



Energy Statement

GA2, Land north of Great Ashby

Iceni Projects Limited on behalf of
Picture Estates Limited

January 2026

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ON BEHALF OF PICTURE
ESTATES LIMITED

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Energy Statement
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1. EXECUTIVE SUMMARY

- 1.1 Icen Projects Ltd has been commissioned by Picture Estates Limited to produce a Sustainability & Energy Statement to accompany the planning application for the proposed development of GA2, Land north of Great Ashby.
- 1.2 This document details the carbon dioxide (CO₂) emissions reduction measures adopted by the proposed development and gives an overview of the design proposals that will ensure the development operates in an energy efficient manner over the lifespan of the scheme.
- 1.3 This hybrid application proposes the erection of up to 640 dwellings, a 2.1ha site for a primary school, additional land reserved for educational use, and a site for a community hub, alongside pedestrian and vehicular highways works, car parking, landscaping and public realm. The proposed development incorporates carbon reduction measures which are significantly in excess of current policy requirements, aiming to achieve a significant reduction in carbon emissions compared to the Part L:2021 Building Regulations baseline in operation, in compliance with policies set out within the North Hertfordshire Local Plan 2011 – 2031.
- 1.4 Consideration has been given to the North Hertfordshire Local Plan 2011 – 2031 and the North Herts Sustainability Supplementary Planning Document (SPD) in the formulation of this strategy, based in particular around the objectives of the Local Plan policies SP1 (Sustainable development in North Hertfordshire), SP9 (Design and Sustainability) and SP11 (Natural resources and sustainability), adopted by North Hertfordshire District Council in 2022, in addition to the standards set out within the North Herts Sustainability SPD, adopted in 2024. This outline strategy therefore represents best practice in meeting the required standards of energy efficiency and carbon dioxide (CO₂) emissions reduction.
- 1.5 By designing to rigorous energy standards, employing electric-only systems, and integrating renewable energy technologies, the application will respond directly to the Climate Emergency declared by the Council in May 2019. These measures combine to provide a significant carbon dioxide emissions savings compared to the Part L:2021 baseline, aiming to comply with, and where possible exceed, the current requirements of North Hertfordshire District Council.
- 1.6 Through the use of electric-only systems for space heating and hot water, the scheme will be fossil fuel free, and compatible with the Government's intended trajectory to achieve net zero carbon emissions by 2050.

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- 1.7 The proposed energy strategy is based upon the principles of the Energy Hierarchy on the basis that it is preferable to reduce carbon dioxide emissions through reduced energy consumption above decarbonisation through alternative energy sources.
- 1.8 The key measures proposed to minimise carbon dioxide emissions from the proposed development are set out below.
- 1.9 The suggested 'Be Lean' measures include:
- High levels of building fabric insulation to minimise heat loss;
 - A balanced proportion of façade glazing to ensure natural daylight provision without increasing overheating risk;
 - High levels of air tightness to reduce heat loss through infiltration;
 - The use of construction details to minimise heat loss through thermal bridging;
 - Low energy LED lighting to minimise artificial lighting energy consumption;
 - Openable windows, utilising cross ventilation where feasible, will be provided for all buildings to enable a natural ventilation strategy without increasing the risk of overheating;
 - Employment of mechanical ventilation with heat recovery (MVHR) to provide fresh air to the proposed non-domestic spaces; and
 - A high specification of heating controls to ensure operational efficiency.
- 1.10 The suggested 'Be Green' measures include:
- The incorporation of highly efficient, electric-only heating systems, such as heat pumps, to deliver space and water heating for the domestic element, and space heating and cooling, where relevant, for the non-domestic elements; and
 - The potential employment of rooftop photovoltaic (PV) technology to provide low carbon electricity on-site.
- 1.11 The nature of this application means that the strategies contained within this statement will inform the detailed design of the proposed development, which will be determined at a later date as part of Reserved Matters applications. However, it is anticipated that the incorporation of the measures outlined above would facilitate a significant reduction in carbon dioxide emissions over the Part L:2021 Building Regulations baseline for all proposed dwellings and non-domestic spaces. This is in compliance with the current requirements of North Hertfordshire District Council.
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- 1.12 Overall, the proposals constitute sustainable development in accordance with national and local policy requirements and will provide a development that seeks to promote these principles in operation.

