy-compliant energy strategy that:

- Substantial reductions in carbon emissions through energy efficient design and specification, exceeding the benchmarking requirements for residential development in the Mid Sussex District Planning policy.
- Reduces carbon emissions by 62% when compared with Part L 2021 standards.
- Utilises low-carbon and renewable technologies to support the decarbonisation goals.
- Minimises the risk of overheating through good design practices and passive measures.

The proposal aims to deliver a high-quality, sustainable development through eco-friendly design, energy and water efficiency, sustainable transport, waste reduction, and enhanced ecological value.

Key features:

Maximum internal water consumption of 110l/pp/day

- Substantial reductions in carbon emissions through energy efficient design and specification, exceeding the benchmarking requirements for residential development in the Mid Sussex Plan.
- Segregated bins for refuse, and recycling.
- Use of materials with low environmental impact
- Twenty-four dwellings designed to meet Part M4[2] to create an accessible, inclusive development
- A sustainable transport strategy including the provision of cycle storage and electric vehicle charging points
- A minimum Biodiversity Net Gain of 20.75% for Habitats and 85.60% for Hedgerows

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