

Sustainable Energy Statement

Land off the A363 White Horse Business Park

November 2024



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Client
Castlewood Ventures

Turley Reference
xxxx

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1. Introduction

This Sustainable Energy Statement has been prepared to set out sustainability strategy for the proposed development at the White Horse Business Park.

1.1 Introduction

This Energy Statement has been prepared by Turley Sustainability, on behalf of Castlewood Ventures (the applicant) to support the Outline Application for development at Land off the A363 White Horse Business Park which was submitted for approval in 2020 (20/03641/OUT).

This statement provides a summary of the sustainability measures incorporated into the design of the development at this stage, and measures to be considered as part of future detailed design and Reserved Matters applications.

1.2 Site Context and Development

The proposed development forms part of the wider site allocation (Site H2.2) and comprises an outline application for up to 70 homes.

Figure 1 shows an illustrative masterplan for the site with access from Bradley Road to the north, and significant areas of green open space and recreational opportunities.

The site comprises a relatively small area for development, with a significant provision of public open space, pedestrian access routes, new tree planting and habitat creation, orchard and play area, supporting the delivery of a sustainable new development and opportunities for new and existing residents.

1.4 Document Structure

This Statement has been prepared following comments from the Council requesting further detail on how the development responds to the Council's current sustainability requirements, with a Sustainable Energy Statement provided to address issues including sustainable transport, operational carbon, embodied carbon and climate change adaptation.

Chapter 2 of this report provides an overview of relevant national and local legislation, planning policy and guidance.

Chapter 3 provides detail of the Energy Strategy of the proposed development, in line with local Planning Policy.

Please note, the terms "carbon", carbon dioxide (CO₂)" and "greenhouse gas (GHG)" are used interchangeably in this statement depending on the terminology of referenced documents.



Figure 1: Illustrative masterplan

2. Policy Context

This chapter provides an overview of the relevant sustainability planning policy and guidance from a national and local perspective.

2.1 Introduction

This chapter sets out the planning policy context relating to sustainable design and construction at the national and local authority level.

2.2 National Policy

This section sets out a summary of current national guidance and policy in relation to sustainable development.

2.2.1 National Planning Policy Framework

The National Planning Policy Framework¹ (NPPF) provides a framework for the development of locally-prepared plans and the government's planning policies for England and how these are expected to be applied.

Paragraph 7 of the NPPF states that: 'the purpose of the planning system is to contribute to the achievement of sustainable development'.

It states clearly that in order to deliver sustainable development, the planning system must perform three distinct objectives, aligned to the three pillars of sustainability, which must not be taken in isolation and should be pursued jointly:



An **economic** objective to help build a strong, responsive and competitive

economy, by ensuring that sufficient land of the right type is available in the right

places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.



A **social** objective supporting strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and



An **environmental** objective contributing to protecting and enhancing our natural, built and historic environment; including, making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

These objectives are key to the development of plans and the NPPF sets out a number of key themes for consideration which guide the preparation of local plans and policies, ensuring the delivery of sustainable development.

The NPPF recognises the role planning has to play in support of the UK's pursuit of the United Nations Sustainable Development Goals (UNSDGs) which address social progress, economic wellbeing and

1

https://assets.publishing.service.gov.uk/media/65829e99fc07f3000d8d4529/NPPF_December_2023.pdf

environmental protection². Example UNSDGs are presented in **Figure 2**.

Figure 2: Example UN Sustainable Development Goals



2.2.2 Planning Practice Guidance

Planning Practice Guidance (PPG) provides further advice on various planning issues associated with development, including those linked to sustainability and renewable energy and underpins the policies within the NPPF.

PPG is a material consideration in planning decisions and it sets out how local authorities should include policies that protect the local environment and strategies to mitigate and adapt to climate change.

2.2.3 National Design Guide

The National Design Guide published in October 2019 and is based on the national planning policy practice guidance and objective for good design as set out in the NPPF. The Guide introduces ten characteristics of well-designed places which work together to create developments Character and Community, while positively addressing environmental issues affecting climate.

2.2.4 Building Regulations

Whilst not planning policy, the Building Regulations (and specifically Approved Document Part L:

Conservation of Fuel and Power) set out the requirements for energy and carbon performance in new buildings. Periodic updates to these national regulations will drive energy efficiency and carbon reduction improvements.

Part L, Conservation of Fuel and Power - On 15th June 2022, the Building Regulations were updated as an interim step towards part of the roadmap to the 'full' Future Homes and Buildings Standard, which comes into effect in 2025. The regulations aim to deliver buildings that are of a higher quality, with lower energy bills and reduce GHG emissions by around 30% for new homes and 27% for non-domestic buildings.

