



Land South of Turnpike Lane, Ickleford

Energy & Sustainability Statement

August 2025

Key Features of the Proposals

Highly energy efficient buildings, adopting a 'fabric first' approach

Air source heat pumps for heating and hot water

Onsite renewable energy generation

Zero carbon ready

100%
of properties with associated parking to have dedicated EV charging

Adapted to anticipated future changes in the climate

25%
reduction in potable water use against the national average

100%
of properties to be equipped with gigabit-ready infrastructure

Construction waste will be managed in accordance with the Waste Hierarchy

The sustainable approach described within this Statement demonstrates that the proposals align with the relevant requirements of the North Hertfordshire local planning framework, creating a low carbon development which is adapted to future changes in the climate.

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1 Introduction

1.1 This Statement

- 1.1.1 This *Energy & Sustainability Statement* supports the planning application for the proposed development on Land South of Turnpike Lane, Ickleford in North Hertfordshire. It has been commissioned by Hawridge Strategic Land (the Applicant).
- 1.1.2 The regulatory framework encouraging sustainable new development is comprehensive at both a national and local level. This Statement responds to existing planning policy, including the *North Hertfordshire Local Plan 2011-2031 (Adopted November 2022)*, the *Ickleford Neighbourhood Plan 2022-2035 (Made March 2024)* and current Building Regulations, whilst looking ahead to the emerging Future Homes Standard, details of which are due to be finalised in 2025.
- 1.1.3 In particular, this Statement describes how the development proposals address sustainability, with a focus on climate change mitigation and adaption:

Low Carbon Energy

- The dwellings will be 'zero-carbon ready', and will be futureproofed to become operationally zero carbon over time;
- High fabric standards for thermal efficiency will be specified;
- There will be no natural gas connection to the proposed development;
- Energy demand will be met from low and zero carbon sources.

Water Efficiency

- Water use will be reduced compared to a standard development through the adoption of water efficient fixtures and fittings.

Climate Resilience and Adaptation

- The development designs will anticipate future changes in the climate;
- Overheating risk will be reduced through passive design measures as required by Approved Document O;
- Open space and landscaping will provide multiple benefits;
- Surface water will be managed with the integration of SuDS.

Reducing Carbon Emissions from Transport

- Electric vehicle charging infrastructure will be incorporated in line with the requirements of Approved Document S;
- Gigabit-ready infrastructure will be provided as required by Approved Document R.

Embodied Carbon and Sustainable Waste Management

- The adoption of sustainable design and construction principles will reduce the embodied carbon of the development;
- Construction waste will be reduced, and the use of recycled materials will be maximised through considered waste management practices.

1.1.4 The Sustainability Checklist from the *North Hertfordshire Sustainability Supplementary Planning Document (Adopted September 2024)* has been completed in as much detail as is possible at this outline planning stage and is included in Appendix A.

1.1.5 Where specifics are not currently available, the overall approach and standards to be achieved have been set out to ensure that sustainability remains a central feature of the development as the designs develop and the application proceeds.

1.2 The Site

1.2.1 The proposed site is located to the southwest of the village of Ickleford on land to the south of Turnpike Lane. It currently comprises grazing land with boundary trees and hedgerows, and areas of woodland in the southern and western portions of the site.

1.2.2 The site is bound by Turnpike Lane and residential development to the north, residential development and the consented Ickleford Mill approved residential scheme to the east and Ickleford Manor and the consented Burford Grange scheme to the west. The River Oughton and residential gardens form the southern boundary.

1.3 Description of Development

1.3.1 The outline planning application has the following Description of Development:

Outline planning application for residential development including 50% affordable housing, with means of access from Turnpike Lane for consideration (all other matters reserved for subsequent approval), drainage, landscaping, car parking and all other ancillary and enabling works.

1.3.2 The image below shows the Concept Masterplan for the proposed development:



Figure 1: Concept Masterplan (insitu design)

2 Sustainability Policy Review

2.1 National Planning Policy

The National Planning Policy Framework December 2024 (NPPF)

2.1.1 The NPPF Section 2 states that the purpose of the planning system is to contribute to the achievement of sustainable development, and it includes three overarching objectives 'to be pursued in mutually supportive ways':

- An economic objective, contributing to a strong, responsive and competitive economy;
- A social objective, supporting vibrant and healthy communities and;
- An environmental objective, protecting and enhancing our natural, built and historic environment.

2.1.2 As such, the NPPF at its heart contains a 'presumption in favour of sustainable development'. Emphasising the need to achieve well designed places, the NPPF states that "*Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities*".

2.1.3 The NPPF sets out a number of principles which should underpin both plan-making and decision-taking, and of which many are particularly relevant to this document. In this context, planning should:

- Promote healthy and inclusive places that encourage social interaction, enhance healthy lifestyles, and which are safe and accessible;
- Seek to secure a high-quality of design and a good standard of amenity for occupants;
- Support the transition to a low-carbon future, avoid increased vulnerability to climate change impacts, take account of flood risk and coastal change and seek to reduce greenhouse gas emissions. Plans should include a positive strategy to help increase the use and supply of renewable and low carbon energy;
- Help conserve and enhance the natural environment, achieve net gains in biodiversity and reduce the impact of all forms of pollution;
- Plan and manage development to make full use of public transport, walking and cycling, and take into account the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles;
- Support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections, which are seen as essential for economic growth and social wellbeing.

The Climate Change Act

- 2.1.4 The Climate Change Act 2008 is the basis for the UK's approach for tackling and responding to climate change. It commits the UK government to reducing greenhouse gas emissions by at least 100% of 1990 levels by 2050.

Building Regulations

- 2.1.5 *Approved Document L, Conservation of Fuel and Power, Volume 1: Dwellings (2021)* came into force in June 2022. It sets out the Building Regulation standards for energy performance in new developments, placing a greater emphasis on reducing primary energy use, in addition to achieving carbon and fabric efficiency targets, compared to the previous standards. The tightening of fabric energy efficiency standards, air tightness and carbon performance targets are accompanied by updated calculation and modelling requirements within the compliance mechanism (SAP10.2 for dwellings).
- 2.1.6 *Approved Document F, Ventilation, Volume 1: Dwellings* details requirements for ventilation in domestic properties to ensure that increased air tightness (as required by the updates to Approved Document L) does not impact on internal air quality.
- 2.1.7 *Approved Document O: Overheating* has been put into place to limit overheating risk in new residential buildings. It expands on the provision in the previous Part L and requires the use of passive methods where feasible. Compliance can be demonstrated through a prescriptive or thermal simulation compliance path.
- 2.1.8 *Approved Document S: Infrastructure for Charging Electric Vehicles (December 2021)* details regulations for the installation of electric vehicle charging points and cable routes. Requirement S1 from Part S of Schedule 1 and regulation 44D of the Building Regulations states that every new home with an associated parking space must have access to an EV charging point.
- 2.1.9 Water efficiency targets for new dwellings are driven by *Approved Document G: Sanitation, Hot Water Safety and Water Efficiency (2015)*. Within a domestic setting, the requirement is to limit water use to either 125 litres per person per day or, if required by the planning permission, an enhanced standard of 110 litres per person per day.