2. INTRODUCTION

- 2.1 Icen Projects Ltd was commissioned by Picture Estates Limited to produce an Energy Statement to accompany the planning application for the proposed development at GA2, Land north of Great Ashby.

Report Objective

- 2.2 This document details the sustainable design and construction measures adopted by the proposed development and gives an overview of the design proposals that will ensure the development operates in a sustainable manner over the lifespan of the scheme. The Energy Statement report headlines will provide a framework for the project team to operate consistently within sustainability guidelines set out by.
- 2.3 The report is structured to meet these guidelines as follows:
- Section 3 discusses the planning context and policies which are relevant to energy;
 - Section 4 discusses the development response to the policy drivers for energy;
 - Section 5 summarises the development's design response; and
 - Section 6 summarises the development's design response.

Site and Surroundings

- 2.4 The application site (Appendix A1) is located in Great Ashby, to the north east of Stevenage, approximately 4.75km to the north east of Stevenage train station. To the north, the site is bound by areas of woodland and arable land, with Tile Kiln Farm located immediately adjacent to a section of the northern boundary of the site. Woodland and arable land also form the eastern boundary of the site, with an area of ancient woodland abutting the western boundary, and further arable land present beyond this. The parish of Great Asby forms the southern boundary of the site, with areas of ancient woodland and a local wildlife site located in proximity to the southeastern corner.
- 2.5 The application site itself currently comprises arable fields and areas of woodland. The arable fields within the site are demarcated by hedgerows, woodlands, and copses, and a number of footpaths and bridleways run through and adjacent to site. Arable farmland comprising woodland and hedgerows are found adjacent to the site to the north and the east. The surrounding area is predominantly rural in nature to the north, east and west, whilst the area to the south is dominated by low density dwellings associated with the parish of Great Ashby. The approximate location and boundaries of the site are shown in Figure 2.1 below.

Figure 2.1 The site

 Approximate site boundary



The Proposed Development

2.6 The description of development is as follows:

“Hybrid application for a residential-led development comprising residential (Use Class C3), educational use (Use Class F1), a community hub (Use Class F2) with associated new internal roads, access, parking, cycling infrastructure, landscaping and other associated infrastructure.

Full application comprises the construction of vehicle access and an active travel link via Mendip Way, with associated landscaping and drainage works.

The outline application, for which all matters are reserved except for means of access, comprises the erection of up to 640 dwellings (Use Class C3), a site for a primary school, further land reserved for educational use (Use Class F1), a site for a community hub (Use Class F2), with associated infrastructure.”

2.7 The image below shows the illustrative masterplan, whilst a site location plan is provided in Appendix A1.

Figure 2.2 Illustrative Masterplan



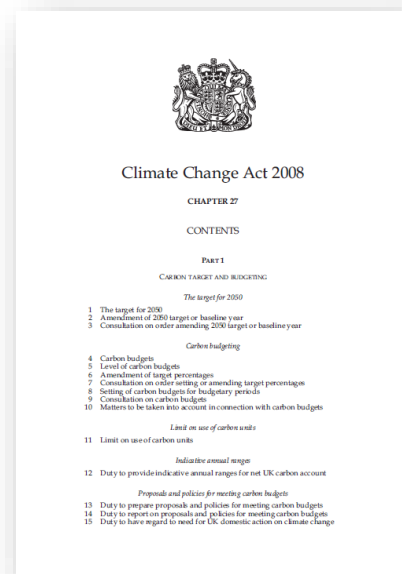
3. PLANNING AND REGULATORY CONTEXT

- 3.1 Built environment sustainability is incorporated within policy and regulation at a national and local level, as set out below.

National

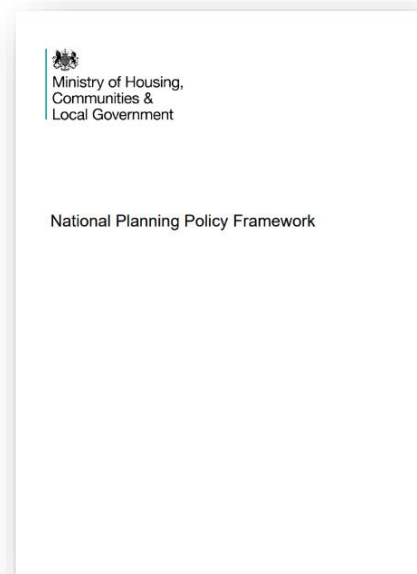
Climate Change Act 2008

- 3.2 On 26th November 2008, the UK Government published the Climate Change Act 2008; the world's first long-term legally binding framework to mitigate against climate change. Within this framework, the Act sets legally binding targets to increase greenhouse gas emission reductions through action in the UK and abroad from the 60% target set out in the Energy White Paper, to 80% by 2050.
- 3.3 As required under Section 34 of the Climate Change Act, the Sixth Annual Carbon Budget was accepted by the Government in April 2021. This sets out a budget for UK emissions for the period 2033 – 2037.
- 3.4 Following a commitment in June 2019, the Climate Change Act has been amended to target net zero carbon emissions by 2050.