In December 2023 the Government published the 2025 Future Homes Standard (FHS) and Future Buildings Standard (FBS) consultation. The FHS, which is expected to come into force in 2025, will require homes to achieve a c.75% reduction in carbon emissions beyond Part L 2013. Homes will be 'zero-carbon ready', meaning that they will need no retrofitting to produce zero carbon emissions as the electricity grid decarbonises. Fabric standards will closely resemble the fabric standards in the 2021 Part L uplift to the Building Regulations. Two options are currently being consulted on:

- **Option one** with high efficiency solar PV panels covering 40% of ground floor area (equiv.), airtightness of 4 m³/m².h @ 50Pa, wastewater heat recovery, and decentralised mechanical extract ventilation (dMEV), and
- **Option two** with no renewable energy, airtightness of 4 m³/m².h @ 50Pa, no wastewater heat recovery, and natural ventilation with intermittent extract fans.

In 2022 the government also announced two new Building Regulations which took effect in June 2022, Part S and Part O.

Part S, Infrastructure for Charging Electric Vehicles - New approved document Part S sets out guidance for electric vehicle (EV) charging infrastructure and

² [UN Sustainable Development Goals](#)

specifies that EV charge points must be provided for each new residential building with associated parking. Any remaining spaces must have cable routes for charge points to be installed. For non-residential car parks with more than 10 spaces, at least one active EV charge point must be provided, with cabling to the remaining 20% of spaces.

Part O, Overheating - Part O sets out new requirements for mitigating overheating, specifying that residential developments must limit unwanted solar gains in the summer and provide means to remove heat. Compliance with Part O can be demonstrated using two methods to demonstrate the risk of overheating from rising summer temperatures has been mitigated following a simplified prescribed glazing and free area ratio; or, use of a Dynamic Simulation Modelling.

2.3 Local Planning Policy

2.3.1 Climate Emergency

Wiltshire Council declared a Climate Emergency in 2019 and committed to becoming carbon neutral by 2030. The Council has adopted a climate strategy which includes an aspiration for net zero carbon development.

2.3.2 Wiltshire Council Local Plan

Wiltshire Council's Core Strategy was adopted in 2015 and below is a summary of relevant sustainability policies.

Policy CP41 - Sustainable Construction and Low-carbon Energy – Encourages development to incorporate measures to tackle climate change, including reducing energy demand. As well as including being design to be well insulated, and take advantage of natural light and heat from the sun, using natural ventilation New homes are expected to be assessed against the Code for Sustainable Homes, although this has now been withdrawn. All proposals for major development are required to submit a Sustainable Energy Strategy alongside the planning application outlining the low-carbon strategy for the proposal.

Policy CP50 – Biodiversity and Geodiversity – States development should protect and enhance site habitats and biodiversity.

Policy CP52 – Green Infrastructure – States development shall retain and enhance Wiltshire's green infrastructure network.

Policy CP57 – Ensuring High Quality Design and Place Shaping – States a high standard of design is required, with development expected to demonstrate how it positively contributes to the character of Wiltshire through measures including enhancing biodiversity, maximising opportunities for sustainable construction, making efficient use of land, and the use of high standards of building materials.

Policy CP60 – Sustainable Transport – Which states the council aims to reduce the need to travel by private car, supporting and encouraging sustainable movement.

Policy CP61 – Transport and New Development – Which states new development should be located and designed to reduce the need to travel by private car, considering a hierarchy of transport options to promote sustainable travel.

Policy CP67 – Flood Risk – States development will include measures to reduce the rate of rainwater run-off and incorporate sustainable urban drainage.

Policy CP68 – Water Resources – States developers will be expected to submit details of how water efficiency has been taken into account.

2.3.3 Local Plan Review – Regulation 19 Pre-submission Draft 2020-2038

The Council is in the process of preparing a new Local Plan and following the Regulation 19 consultation is due to submit the Plan for examination in 2024. The new Local Plan includes an enhanced set of policies around climate change, including the following policies.

Policy 4 – Addressing Climate Change – Sets out how development must support a move to carbon neutrality and adaptation to climate change. This includes how development should minimise carbon emissions, maximise carbon storage and

sequestration, mitigating and adapting to the effects of climate change. Proposals are required to include a Sustainable Energy Statement demonstrating how development takes account of embodied carbon, mitigates and adapts to climate change, and meeting targets to reduce carbon emissions.

Policy 85 – Sustainable Construction and Low Carbon Energy – Requires new development to be zero carbon in operation, setting space heating and energy use targets, and renewable energy generation requirement.

Policy 87 – Embodied Carbon – Requires new development to achieve an upfront embodied carbon target of <900kgCO₂/m².

2.4 Council Application Comments

The Council has provided comments on the current planning application, requesting the preparation of a Sustainable Energy Statement to set out how the development responds to Core Strategy policies CP41 and CP60 in particular, structured to address sustainable transport, operational carbon, embodied carbon and climate change adaptation.

2.5 Planning Policy Summary

Both local and national policy aims to ensure the delivery of sustainable and well-designed homes and other buildings which mitigate and adapt to the impacts of climate change.

The current Local Plan requires development to include a Sustainable Energy Statement demonstrating how it responds to the key policies and objectives on sustainable construction and low carbon energy, sustainable transport biodiversity, high quality design, flood risk and water management.