The Future Homes Standard

- 2.1.10 The Future Homes Standard (FHS) is part of the Government's strategy for achieving the Climate Change Act 2050 target. It will build on the current uplifts within Approved Document L and Approved Document F.
- 2.1.11 Under the proposed new Standard, an average home will have 75 – 80% fewer carbon emissions than one built to the Building Regulation 2013 requirements.
- 2.1.12 The details of the Standard are still to be confirmed, with various options having been consulted upon as part of the Future Homes and Buildings Standards Consultation which was launched in December 2023.

2.1.13 However, what is clear is that the Standard will require new homes to be built with high fabric standards and low carbon heating (instead of fossil fuel powered boilers which will be banned) so that they are 'zero-carbon ready'. This means that no future retrofitting will be needed to enable the properties to benefit from the ongoing decarbonisation of the Grid.

2.1.14 Two options for the notional building specification have been presented as part of the FHS Consultation, both of which are designed with the aim of reducing running costs and maintaining thermal comfort while balancing build costs. In both cases, the Consultation has proposed that the building fabric standards remain broadly as per those in Approved Document L (2021).

Building Element		Option 1	Option 2
U-Values (W/m ² K)	Roof	0.11	0.11
	External Wall	0.18	0.18
	Floor	0.13	0.13
	Window	1.2	1.2
	Door	1.0	1.0
Wastewater Heat Recovery		Yes	No
Heat Source		A notional air source heat pump equivalent to ErP A++	A notional air source heat pump equivalent to ErP A++
Hot Water System		Hot water storage vessel, 120mm insulation	Hot water storage vessel, 120mm insulation
Airtightness (m ³ /m ² .h@50Pa)		4	5
Ventilation		dMEV	Natural ventilation with intermittent extract fans
Renewable Energy		High efficiency solar PV panels covering equivalent of 40% of ground floor area	None

Table 1: Proposed Main Notional Building Specifications for Homes (Future Homes Standard Consultation, Dec 2023)

2.1.15 Other areas under consideration include improving the guidance and minimum standards for heat losses from building services, improving the real-world performance of homes and supporting the expansion of cleaner heat networks.

2.1.16 Two options are being considered for transitional arrangements – either a 6-month or 12-month period between the Future Homes Standard legislation being laid in 2025 and it coming into force, followed by a 12-month transitional period.

2.1.17 The Government has also consulted on a new calculation methodology which will be used to demonstrate compliance with the FHS. Known as the Home Energy Model (HEM), this will replace the existing SAP compliance tool, and will also be used to produce Energy Performance Certificates (EPCs).

2.2 Local Planning Policy

North Hertfordshire Local Plan 2011-2031 (Adopted November 2022)

2.2.1 The Local Plan sets out the strategic vision and spatial strategy for the District over the period 2011 to 2031. It forms part of the statutory Development Plan for the District and is used in the assessment of planning applications.

2.2.2 The following policy extracts are of particular relevance to this Statement:

Policy	Extract
SP9	Design and Sustainability The Council considers good design to be a key aspect of sustainable development. We will: a) Support new development where it is well designed and located and responds positively to its local context; b) Require Strategic Masterplans to be produced for Strategic Housing Sites and other significant development. Significant development generally comprises residential development of 100 dwellings or more. (...) c) Require Strategic Masterplans and planning applications for Strategic Housing Sites and significant development to (as applicable): (...) vi. create an accessible multi-functional green infrastructure network that provides: - a high-quality integrated network to support ecological connectivity, biodiversity net gain, climate adaptation and mitigation linking into the wider Ecological Network (...) d) Ensure Strategic Masterplans are informed by a technical and design evidence base and include the following for Strategic Housing Sites and where applicable for other significant development: (...) vi. Sustainability & Energy Framework identifying site-wide and building scale opportunities for low and zero carbon (...) f) Assess proposals against detailed policy requirements set out in this Plan and have regard to the Design SPD; and g) Adopt the Government's additional technical standards for the size of new homes, water efficiency and, in specified circumstances, accessibility.
SP11	Natural Resources and Sustainability This Plan seeks to meet the challenges of climate change and flooding. We will: a) Support proposals for renewable and low carbon energy development in appropriate locations; b) Take a risk based approach to development and flood risk, directing development to areas at lowest risk in accordance with the NPPF and ensuring the provision of Sustainable Drainage Systems (SuDS) and other appropriate measures; (...)
D1	Sustainable Design Planning permission will be granted provided that development proposals: a) Respond positively to the site's local context; b) Take all reasonable opportunities, consistent with the nature and scale of the scheme, to: i. create or enhance public realm; ii. optimise the potential of the site by incorporating Sustainable Drainage Systems (SuDS); iii. reduce energy consumption and waste; iv. retain existing vegetation and propose appropriate new planting; v. maximise accessibility, legibility and physical and social connectivity both internally and with neighbouring areas;

Policy	Extract
	vi. future proof for changes in technology and lifestyle; vii. design-out opportunities for crime and anti-social behaviour; and viii. minimise the visual impact of street furniture and parking provision; c) Have regard to the Design SPD, and any other relevant guidance; (...) e) For residential schemes, meet or exceed the nationally described space standards and optional water efficiency standards.

Sustainability Supplementary Planning Document (Adopted September 2024)

- 2.2.3 The Sustainability Supplementary Planning Document (SPD) provides further guidance on the application of the Local Plan policies and the Council's sustainability expectations for different forms of development.
- 2.2.4 It identifies sustainable construction requirements for new developments to take account of both mitigation and adaptation to climate change, and includes a Checklist which has been completed in as much detail as possible at this outline planning stage (see Appendix A).