National Planning Policy Framework

- 3.5 The Ministry of Housing, Communities & Local Government determines national policies on different aspects of planning and the rules that govern the operation of the system. Accordingly, the National Planning Policy Framework (NPPF), which came into force in March 2012 and was updated in February 2019, aims to strengthen local decision making. Additional updates have since been made through the latter half of 2020 and in January and July 2021 to reflect changes related to use classes, permitted development rights, the calculation of housing need, and requirements to achieve beauty alongside sustainability. Further updates were made in September and December 2023 with respect to onshore wind



development, and beauty, design, infrastructure, neighbourhood and the environment, respectively. In December 2024, the NPPF was revised in response to reforms to the Framework, and consultations on other changes to the planning system.

- 3.6 Paragraphs 10 and 11 of the NPPF confirm that at the heart of this document is a “*presumption in favour of sustainable development*”, and that development proposals that accord with an up-to-date development plan should be approved without delay.
- 3.7 Paragraph 7 states that the purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- 3.8 Achieving sustainable development means that the planning system has three overarching activities, which are interdependent and need to be pursued in mutually supportive ways, so that opportunities can be taken to secure net gains across each of the different objectives:
- **An Economic Role** – ensuring the provision of land and infrastructure needed to help build a strong, responsive and competitive economy.
 - **A Social Role** – supplying the required amount of housing while at the same time ensuring and building strong, vibrant and healthy communities. Ensuring that the built environment is sited around accessible local services which help support a community’s health, social and cultural well-being.
 - **An Environmental Role** – ensuring development contributes to the protection and enhancement of the natural, built and historic environment through the improvement of biodiversity, minimising the use of natural resources and production of pollution / waste, and guaranteeing sufficient adaptation to climate change.

Future Homes Standard 2025 (March 2019)

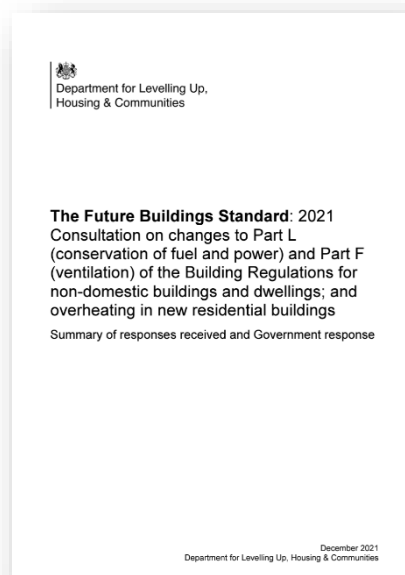
3.9 Within the Spring Statement 2019, the Chancellor announced the future introduction of the Future Homes Standard 2025. The Standard will mandate the end of fossil fuel heating systems in new homes from 2026, and target “world-leading levels of energy efficiency”. In doing this, the Standard aims to utilise green technology to reduce environmental impacts, as well as reducing consumer energy bills.

3.10 This Standard is expected to build on the Prime Minister’s Clean Growth Grand Challenge missions, which aims to at least halve the energy usage of new build properties by 2030. It also looks to halve the costs of renovating existing buildings to achieve a similar standard of energy efficiency as new buildings, whilst improving their quality and safety.

Future Buildings Standard (January 2021)

3.11 On 19th January 2021, the government announced the future introduction of the Future Buildings Standard. The Standard will deliver new non-domestic buildings that are zero-carbon ready from 2026 onward, which use low-carbon heat, and which have the best fabric standards possible. As the electricity grid continues to decarbonise, homes built to the Standard will become net zero carbon over time, with no need for further energy efficiency retrofit work as they will not rely on fossil fuels for heating and hot water.