Latest national planning policy and guidance confirms the Government's approach to sustainable development which is also being driven through updates to the Building Regulations. These have been updated as part of a phased approach to ensure that new buildings are well designed and reduce carbon emissions, in line with the UK's carbon targets.

The following sections of this Sustainable Energy Statement sets out the measures incorporated into the design of the development at this stage, and to be considered as part of future Reserved Matters application to ensure the delivery of sustainable new homes.

3. Sustainability and Energy Strategy

This section summarises the sustainability, climate change and energy strategy for the proposed development at Land off the A363 White Horse Business Park

This section of the report outlines the sustainability, climate change and energy strategy for the proposed development, demonstrating how the development responds to both national and local planning policy, including the NPPF, where appropriate incorporating responses to the Council's Local Plan requirements.

In this context the sustainable design commitments are set out under the following headings which reflect the themes of the NPPF and guidance from the Council.

Promoting Sustainable Transport – Setting out how the development aims to enhance sustainable transport.

Energy and Carbon Strategy – Setting out how the development will reduce embodied and operational carbon emissions. This includes the development Energy Strategy, supporting the Council's Core Strategy.

Climate Change Adaptation – Demonstrating how the development will deliver a development and homes which are resilient to the effects of climate change.

3.1 Promoting Sustainable Transport

A Transport Assessment was been prepared by Badingham Limited in 2020, summarising the existing conditions in the vicinity of the Site, the accessibility of the Site relative to local facilities and services, outlining the development proposal for the Site and setting out measures to promote travel by the more sustainable modes of transport, and to manage the overall transport impacts of the development in line with the requirements of the Council's Core Strategy Policies 60 and 61.

Vehicular access – The site is currently accessed via Bradley Road to the north. This provides vehicle access to Trowbridge to the North and Westbury to the South. The proposed development will provide an upgraded access onto Bradley Road through a new ghost island right-turn arrangement. The internal layout of the site will be designed to encourage low speeds (20mph limit), creating a safe environment for pedestrians, and cyclists.

Walking/Cycling Access – A continuous footway is provided along the south side of Bradley Road together with a 2m footway serving the site that provides a link between the Woodmarsh roundabout and White Horse Business Park. From the Woodmarsh roundabout pedestrians can access bus stops, local retail facilities, primary school and amenities.

A 4m segregated facility for pedestrians and cyclists is to be provided on the north side of the carriageway linking west to Drynham Lane and east to the Elmgrove development. A toucan crossing for pedestrians and cyclists will provide a safe and controlled route across Bradley Road.

While there are no formal cycle facilities on the A363 or Woodmarsh the carriageway widths and topography provide favourable cycling conditions. New cycling infrastructure is proposed within the

vicinity of the site through the Elm Park and Ashton Park sites.

Homes will be provided with secure cycle storage facilities to support residents cycling.

Bus Services – The nearest bus stop is located on Bradley Road, approximately 220-240m from the site. Additional bus stops are located on Woodmarsh approximately 330 – 350m from the site. Both bus stops provide access to the wider area, with connections to Bath, Bathampton, Winsley, Trowbridge, Wilton and Salisbury.

Rail Services – Trowbridge rail station is the closest station to the site, approximately 2.5km to the north and can be accessed via local bus services. The station services are provided by Great Western Railway with links to Bath Spa, Bristol Temple Meads and either Gloucester or Cardiff Central northbound and Weymouth or Southampton Central and Portsmouth Harbour in the south.

Local Services and Amenities – Local services and amenities include the North Bradley Primary School, and a range of employment opportunities.

Electric Vehicles – electric vehicles charging points for homes will be provided in line with Part S of the Building Regulations where necessary.

A Travel Plan has been provided which sets out measures which aim to encourage residents to use sustainable modes of transport. This will include several measures, including providing a welcome pack for residents including local transport, walking and cycling routes.

More detailed information on transportation issues and promotion of sustainable transport is contained in the Transport Assessment, and Travel Plan which accompany the planning application.

3.2 Energy and Carbon Strategy

One of the main challenges facing the UK and new development is the need to mitigate and adapt to a changing climate. The Government is committed to tackling climate change and in 2019 set out an ambition to extend the UK Carbon reduction target to reduce carbon emissions by 100% by 2050.

The Government aims to reduce carbon emissions from new development in line with the overarching Net Zero trajectory through updates to the Building Regulations, including the introduction of the Future Homes Standard (FHS). The 2025 FHS will require homes to achieve at least a 75% carbon reduction beyond Part L 2013, banning new development from using gas for heating and hot water.

At a local level, Core Strategy Policy CP41 encourages development to include measures to reduce energy demand, including being designed to be well insulated, and take advantage of natural light and heat from the sun, using natural ventilation.

This section provides an overview of the proposed Energy and Carbon Strategy for the development, considering both the construction and operation of the development in line with Core Strategy Policy CP41.

3.2.1 Reducing Construction Stage Emissions

As the energy efficiency of buildings improves through the introduction of new building standards the construction stage emissions become increasingly significant.