Design Supplementary Planning Document (July 2011)

- 2.2.5 The Design SPD provides guidance for future development in North Hertfordshire. It includes advice on sustainability, specifically reducing carbon and increasing resource efficiency, and has been reviewed for the purposes of this Statement.

Vehicle Parking at New Developments (Adopted November 2011)

- 2.2.6 The Vehicle Parking at New Developments SPD provides guidance on parking provision, including the provision of electric vehicle infrastructure, in line with national policy.

Ickleford Neighbourhood Plan 2022-2035 (Made March 2024)

- 2.2.7 The Ickleford Neighbourhood Plan 2022-2035 was made on 22 March and it now forms part of the Development Plan for North Hertfordshire.
- 2.2.8 The Plan sets out the vision and aims for development in the area, and includes a number of policies which will be used in the determination of planning applications, including the following of particular relevance to this Statement:

Policy	Extract
SD4	Provision of Energy Efficient Buildings The design and standard of any new building should meet a high level of sustainable design and construction and be optimised for energy efficiency, targeting zero carbon emissions. This includes: • Siting and orientation to optimise passive solar gain, • The use of high quality, thermally efficient building materials, • Installation of energy efficiency measures such as loft and wall insulation and double glazing. • Any new development should incorporate on-site energy generation from renewable sources such as solar panels.

Policy	Extract
	Proposals for the retrofitting of existing buildings including heritage properties, should reduce energy demand where practicable and, where appropriate, generate renewable energy whilst safeguarding their historic characteristics. (...)

SD5	Water Management Development proposals should respond positively to best practice on water efficiency, including using water efficient fittings and appliances, water harvesting, grey water recycling, and providing water storage features. As appropriate to their scale, nature, and location, development proposals should demonstrate that the estimated consumption of wholesome water per dwelling is calculated in accordance with the methodology in the water efficiency calculator and should not exceed 110 litres/person/day.
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Additional Planning Policy Documents

- 2.2.9 Further guidance exists relating to transport, parking, flood risk and ecology. These are covered in more detail in the other reports accompanying this submission. This Statement does however summarise the outputs of these reports where relevant to give a rounded picture of the approach to sustainable design and construction issues.

3 Low Carbon Energy

3.1 Introduction

- 3.1.1 This section describes how the homes on the proposed development will be 'zero-carbon ready', with high fabric efficiency standards, low carbon air source heat pumps and renewable energy production via roof integrated solar photovoltaic panels where required.
- 3.1.2 The hierarchy of solutions proposed will set the new development on a pathway to zero emissions over time in line with wider national and local aspirations to address climate change.
- 3.1.3 Furthermore, it will ensure that the development comfortably achieves the requirements of Local Plan Policy D1 and Policy SP11, Ickleford Neighbourhood Plan Policy SD4 and Approved Document L (2021), while anticipating the requirements of the emerging Future Homes Standard, details of which are due to be confirmed in 2025.

3.2 The Energy Hierarchy

- 3.2.1 The Energy Hierarchy underpins the entire approach to building performance for this development, thus prioritising a reduction in the demand for energy as far as possible through thermally efficient, easily controlled, well designed and oriented buildings:

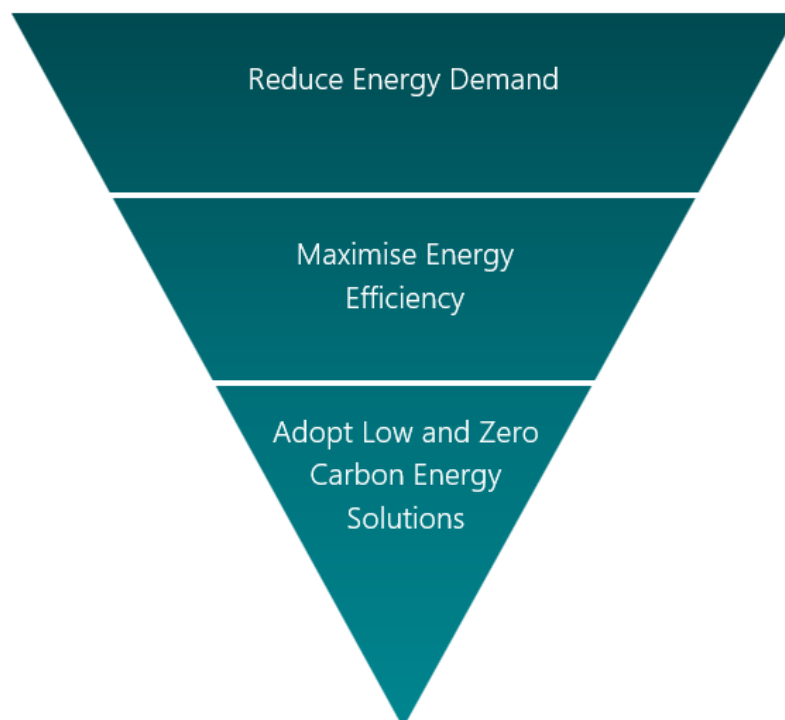


Figure 2: The Energy Hierarchy

3.3 Optimising Passive Design and Fabric Performance

Site Layout and Property Orientation

- 3.3.1 The orientation of buildings, along with the size and location of glazing and the extent of overshadowing, plays an important role in energy performance. Improving a building's orientation so that the main living spaces benefit from the heat and light of the Sun can reduce the requirement to use fuels to perform the same function thus reducing costs, energy use and associated carbon emissions.
- 3.3.2 When buildings have a southerly orientation, they can benefit from the Sun during the middle portion of the day without suffering from potential overheating later in the afternoon. This orientation can also help to ensure that they still benefit as much as possible from sunlight during the winter when the Sun's path is shortened.
- 3.3.3 However, there is a balance to be struck between maximising solar gain and the risk of overheating. Section 5 of this Statement discusses approaches to addressing and managing this risk which align with the requirements of Building Regulations Approved Document O.
- 3.3.4 The proposed layout of the site will be developed with respect to identified spatial, topological and visual constraints, all of which need to be carefully considered. Within these parameters, a proportion of the properties will have a southerly orientation. Furthermore, the relatively low density of the development will ensure appropriate spaces around dwellings, reducing overshadowing.
- 3.3.5 The impact of orientation on the viability of photovoltaic panels is discussed in Paragraph 3.5.8-3.5.9.