3.12 This Standard is expected to build on the Prime Minister’s Clean Growth Grand Challenge mission, which aims to at least halve the energy usage of new buildings by 2030. It also looks to halve the costs of renovating existing buildings to achieve a similar standard of energy efficiency as new buildings, whilst improving their quality and safety.

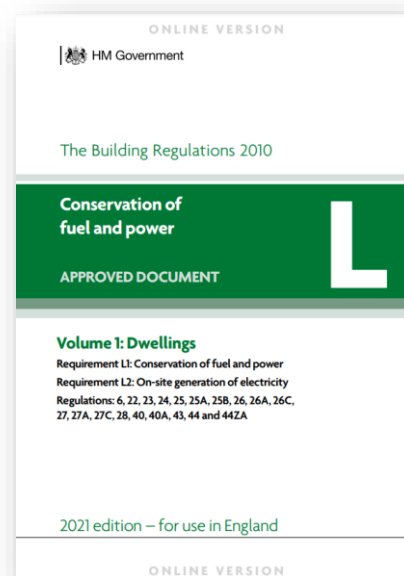


Part L:2021 of the Building Regulations

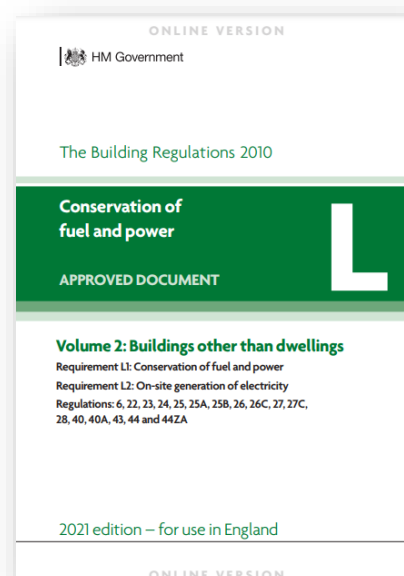
Part L of the Building Regulations relates to the conservation of fuel and power, and applies to both new and existing buildings. The current edition covers the energy efficiency requirements of the building regulations as set out in Part L of Schedule 1 to the Building Regulations. Technical guidance is contained in two Part L Approved Documents.

3.13 The documents of relevance to this scheme include:

- **Approved Document L Volume 1: Dwellings.** This provides the methodology for new build, domestic buildings to meet current energy efficiency standards, including backstop U-values, carbon dioxide emissions calculations and minimising the risk of overheating. Carbon dioxide emissions reductions are prescribed for 'regulated' emissions only, and relate to heating, hot water, lighting, auxiliary and cooling (where specified). Emissions from domestic appliances (cooking, for example) are considered to be unregulated emissions, and are excluded from the analysis.



- **Approved Document L Volume 2: Buildings other than dwellings.** This provides the methodology for new build, non-domestic buildings to meet current energy efficiency standards, including backstop U-values, carbon dioxide emissions calculations and minimising the risk of overheating. Carbon dioxide emissions reductions are prescribed for 'regulated' emissions only, and relate to heating, hot water, lighting, auxiliary and cooling (where specified). Emissions from other equipment (computers, for example) are considered to be unregulated emissions, and are excluded from the analysis.



Regional

- 3.14 Within Hertfordshire County Council, key sustainable development principles for economic, environmental and social improvement are set out below:

Sustainable Hertfordshire Strategy (2022; Revised 2023)

- 3.15 Following the declaration of a Climate Emergency in July 2019, Hertfordshire County Council committed to develop a Sustainable Hertfordshire Strategy to set out policies and strategies enabling the embedding of sustainability across all Council operations and services throughout the county.



- 3.16 The Strategy focuses on the environmental aspirations of sustainability, and has been developed based upon three levels of influence:

- **Lead** in Council operations – e.g. how the Council work, how the Council provides services, and how the Council manages its buildings.
- **Enable** a sustainable County with the Council's programmes, policies and decisions – e.g. through planning policies and how waste is disposed of within the County.
- **Inspire** businesses and residents to take action – e.g. helping residents to lead a sustainable life, and support businesses to grow by partnering with other leading organisations to take action together.

- 3.17 The Strategy sets out policies and objectives to achieve the following ambitions for the County:

- Carbon neutral for all Council operations by 2030.
- All Council operations and services ready for future climates.
- Improve biodiversity on Council land by 20% by 2030.
- Divert all waste from landfill by 2030.
- Become a net zero greenhouse gas County before 2050.
- Ensure the County's communities are ready for future climates.
- Improve wildlife in the County's land and water by 20% by 2050.
- Provide clean air for all by 2030.
- Increase resource efficiency threefold in the County by 2050.