Construction stage emissions include:

- GHG emissions associated with the construction of buildings;
- The embodied carbon of materials used in the construction of buildings; and
- Emissions associated with the transportation of construction stage waste.

This section sets out estimated construction stage emissions and measures to be considered as part of future applications and design stages to reduce construction stage emissions.

Reducing Construction Emissions - To reduce construction emissions consideration will be given to a range of measures, including:

- Use of biofuels in site vehicles which has a lower emissions factor than diesel;
- Use of hydrogen or electric site vehicles and equipment;
- Use of temporary energy storage systems;
- Requiring the contractors to purchase renewable energy; and
- Use of renewable energy generating systems such as PV cells on construction buildings.

As technology evolves, particularly in the development of low emissions vehicles it is anticipated the construction stage emissions will reduce over time.

Reducing Embodied Carbon - To reduce the embodied carbon of the development the detailed design of homes will consider a range of measures, including, by not limited to:

- Lean design to minimise materials use, including consideration of infrastructure materials, i.e. minimising hardstanding, as well as reducing building material use.
- Use of natural materials which sequester carbon such as timber.
- Specification of low carbon materials, for example steel and concrete with recycled materials content.
- The use of Modern Methods of Construction (MMC) including off-site prefabrication of building elements.
- Use of local supplies and labour where feasible.

The use of MMC and prefabricated building elements can have a significant impact on reducing embodied carbon, with studies suggesting that MMC can reduce carbon by 45% compared to traditional methods of construction³.

Furthermore through the use of carbon offsetting within the manufacturing industry it is now possible to purchase some net zero products, for example the Cemex ReadyBlock Zero masonry construction blocks⁴ are constructed saving 80% of CO₂ compared to traditional blocks, with the remaining residual emissions offset in accordance with the Carbon Neutral Protocol to create a CarbonNeutral product.

3.2.2 Operational Energy and Carbon Strategy

The development will deliver zero carbon ready homes which will meet the anticipated requirements of the 2025 FHS.

It is anticipated that the FHS will require homes to achieve a c.75% improvement in carbon emissions over the Part L 2013 standard through a combination of fabric, energy efficiency and low carbon renewable energy measures. Homes will be all electric and will not make use of fossil fuels to provide heating or hot water. Homes will be zero carbon ready in line with the Government's objective, and residents will be able to live fully net zero through the purchase of certified renewable electricity.

Homes will be designed in line with the requirements of Policy CP41, and in accordance with the energy hierarchy, as shown in **Figure 2**, which aims to reduce energy demand through passive design measures and a fabric first approach before utilising low carbon energy and the production of on-site renewable energy.

³ <https://www.insidehousing.co.uk/news/news/mmc-cut-carbon-emissions-by-up-to-45-research-finds-75970>

⁴ <https://www.cemex.co.uk/low-carbon-masonry-blocks>

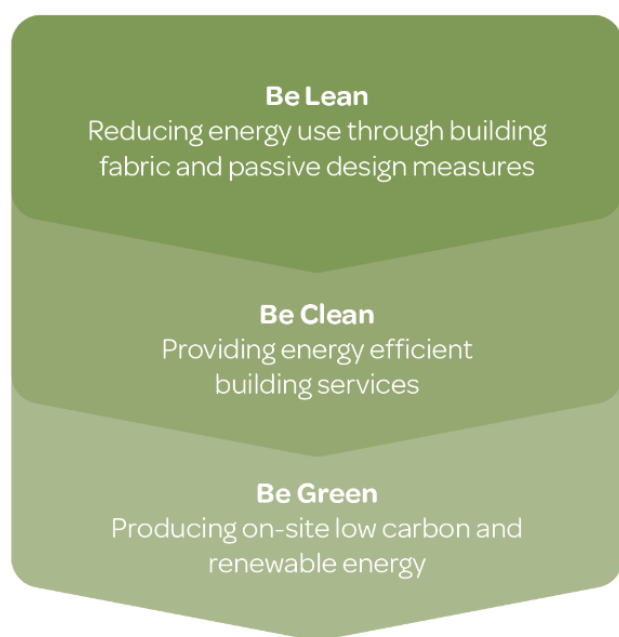


Figure 2: The Energy Hierarchy

The following sections set out the measures included to deliver an energy efficient, low carbon development in accordance with the energy hierarchy.

Be Lean – Reducing Energy Use

Central to the delivery of low carbon and energy efficient buildings is the ‘Fabric First’ principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services.

Reducing the primary energy demand of a building through the use of an efficient fabric and services is widely regarded as best practice and is therefore the first and most important step to reducing carbon emissions.

This ‘fabric first’ approach has a number of distinct benefits including:

- Carbon savings delivered are ‘locked-in’ for the lifetime of the building (60 years or more);

- Virtually no maintenance and/or replacement costs to maintain carbon reductions through improved fabric;
- No reliance on an occupier’s behaviour to deliver carbon reductions. Achieving carbon savings from renewable energy technologies require education, awareness and often, behavioural changes from occupants.