Highly Efficient Building Envelope

Thermal Elements

- 3.3.6 In line with the guidance provided in the Sustainability SPD, a 'fabric first' building specification will be developed to ensure that the envelope of each dwelling, including the wall, roof, floor, glazing and doors, will be highly energy efficient. This will reduce energy demand and increase comfort.
- 3.3.7 Thermal bridges will be minimised through the application of design details and products that provide continuous insulation, such as insulated lintels.
- 3.3.8 The specification will be confirmed at a later stage in the planning process once housetypes have been finalised and the details of the Future Homes Standard have been announced.
- 3.3.9 In the meantime, Table 2 in Section 3.6 provides an indication of the levels of performance required, including u-values for different thermal elements.

Air Tightness and Controlled Ventilation

- 3.3.10 It is vital that buildings have sufficient levels of air tightness to reduce heat loss and minimise draughts. Air tightness is also an important factor in managing interstitial condensation and reducing sound transmission through structures.
- 3.3.11 The current target for the development will be to ensure the dwellings are constructed with a design air permeability level of $5\text{m}^3/\text{m}^2@50\text{Pa}$ or less.
- 3.3.12 Where the as-designed air permeability is less than $5\text{m}^3/\text{m}^2@50\text{Pa}$ (and as-built is less than $3\text{m}^3/\text{m}^2@50\text{Pa}$), it will be necessary to install mechanical extract ventilation units (ideally with heat recovery) in each dwelling to ensure adequate and controlled ventilation, in line with the requirements of Approved Document F.
- 3.3.13 All of the dwellings at the development will also benefit from natural cross ventilation via openable windows which will enable rapid purges of air and will contribute to maintaining internal air quality.

3.4 Lighting, Fixtures and Fittings

- 3.4.1 Further energy savings will be made by maximising the efficiency of appliances, lighting, fixtures and fittings.
- 3.4.2 All internal and external fixed electric lighting will be categorised as 'energy efficient' in line with regulations to minimise lifetime energy use and associated emissions.
- 3.4.3 All appliances where installed will be high efficiency, further minimising the use of both electricity and hot water. Moreover, where these are not installed, they will be provided to incoming residents within the list of optional extras. There will be space in all gardens for clothes drying to discourage the use of tumble dryers.
- 3.4.4 Taps and shower fixtures and fittings that reduce hot water consumption with low and/or aerated flows will be specified; more detail in relation to potable water management is provided in Section 4.
- 3.4.5 A further option that could be explored is the installation of Waste Water Heat Recovery units (WWHR) in those dwellings that can accommodate them. WWHR units enable heat to be recovered from the waste water produced in bathrooms via baths or showers. This heat is then used to pre-warm water in the system, therefore reducing the amount of energy needed to provide hot water for use within the property.

3.5 Achieving Low Carbon Energy

- 3.5.1 The UK is rapidly moving towards the electrification of the heating system. Indeed, it is expected that the installation of gas and oil boilers will not be permitted under the Future Homes Standard.
- 3.5.2 The Applicant has therefore confirmed that this development will not be connected to the gas network and will instead look to alternative options for energy supply and heating provision.

Air Source Heat Pumps

- 3.5.3 Air source heat pumps will be installed to provide space and water heating to all properties at this development.
- 3.5.4 High quality, well installed units can deliver a seasonal heating efficiency in excess of 300%, significantly reducing both operational costs for occupiers and carbon emissions when compared to gas or direct electric baselines.
- 3.5.5 Furthermore, the heat pump solution will ensure the homes are 'zero-carbon ready', setting the development on a trajectory to net zero emissions over time: the rapid expansion in renewable and low carbon energy supply within the Grid in recent years means that Grid electricity is considerably cleaner per unit than natural gas, and will continue to decarbonise over time:

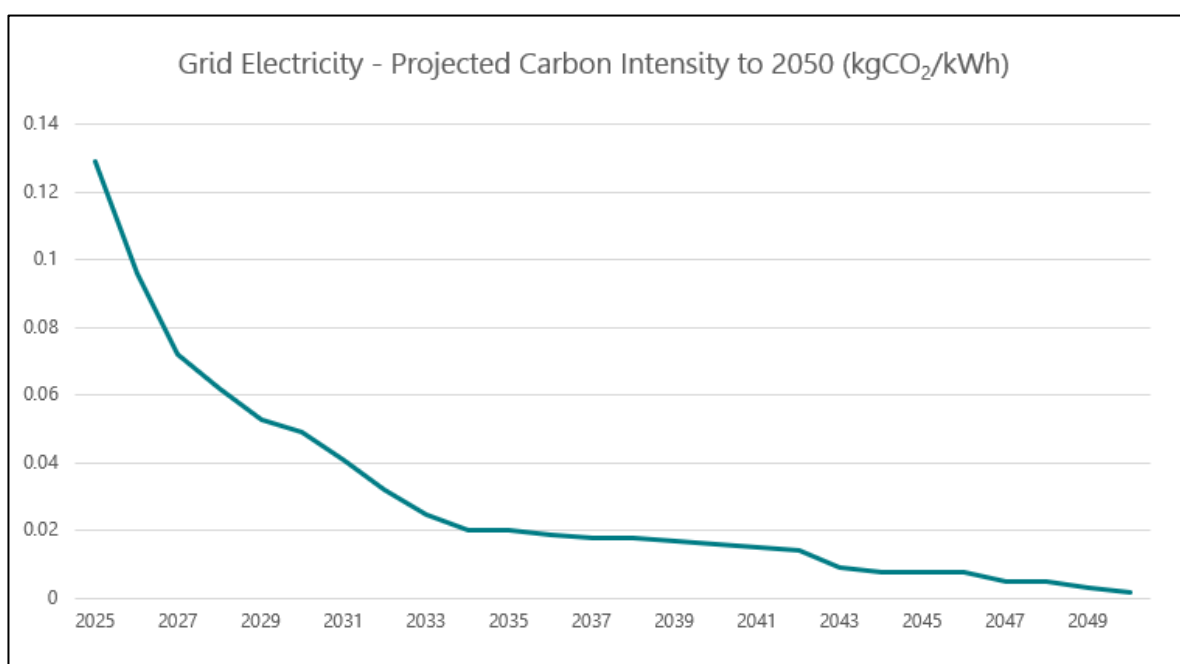


Figure 3: Projected Grid Decarbonisation
(Source: UK Government Green Book, Supplementary Guidance, November 2023)