Fabric Efficiency Measures – The design of new homes will aim to reduce thermal energy demand by targeting improved insulation levels and air leakage and fabric u-values in line with the requirements of the 2025 FHS. **Table 1** sets out the proposed u-values within the government’s FHS consultation⁵.

Table 1: Proposed u-values

Building element	Part L 2021	2025 FHS
Wall (W/m ² K)	0.26	0.26
Roof (W/m ² K)	0.16	0.16
Floor (W/m ² K)	0.18	0.18
Windows (W/m ² K)	1.6	1.6
Air permeability (m ³ /h. m ² @50Pa)	8	4-5

The detailed design will also consider a range of energy efficiency measures, subject to the outcomes of the FHS this will include consideration of:

- Design to promote passive solar gains, maximise natural daylight, sunlight and ventilation;
- Highly insulated glazed windows;
- Use of Waste Water Heat Recovery to reduce energy demand;

⁵ [The Future Homes and Buildings Standards: 2023 consultation - GOV.UK](#)

- Provision of Mechanical Ventilation Heat Recovery to reduce energy demand and provide ventilation;
- Use of high efficiency heating systems appropriate to the building use to reduce energy consumption; and
- Specification of high energy efficient equipment that will use less energy and water.

The new homes will reduce thermal energy demand by targeting improved insulation levels and air tightness, as well as energy efficiency measures to meet the requirements of the 2025 FHS.

Be Clean – Efficient Energy

The next stage of the energy hierarchy is the efficient supply of heat and energy. This considers opportunity for connection of development to energy networks, and provision of energy efficient heating systems.

Heat Networks - Connecting into an existing District Heating Network (referred to as “DHN” hereafter) where possible or providing an on-site communal heat network or individual systems.

District Heating Networks (DHN) comprise a centralised heat generator, typically a gas fired Combined Heat and Power (CHP) engine. CHP systems generate electricity and waste heat which can be fed into a network of insulated pipes which deliver low carbon heat to buildings to provide heating and hot water via individual heat transfer units.

DHNs are suited to development with high thermal demand, typically provided by sufficient density or a large anchor load, i.e. high-density flats, leisure centres and industrial process.

The continued decarbonisation of the national electricity network and changes to the Building Regulations mean that the carbon emission benefits of traditional CHP systems will diminish during their life cycle.

CHP and DHN are therefore not proposed, as carbon emissions associated with electricity are expected to continue to reduce as the grid decarbonises,

leading to greater savings in carbon emissions over the lifetime of the development.

Be Green – Low Carbon Renewable Energy

The final stage of the Energy Hierarchy is the generation of on-site low carbon and/or renewable energy to provide a further reduction in carbon emissions.

An initial review of potential low carbon renewable energy technologies which may be suitable for inclusion in the design of the homes has been completed to reduce carbon emissions further. A summary of the technologies reviewed is provided below.

Heat Pumps - Heat pumps provide low carbon heat sourced either from the ground (Ground Source Heat Pumps) or air (Air Source Heat Pumps). This type of system is suited to thermally efficient buildings. They require mains electricity to operate but typically provide around three units of heat for every unit of electricity that is consumed. Because the heat generated is at a lower temperature than that produced by a gas boiler, heat pumps typically require underfloor heating or over-sized radiators to ensure the heat is distributed efficiently. The Government FHS consultation anticipates that the decarbonisation of the electricity network will shift design to using electric heating systems, including heat pumps.

Air Source Heat Pumps - ASHPs extract low grade heat from the air and raise the heat to a higher temperature for domestic heating and hot water loads. They require less space than Ground source heat pumps and less maintenance than combustion-based heating systems. They also have a longer life than combustion boilers.

Heat pumps save carbon emissions. Unlike burning oil, gas, LPG or biomass, a heat pump produces no carbon emissions on site (and no carbon emissions at all, if a renewable source of electricity is used to power them). Heat pumps can also provide cooling in summer, as well as heating in winter.

The relatively minimal maintenance, efficiency and capital cost of an ASHP system means that it is

suitable for incorporation into the energy strategy for the homes. The heat pumps will draw from grid electricity and deliver carbon savings due to the increasing amount of renewable in the UK power generation mix.

The Government's FHS consultation notes ASHPs will likely be the preferred method of providing heating and hot water for homes from 2025.

Ground Source Heat Pumps - Ground source heat pumps (GSHP) draw heat from underground through a refrigeration cycle and can be a very efficient solution. The ground can also be used as a source of heat and cooling. GSHPs can be either open loop or closed loop. An open loop system will require abstraction and discharge licences from the Environment Agency; a closed loop system comprises of buried pipes. This system requires extensive ground works to extract low grade heat from the earth, proving very expensive. GSHPs are not considered practical or cost-effective for low density residential development.