Solar Photovoltaics

- 3.5.6 Solar photovoltaic (PV) panels will be installed to complement the heat pump solution where required. This option will result in further carbon reductions and energy cost savings by generating electricity on-site.
- 3.5.7 The quantity of PV installed at each property will be determined later at the Reserved Matters stage once housetypes have been designed and the details of the Future Homes Standard have been announced.
- 3.5.8 Any PV panels installed will be roof integrated as far as possible to minimise visual impact, so the orientation and design of the buildings and roofscapes will be carefully considered. For example, the designs will avoid roof features on southerly orientations that significantly limit the installation of PV, such as hipped roofs and dormers.
- 3.5.9 Certain elevations will also be avoided where possible, including those facing WNW or ENE (although it is recognised that orientation to maximise solar PV potential is just one of many considerations when determining residential development layouts). Increasingly, east-west facing split systems are being adopted, providing a more even amount of generation through the day, without any significant loss in annual output. It should not therefore be assumed that all roofs need to face between south east and south west when finalising the layout.
- 3.5.10 The introduction of domestic energy storage (battery) systems will also be considered, potentially as an optional extra for incoming residents. The use of battery technology provides far greater flexibility and control for residents, enabling them to benefit from the value of the energy generated and to capitalise on flexible tariffs designed for heat pump users.

Smart Meters and Control Systems

- 3.5.11 The dwellings will feature smart control systems to help future residents maximise the efficiency of their heating and energy generation systems. This is likely to include highly granular time and temperature zone control and weather compensation. Clear and straightforward system user guides will be provided to incoming residents as part of their welcome packs.
- 3.5.12 Smart meters will also be installed at each property in line with regulations and supplier requirements.

3.6 Indicative Specification: A Summary

- 3.6.1 By adopting the approach to energy outlined in this Section, including the use of low carbon air source heat pumps complemented with solar PV panels where required, the proposed development will comfortably achieve local policy requirements.
- 3.6.2 This approach will also ensure that the development achieves the requirements of current Building Regulations and will be 'zero-carbon ready' in line with Policy SD4 of the Ickleford Neighbourhood Plan and the emerging Future Homes Standard.
- 3.6.3 The outline nature of this application and the fact that the details of the Future Homes Standard are still being finalised means it is not possible to provide an exact specification for the dwellings. It is also not possible to complete energy compliance calculations to establish energy performance, including carbon emissions and Energy Use Intensity (EUI) figures as referenced in the Sustainability SPD.
- 3.6.4 Table 2 instead provides a summary of the *indicative* levels of performance which will be applied at the proposed development. This has been compiled using the notional building specifications for homes under the Future Homes Standard Option 1 as set out in the Future Homes Consultation 2023:

Element Type	Indicative Specification for the Proposed Development
Roof / Sloped Roof	0.11 W/(m ² .K)
External walls	0.18 W/(m ² .K)
Ground floor	0.13 W/(m ² .K)
Glazing	1.2 W/(m ² .K)
Doors	1.0 W/(m ² .K)
Air permeability	<5.0m ³ /m ² /hour@50Pa
Ventilation system	dMEV
Heating system	Air source heat pump
Photovoltaic system	High efficiency panels where required

Table 2: Indicative Specification Summary

- 3.6.5 The precise specification to be applied at the site will be for determination as part of a Reserved Matters application. At that point, detailed energy calculations can be provided, demonstrating more accurately the impact of the proposed approach and how it complies with the local policies and national regulations in place at that point.

4 Water Efficiency

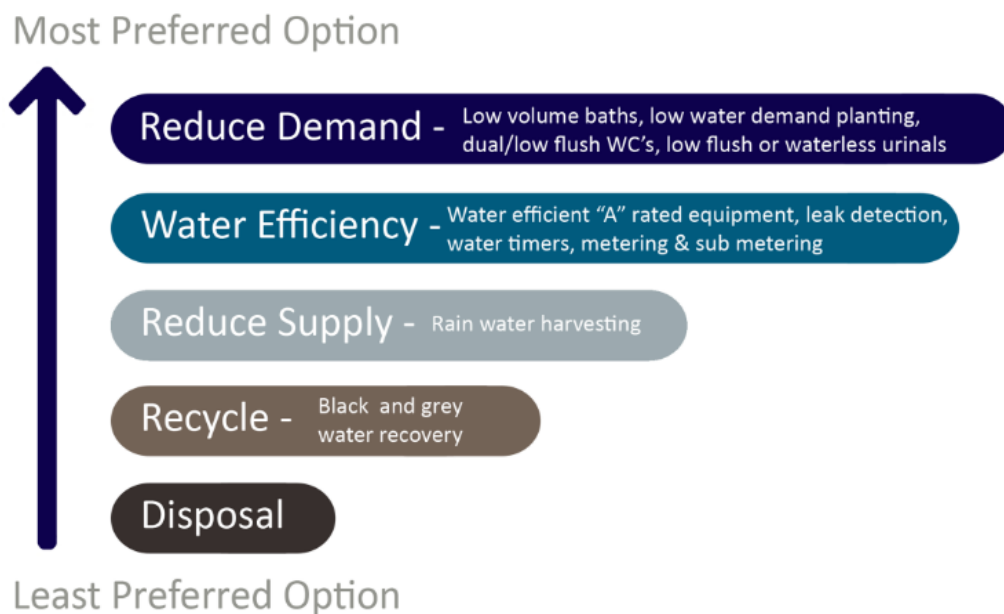
4.1 Introduction

- 4.1.1 Water efficiency becomes increasingly important in a changing climate with diminishing water resources.
- 4.1.2 In the UK, the national average for water consumption is around 143 litres per person per day (l/p/d) which includes potable water being used for flushing the toilet, washing the car and irrigating gardens.



Figure 4: Domestic Water Consumption by End Use

- 4.1.3 In order to reduce this figure, the management of water at the proposed development will follow the principles of the Water Hierarchy:



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Figure 5: The Water Hierarchy

4.2 Water Reduction Measures

- 4.2.1 Water efficiency targets are driven by Approved Document G of the Building Regulations, the enhanced target of which requires new residential developments to achieve a water efficiency equivalent of no more than 110 l/p/d (see Section 2).
- 4.2.2 The Ickleford Neighbourhood Plan directly supports this target, and Local Plan Policy D1 and Policy SP9 both state that residential schemes should meet or exceed the nationally described water efficiency standards.
- 4.2.3 The dwellings at the proposed development will include water efficient fixtures, fittings and appliances plus rainwater recycling via water butts to ensure that daily water use will be calculated to not exceed the 110 l/p/d target. The following table is an illustrative list of specifications which typically achieve this standard:

	Measure	Unit	Performance / Specification
1	Showers	Litres per minute	11
2	Aerated taps	Litres per minute	3
3	Kitchen sink taps	Litres per minute	4
4	Bath	Litre capacity to overflow	140
5	WC	Litres per flush	4 / 2.6 (dual flush)
6	Washing machine	Litres per kg dry load	7
7	Dishwasher	Litres per place setting	1.08

Table 3: Illustrative Water Specifications

- 4.2.4 The final specification to be applied at the development can be confirmed at detailed design stage, at which point the Approved Document G calculation can be used to demonstrate compliance.