Solar Photovoltaic (PV) - Solar photovoltaic (PV) systems generate zero carbon electricity from sunlight and are well-suited to dwellings with unobstructed south-east to south-west facing roof space. Excess power is exported to the grid or can be harnessed using battery storage. Maintenance requirements are typically minimal. This type of system would be suitable for the Proposed Development and will be considered during detailed design. Option 1 of the governments FHS consultation includes the provision of high efficiency solar PV panels covering equivalent of 40% of ground floor area.

Solar Thermal - Solar thermal systems generate hot water from sunlight in a similar manner to Solar PV. They require insulated tanks to store the hot water and have greater maintenance demands than solar PV given the need to ensure anti-freeze in the pipework is topped up every few years. They can be a highly cost-effective technology particularly where mains gas supplies are not available, however in energy efficient new homes their benefit can be limited.

Biomass - Biomass provides useable heat from a range of solid fuels including wood and straw. The installation of a biomass boiler, flue and associated fuel store require significant space which is not considered appropriate for the development.

3.2.3 Energy and Carbon Strategy Summary

The detailed Energy and Carbon Strategy for the development will be developed as part of future Reserved Matters applications, this will include measures to reduce embodied carbon and operational carbon of homes in line with Policy CP41.

Reducing Embodied Carbon Emissions - Homes will be designed to reduce embodied carbon through consideration of measures such as lean design, specification of low carbon materials and use of MMC.

Reducing Operational Carbon emissions – Homes will be designed in accordance with the energy hierarchy to meet the requirements of the 2025 FHS.

The detailed design will be undertaken utilising a 'Fabric First' principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services. In line with the 'Be Clean' and 'Be Green' energy hierarchy tiers, the development will consider the use of low carbon renewable energy to provide low carbon heat and a proportion of homes energy demand. In line with the FHS consultation this will likely include the use of ASHPs and potentially Solar PV.

The strategy aims to ensure homes will meet the requirements of the FHS delivering a c.75% reduction in carbon emissions beyond Part L 2013.

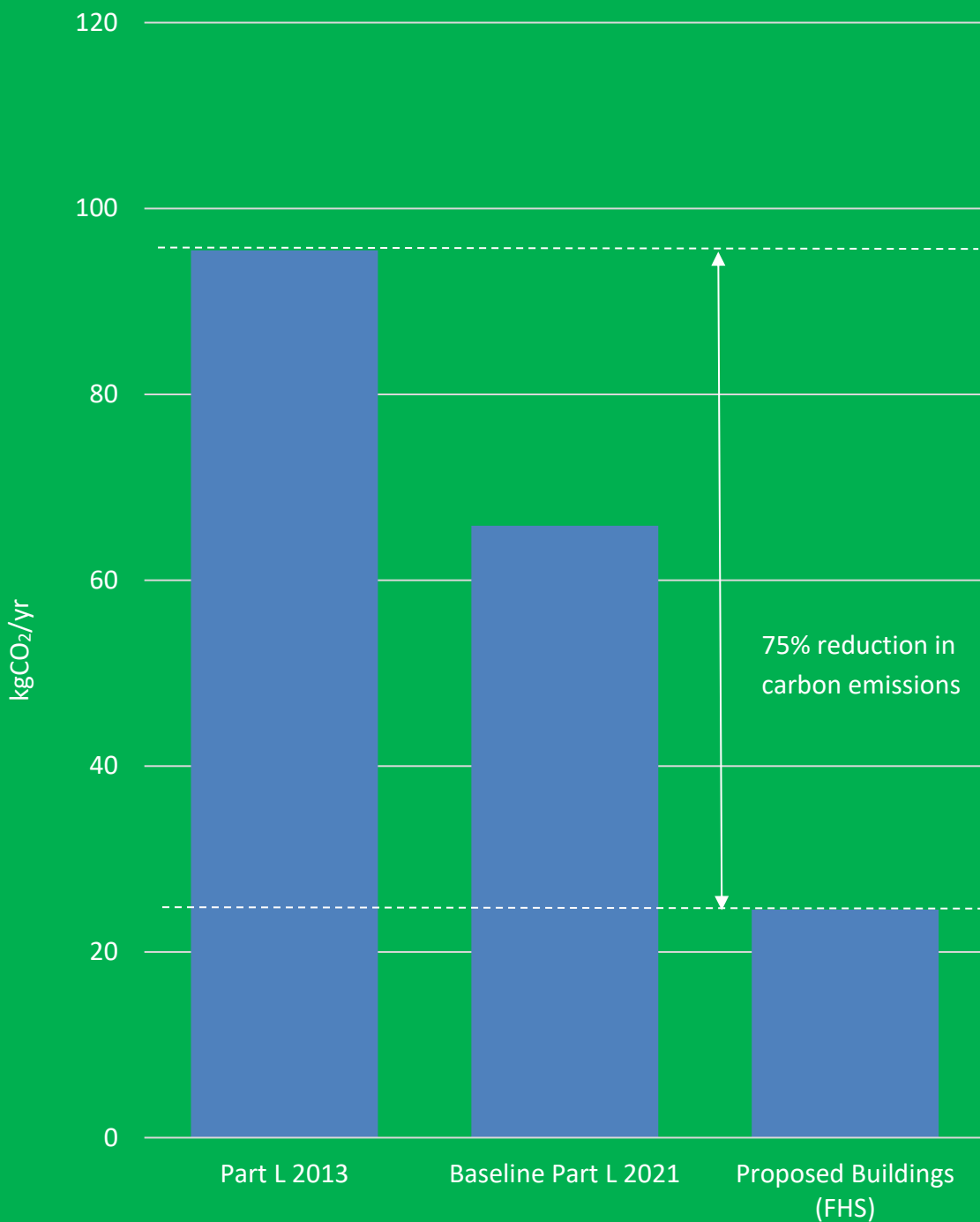
Table 2 shows the benefit of delivering homes in accordance with the 2025 FHS. This is based on a notional semi-detached home built to Part L 2021 (baseline) and development meeting the 2025 FHS requirements. **Table 2** demonstrates how the development will reduce carbon emissions by at c.63% compared to Part L 2021.

Table 4: Estimated carbon emissions

	Energy (MWh/yr)	Carbon (Tonnes CO ₂ /yr)
Baseline Part L 2021	410	66
Proposed	181	25
Reduction	229	41
% Reduction	56%	63%

Operational Carbon Emissions

The graph below shows the estimated carbon emissions of the proposed development, demonstrating how homes will reduce emissions in line with the requirements of the 2025 FHS.



3.3 Meeting the Challenge of Climate Change

Climate change will cause the UK to become warmer, winters will become wetter, and summers will become drier. Adapting to this changing climate will impact on the design, construction, location, cost and operation of all new buildings in the next few decades. One of the NPPF's core planning principles is for development to consider climate change adaptation and mitigation during the planning process.

To ensure the proposed development is resilient to the effects of climate change it will incorporate a number of key design measures in response to the climate predictions set out in the UKCP18 projections.

The Independent Assessment of UK Climate Risk (June 2021)⁶ identifies key risks associated with the effects of climate change. In relation to the built environment and the proposed development, these include reduced summer water availability, increased winter rainfall, and increased summer temperatures.

This section identifies key measures which will be incorporated into the design of new buildings and the proposed development to adapt to climate change.

3.3.1 Water Efficiency

Potable water is an increasingly important natural resource and with the majority of the UK classed as being in an area of moderate or severe water stress the conservation of water is becoming a more significant sustainability metric.

The homes will aim to reduce water consumption through a range of water efficiency measures such as:

- Reduced flush WCs;
- Low flow fittings such as taps and showers; and
- Where appropriate, water efficient equipment.

Through the use of these measures new homes will target a water consumption rate of 110 l/p/d in line with the Building Regulations higher water efficiency standard supporting Core Strategy Policy CP68.

3.3.2 Flood Risk and Drainage

A Flood Risk Assessment (FRA) and Drainage Strategy has been undertaken by Abley Letchford Partnership to assess the flood risk and surface water drainage requirements of the Site and set out a drainage strategy supporting the requirements of Core Strategy Policy CP57.

The FRA shows that the existing site is located entirely within Flood Zone, where flooding from rivers and seas is very unlikely. An element of surface water flooding potential is noted around the existing open ditch and site low points.

To mitigate the potential of the existing surface water flooding the proposed buildings will be located away from the existing extent of pluvial flooding, and ground reprofiling will be undertaken to mitigate the risk. Furthermore, the remaining greenfield areas will be managed with grass and vegetation helping reduce surface water flooding.

Overall the site is considered to be at low risk of flooding.

The drainage system for the proposed development will manage and reduce flood risk for the site, restricting runoff to greenfield rates for all storms up to 1 in 100 year event, including a 45% allowance for climate change. Attenuation will be provided through Sustainable Drainage Systems including attenuation basins and a network of trapped gullies and pipes, with possible roadside swales and permeable paving.

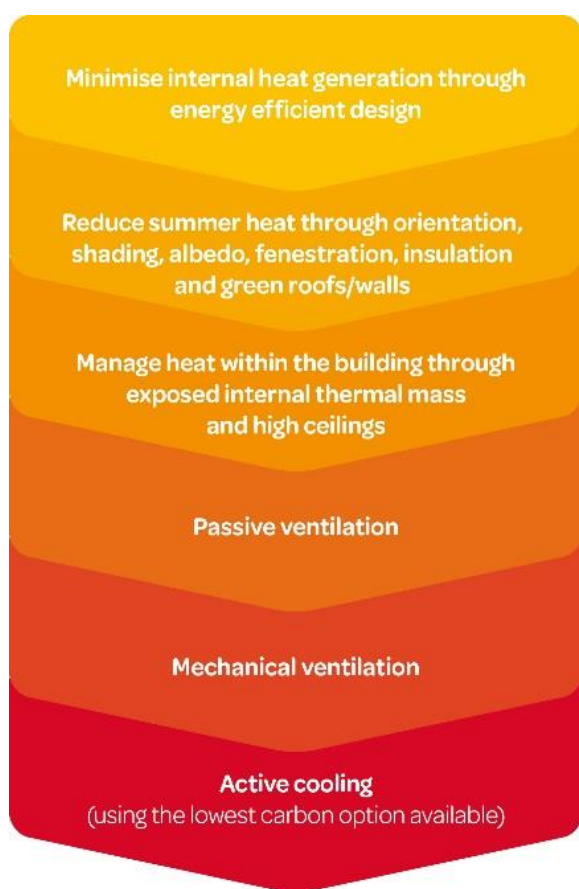
⁶ [CCC | Advice to the Government for CCRA3](#)