5 Climate Resilience and Adaptation

5.1 Adapting to the Future

- 5.1.1 The ability of the development to adapt to anticipated future changes in the climate is an important aspect of its longevity, and ultimate habitability. The principle of adaptation applies to both the built and external environment, and indeed how they interact.
- 5.1.2 This section discusses how the Applicant is addressing the challenges of climate resilience and adaptation at the proposed development in line with the requirements of Local Plan Policy SP11.

5.2 Reducing Overheating Risk Through Design

- 5.2.1 The risk of the overheating of living spaces is of increasing concern, given our knowledge of future climate. Approved Document O details requirements for mitigating this risk in new residential dwellings and methods for demonstrating compliance, including the use of either a compliance checklist or the *CIBSE Guide TM59 Design Methodology for the Assessment of Overheating Risk in Homes* (CIBSE, June 2017).
- 5.2.2 The dwelling designs for the development will undergo overheating risk modelling at the appropriate design stage. In order to provide a robust analysis, and in the context of a changing climate, the use of a 'future weather' file will help ensure that we can be more certain of the impact in the future, and the resulting efficacy of the solutions put forward where any overheating risk exists.
- 5.2.3 Acceptable strategies for reducing overheating risk described in Approved Document O focus on passive design features and include:
- Limiting solar gains:
 - Fixed shading devices such as shutters, external blinds, overhangs or awnings;
 - Glazing design including size, orientation, glass g-value and depth of window reveal;
 - Shading provided by adjacent permanent structures.
 - Removing excess heat:
 - Opening windows and ideally cross ventilation;
 - Ventilation louvres in external walls;
 - A mechanical ventilation system;
 - A mechanical cooling system as a last resort.

5.3 The Multiple Benefits of Open Space and Vegetation

- 5.3.1 The development proposals include retaining the majority of the trees and hedges within the site and around its boundaries, and enhancing them with additional species rich planting. Landscaping features including street trees and shrubs will be planted around the site, and a large area of parkland and an informal play area to the south/southwest of the site will provide valuable amenity space. A large attenuation basin to the southwest will provide opportunities for wetland marginal species.
- 5.3.2 This landscape-led approach will provide multiple benefits in a changing climate:
- The trees will provide shading in the summer months, reducing heat gain into dwellings and therefore reducing the need for mechanical cooling;
 - Trees throughout the site will also help maintain a comfortable external environment in hot periods by providing shading in gardens and shared spaces and reducing any urban heat island effect;
 - The trees, hedges and shrubs will contribute to the reduction of wind speeds, improving comfort levels and reducing air infiltration into buildings on windier days;
 - Vegetation acts as a 'carbon sink' and improves air quality through dry deposition of gases (including NO_x, SO_x, PM₁₀ and O₃);
 - Trees, hedges and shrubs also help reduce levels of ambient noise.
- 5.3.3 This approach will also result in biodiversity gains through ecosystem improvement. The Preliminary Ecological Appraisal for the site should be referred to for full details in this regard.

5.4 Managing Water in a Changing Climate

- 5.4.1 Any new development on a previously undeveloped site will inevitably increase the amount of hard standing (roofs, roads, pavements) and therefore the amount of surface water run-off. Furthermore, rainfall levels in 20-30 years' time are expected to be very different to current levels, not necessarily in annual total volume, but with respect to the rainfall distribution throughout the year and the number of heavy downpours and storm events.
- 5.4.2 The integration of different SuDs features into the landscape layout will therefore be pivotal in its development, in order to enable the necessary storage volumes associated with a 1 in 100 year storm event, plus a 40% allowance for the impacts of climate change.
- 5.4.3 The Flood Risk and Surface Water Assessment which accompanies this application provides further detail in relation to the level of flood risk and the management of surface water flows at the proposed development and this should be referred to for full details in this regard.

6 Reducing Carbon Emissions from Transport

6.1 Accessibility and Sustainable Transport

- 6.1.1 The Transport Assessment which accompanies this application demonstrates that the site is well situated to make the most of existing road networks and public transport routes.
- 6.1.2 To encourage cycling, all the proposed properties will include a secure and weatherproof means of cycle storage in line with local policy requirements.

6.2 Provision of Electric Vehicle Charging Points

- 6.2.1 Increasingly, energy and transport systems are becoming interlinked as the nation transitions from the use of petrol and diesel vehicles to zero emission solutions based around electric charging.
- 6.2.2 There is therefore a need for charging infrastructure to support this wholesale shift to cleaner vehicle technology and this is supported by policy: Approved Document S of the Building Regulations described in Section 2 sets out the comprehensive standards and detailed specifications required at new residential development.
- 6.2.3 The Applicant will design and manage the power network to provide the level of EV charging infrastructure required by Approved Document S. To this end, each dwelling with associated parking will have EV charging infrastructure installed.
- 6.2.4 Approved Document S should be referred to for full details including installation requirements, the cost cap and standards for charging points and cable routes.
- 6.2.5 The full details of the EV charging provision to be installed on the proposed development will be confirmed at the appropriate stage in the planning and design process.

6.3 Provision of Fibre to the Premises

- 6.3.1 The availability of high-quality, reliable broadband infrastructure is increasingly viewed as critical to the functioning of a development and its continued attractiveness to incoming residents.
- 6.3.2 Indeed, such provision can facilitate better home working, enabling clear video calling and effective file sharing, which can contribute to a reduction in commuting.
- 6.3.3 Better quality, reliable internet connections for all have wider social ramifications too – reducing the risk of exclusion, a lack of access to services (which are increasingly internet based) and enabling people to better connect with society as a whole.
- 6.3.4 The provision at the development will align with *Approved Document R Volume 1 (2022 Edition)* which sets out requirements to ensure that, during construction, all new homes are equipped with gigabit-ready infrastructure.