3.3.3 Overheating

With increasing summer temperatures there is an increasing risk of overheating in buildings which could adversely affect building occupants and users.

Homes and buildings will be designed in accordance with the cooling hierarchy, as shown in **Figure 3**, which aims to reduce any potential overheating in buildings through minimising heat generation first, followed by the consideration of passive cooling measures, and finally the use of active cooling using the lowest carbon option.

Figure 7: Cooling Hierarchy



Incorporating the cooling hierarchy into the design process means buildings will be better equipped to manage their cooling needs and to adapt to and mitigate climate change, while also minimising the carbon emissions associated with reducing overheating risk.

An Overheating Assessment will be provided as part of future Reserved Matters applications and

detailed design. This will include an assessment of homes in line with the requirements of Part O of the Building Regulations, including either a simplified method or dynamic thermal modelling, to consider future climate scenarios.

3.3.4 Ecology and Biodiversity

An ecological assessment was prepared to support the application in 2020 by Nichols Pearson Associates, with subsequent updates to the ecological plans and Ecological Addendum provided in 2022 and 2023.

The Ecological Assessment notes that the site comprises 5 grassland fields bounded by hedgerows, woodland or fencing.

The site habitats include semi-improved grassland and hedgerows. The key ecological value of the site is in relation to bat foraging/commuting associated with the Bath and Bradford on Avon Special Area of Conservation. The site also provides value/potentially supports other protected species including badgers, birds, great crested newts, and reptiles.

Mitigation and Enhancement Measures

As part of the assessment and site design a range of mitigation and enhancement measures have been proposed, including:

- Protection of site habitats during construction with provision of tree and hedge protection;
- Carrying out removal of bird habitats outside of the bird nesting season;
- Pre-construction checks to check for signs of badgers and other species, with open trenches and excavations covered at night, or provided with a means of escape;
- Minimising the loss of habitats and hedgerows through provision of wide habitat buffers;
- Creation of botanically rich habitat areas in buffer zones;
- Sensitive lighting design to minimise light spill, including dark zones and buffer lighting zones;
- Provision of a significant area of public open space, limiting impacts on nearby sites;

- Erection of bird boxes or nesting features;
- Creation of permanent water bodies and habitats to support Great Crested Newts; and
- Enhanced terrestrial reptiles habitats within buffer areas.

The provision of new habitats and support for existing species is anticipated to increase site biodiversity, with an 18.57% increase in habitats units. These proposals help support the requirements of Core Strategy Policies CP50, Biodiversity and Geodiversity and CP52, Green Infrastructure.

Achieving a net gain in biodiversity will help site habitats and species adapt to the effects of climate change.

More details on the above can be found in the Ecological Impact Assessment and subsequent updates which accompany the application.

5. Conclusion

This Sustainable Energy Statement has been prepared to demonstrate how the proposed development will deliver sustainable, low carbon new homes.

The proposed development at will be designed to respond positively to national and local plan policy incorporating measures to promote sustainable transport, reduce carbon emissions and adapt to climate change.

The key sustainability measures incorporated at this stage and further measures to be considered during the detailed design of the proposed development have been set out within previous sections and are summarised below.

- Development in a sustainable location and a sustainable travel plan that encourages movement by healthy and active means;
- Provision of measures to protect and enhance on-site habitats, including significant areas of new habitats and green infrastructure achieving a net gain in biodiversity;
- Use of SuDS features in the form of an attenuation basin, to help deliver multifunctional biodiversity, amenity and water quality benefits;
- Homes designed to reduce carbon emissions in accordance with the FHS, reducing emissions by c.75% beyond Part L 2013;
- A fabric-first approach to design to reduce energy demand, followed by low carbon renewable energy technologies such as Solar PV and ASHP;
- Homes will be all-electric and 'net zero ready', helping to mitigate the effects of climate change;
- Consideration of measures reduce embodied carbon such as lean design, use of low carbon or locally sourced materials, and/or MMC;
- Specification of water efficient fixtures and fittings to reduce water consumption to achieve the higher water efficiency rate of 110l/p/d;
- A surface water drainage strategy designed to accommodate all storm events up to the 1 in 100 year event, plus a 45% allowance for climate change; and
- Homes designed to take into account increasing annual temperatures and to minimise the risk of overheating.

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Sustainability