7 Embodied Carbon and Sustainable Waste Management

7.1 Introduction

- 7.1.1 Local Plan Policy D1 requires that developers reduce construction waste, while the Sustainability SPD considers sustainable waste management and encourages developers to address Whole Life Carbon.
- 7.1.2 Broadly speaking, the Whole Life Carbon associated with a development is made up of operational emissions as discussed in Section 3 plus embodied carbon emissions.
- 7.1.3 Embodied carbon refers to the 'upfront' emissions associated with building construction, including the extraction and processing of materials, and the energy and water consumption in the production, assembly, and construction of the building. It also includes the 'in-use' stage (e.g. maintenance, replacement), and the 'end of life' stage (demolition, disassembly, and disposal of any parts of product or building) plus any transportation.
- 7.1.4 This section therefore discusses how the issue of embodied carbon will be addressed, from considered material selection and sustainable waste management through to flexible design solutions.

7.2 Sustainable Building Materials

- 7.2.1 The extraction, manufacturing, refinement and transportation of a raw material will all contribute to its embodied carbon. The sourcing of materials used on the development will therefore be a key consideration:
- Materials derived from recycled, repurposed or reused products will be specified where possible;
 - Low carbon concrete mixes will be considered where appropriate;
 - Less carbon-intensive materials will be used in place of more carbon intensive materials where possible;
 - Robust systems and products with long lifespans will be prioritised;
 - Local suppliers of materials will be used where viable to reduce transportation.
- 7.2.2 The homes will be designed with a palette of materials that is both appropriate and in keeping with the local architectural vernacular. As such the form of construction will not require the use of unusual materials, those with significant environmental impact or those that require significant off-site processing and development before use on site.
- 7.2.3 In addition, the Applicant will use suppliers that have recognised environmentally focused accreditations and management systems such as ISO:14001, and all timber will be sustainably sourced with full FSC or PEFC accreditation.

7.3 Future Flexibility

7.3.1 Later in the design process, the durability, flexibility and adaptability of the dwellings can be considered:

- Ensuring there is synchronicity between materials selected and building life expectancy reduces waste and the need for replacement (and reduces in-use costs);
- Ensuring the building is adapted now to future climate scenarios reduces the need for future intervention (see Section 4);
- Flexible layouts will allow homes to be reconfigured over time to adapt to the residents' changing needs.

7.3.2 By designing homes in this way from the outset ensures building longevity and minimises the need for extensive refurbishment which has implications for waste minimisation and embodied carbon.

7.4 The Waste Hierarchy

7.4.1 In order to reduce construction waste, waste generation, storage, treatment and disposal before, during and after construction will be managed in accordance with the Waste Hierarchy:

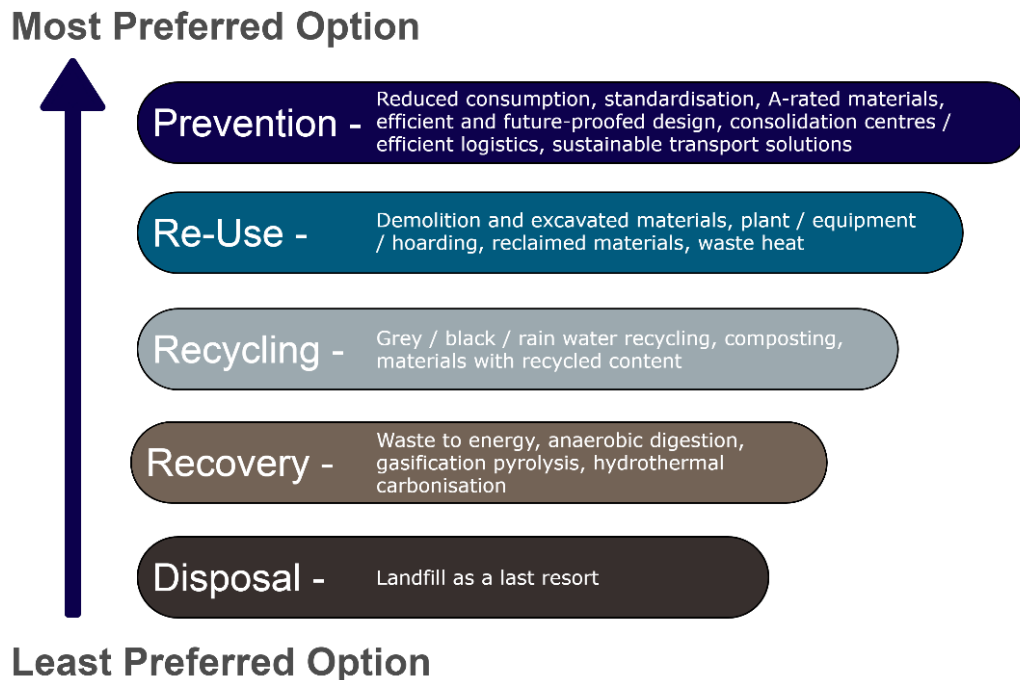


Figure 6: The Waste Hierarchy

7.5 Waste Management

Construction Waste

7.5.1 A Waste Management Plan will be developed and implemented for the development which will:

- Identify a lead person responsible for the Waste Management Plan delivery;
- Provide site induction and training to all staff;
- Identify waste streams, plan for their management and set targets for waste reduction;
- Identify suitable locations for the efficient separation and storage of waste prior to removal from site to encourage higher levels of recycling;
- Identify opportunities for the on-site reuse of materials including excavated materials;
- Re-use scaffolding, hoarding and other such materials on subsequent construction projects.

7.5.2 Where waste must be removed from the site, only licenced waste management contractors with a proven track record of delivering high levels of recycling will be appointed. In addition, it will be a requirement that any contractor operating on the site commits to the Considerate Constructors Scheme and aims to achieve best practice under assessment. This will help further minimise the impact on the surrounding area and neighbours to the site.

Operational Waste

7.5.3 Property occupants will be encouraged to manage waste sustainably, and this will be considered in full at Reserved Matters stage.

7.5.4 For example, the houses will have a private rear garden area with direct external access which will provide sufficient space for bins and composting facilities, keeping waste storage away from the public domain.

7.5.5 Facilities will be easy to access and will be designed in line with the collection regime of the council.

8 Summary

- 8.1.1 This *Energy & Sustainability Statement* has been commissioned by Hawridge Strategic Land to set out how environmental sustainability is being addressed for the proposed development on Land South of Turnpike Lane, Ickleford in North Hertfordshire.
- 8.1.2 Throughout the document, national and local planning policy objectives and standards have been actively addressed to demonstrate the Applicant's commitment to these issues.
- 8.1.3 In particular, the Statement provides as much detail as is possible at this outline planning stage to demonstrate compliance with relevant policies from the *North Hertfordshire Local Plan 2011-2031 (November 2022)*, the *Ickleford Neighbourhood Plan (March 2024)* and current Building Regulations, whilst also looking ahead to the emerging Future Homes Standard:
- The dwellings will be highly energy efficient, adopting a fabric first approach. They will be orientated to maximise solar gain where possible;
 - There will be no natural gas connection to the site;
 - Heating and hot water will be supplied via low carbon air source heat pumps;
 - Solar photovoltaic panels will be installed where appropriate;
 - The development will employ a combination of highly efficient fixtures, fittings and appliances to reduce domestic water use to achieve the 110 l/p/d target;
 - Buildings will be designed and specified to adapt to a changed climate:
 - Overheating will be managed through considered design;
 - The retention of existing trees and additional planting will provide more comfortable microclimates in warmer weather;
 - The landscape design will provide multi-functional benefits, supporting increased biodiversity and enhancing the overall aesthetic;
 - Surface water will be managed via the integration of SuDS into the development.
 - Electric vehicle charging points will be installed in line with policy requirements;
 - High quality broadband will be provided in line with Approved Document R;
 - The embodied carbon of the development will be considered and addressed through sustainable material choices and flexible and durable design;
 - Construction and operational waste will be managed in accordance with the principles of the Waste Hierarchy.
- 8.1.4 As the planning and development process progresses, and as the wider regulatory environment develops, the approach proposed will be kept under review. The final design solution and associated detail will be provided at the Reserved Matters stage.

9 Appendix A: Sustainability SPD Checklist Summary

- 9.1.1 This Checklist provides a brief summary of the proposed approach against the headings provided in the Sustainability SPD, and signposts to the relevant documentation for further information in each case.
- 9.1.2 The information contained within the Checklist is high level to reflect the outline nature of the application.

SUSTAINABILITY THEMES		DETAIL	SPD STANDARD
Optimising Passive Design and Fabric Performance		As detailed in Section 3 of this Statement: - Maximising solar gain will be a consideration when finalising the layout - Overheating risk will be assessed and reduced through considered design - The approach to energy will align with the Energy Hierarchy, prioritising a 'fabric first' approach - A highly efficient building envelope will be specified - There will be no natural gas connection to the site. Heating and hot water will be provided via low carbon air source heat pumps - As a result, the development will be low carbon from the outset and will be 'zero-carbon ready' (it will be futureproofed to become operationally zero carbon over time in line with the decarbonisation of the National Grid) - Energy compliance calculations can be undertaken later in the design process to demonstrate energy performance, including carbon emissions and EUI.	SILVER
Achieving Low Carbon Energy		As detailed in Section 3 of this Statement: - ASHPs and solar PV panels (where required) will ensure a major proportion of energy demand is supplied from onsite technology. This can be confirmed using energy compliance calculations at the appropriate planning stage once house types have been developed. - As detailed in paragraphs 3.5.8-3.5.9, the designs of the houstypes and the roofs will consider PV installation as appropriate - The use of battery energy storage will be investigated later in the planning process.	SILVER
Minimising Carbon Footprint	Whole Life Carbon Assessment	As detailed in Section 3 and Section 7 of this Statement: - Whole Life Carbon (WLC), and methods for reducing emissions, has been considered - This includes a focus on operational carbon in Section 3 and a discussion on embodied carbon in Section 7. - Materials with low embodied carbon will be sourced from suppliers with environmental accreditations, using local suppliers where possible.	BRONZE

	Circular Economy Principles	- Waste will be managed in accordance with the priorities of the Waste Hierarchy. - The final developer will ensure contractors implement strict waste management processes and commit to Considerate Constructor Scheme. - The final developer will consider opportunistic on-site reuse of materials where feasible, including excavated materials. - Sufficient and accessible bin storage will be provided to facilitate waste management and recycling.	BRONZE
Healthy Placemaking		As detailed in the Design and Access Statement and Landscape Strategy: - The designs comply with policy requirements and open space standards - The designs include local areas for play and community amenity As detailed in Section 5 of this Statement: - Overheating risk will be assessed as appropriate later in the design and planning process - Any overheating risk will be controlled by applying requirements of Approved Document O: Overheating.	BRONZE / SILVER
Promoting Biodiversity	Ecological Surveys and Assessments	As demonstrated in the Ecological Appraisal: All required surveys have been completed in line with recommended best practice.	BRONZE / SILVER
	Arboriculture Assessment	As detailed in the Arboriculture Assessment: - All trees on site have been surveyed and trees of value have been identified - The majority of trees will be retained, including high value trees.	BRONZE
	Biodiversity Net Gain	As detailed in the BNG Assessment: - All required surveys, metrics and plans have been completed to assess baseline value and demonstrate how the mitigation hierarchy has been applied 10% BNG will be achieved through a combination of on- and off-site measures - On-plot ecological enhancements will be provided.	BRONZE
	Ecological Buffers	As detailed in the Ecological Assessment: Ecological buffers will be put in place in accordance with policy and regulations.	SILVER
Sustainable Transport	Transport Statements, Assessments and Travel Plans	- A Transport Assessment and Travel Plan have been submitted as part of the application - The scheme includes segregated walk ways and paths away from traffic - The scheme is integrated with green infrastructure	BRONZE

	EV Charging	As detailed in Section 6 of this Statement: • EV charging points will be provided to all properties with associated parking in line with the requirements of Approved Document S	BRONZE
Conserving Water		As detailed in Section 4 of this Statement: • The development will achieve the target water use of 110l/p/d • Fixtures, appliances and fittings that reduce potable water use will be specified, including aerated taps, low/dual flush WCs, low capacity baths • There will be opportunities for rainwater recycling i.e. rainwater butts	BRONZE
Incorporating Sustainable Drainage		As detailed in the FRA and Drainage Strategy: • A detailed SuDS strategy and maintenance plan has been included as part of the application • The strategy includes an allowance for climate change • The strategy is in accordance with policy and regulations.	BRONZE

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