Hertfordshire Energy Strategy

3.18 The Hertfordshire Energy Strategy sets out objectives and targets, and proposed measures to deliver these, relating to improvements in energy efficiency and the delivery of low carbon and renewable energy sources within the County. The key objective of the Hertfordshire Energy Strategy is to:



- Provide a better joined up, corporate approach to energy investment on assets to make savings and generate income for the Council;
- Identify reduce energy consumption can be reduced through service delivery redesign and policy development;
- Attract investment into energy infrastructure on the Council's assets which can benefit the Council and the broader community;
- Identify how the Council's assets can facilitate the development of low carbon energy infrastructure to support transport, housing, waste management and smart community projects; and
- Work with all partners (public and private sector) and the local community to identify and facilitate low carbon energy projects using the Council's assets that bring benefits to all partners.

3.19 To achieve this objective, five key priority areas have been identified to deliver savings and revenue generators:

- Demand Reduction;
- Procurement;
- Generations including use of renewable & emerging technologies;
- Communities/partnership support; and
- Infrastructure development – electric vehicle's, heat networks.

Local

- 3.20 In determining the local context, the North Hertfordshire Local Plan 2011 – 2031 (November 2022) sets out policy relevant to energy.

North Hertfordshire Local Plan 2011 – 2031 (November 2022)

- 3.21 The Local Plan seeks to address the key issues facing North Hertfordshire and will set a strategic vision and spatial strategy for the District over the period 2011 to 2031. Policies of relevance to this project in the context of energy are as follows:

- **Policy SP1: Sustainable development in North Hertfordshire** states that this Plan supports the principles of sustainable development within North Hertfordshire. We will:
 - a) Maintain the role of key settlements within and adjoining the District as the main focus for housing, employment and new development making use of previously developed land where possible;
 - b) Ensure the long-term vitality of the District's villages by supporting growth which provides opportunities for existing and new residents and sustains key facilities;
 - c) Grant planning permission for proposals that, individually or cumulatively:
 - i. deliver an appropriate mix of homes, jobs and facilities that contribute towards the targets and aspirations in this Plan;
 - ii. create high-quality developments that respect and improve their surroundings and provide opportunities for healthy lifestyle choices;
 - iii. provide the necessary infrastructure required to support an increasing population;
 - iv. protect key elements of North Hertfordshire's environment including biodiversity, important landscapes, heritage assets and green infrastructure (including the water environment); and
 - v. secure any necessary mitigation measures that reduce the impact of development, including on climate change; and



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- vi. Support neighbourhood plans and other local planning initiatives where they are in general conformity with the strategic policies of this Local Plan.
 - **Policy SP9: Design and Sustainability** states that 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. Exceptionally, developments under 100 dwellings will be considered significant if there are site specific complexities and sensitivities that require a masterplan-led approach. In some circumstances a Strategic Masterplan may also be required to consider the cumulative impact of more than one site to support a co-ordinated and integrated approach to place-making and design.
 - c) Require Strategic Masterplans and planning applications for Strategic Housing Sites and significant development to (as applicable):
 - i. create buildings, spaces and streets which positively reflect and respond to the local landscape, townscape and historic character
 - ii. create integrated, accessible and sustainable transport systems with walking, cycling and public transport designed to be the most attractive forms of transport and effectively linking into the surrounding areas;
 - iii. provide a clear structure and hierarchy of pedestrian friendly streets and well-connected footpaths and cycleways integrate with the wider built and natural environment and communities;
 - iv. plan for integrated and mixed-use communities with walkable locally accessible community, employment and retail facilities;
 - v. positively integrate with adjacent rural and urban communities and positively contribute to their character and the way the area functions, including addressing cumulative, cross boundary planning and infrastructure matters;
 - vi. create an accessible multi-functional green infrastructure network that provides:
 - a key structuring and functional place-making feature supporting healthy lifestyles, sport, play and recreation linking into the wider Green Infrastructure Network; and

-
- a high-quality integrated network to support ecological connectivity, biodiversity net gain, climate adaptation and mitigation linking into the wider Ecological Network.
- vii. ensure the effective use of sustainable urban drainage and sustainable water management;
 - viii. ensure a hierarchy of linked, high quality and attractive public spaces and public realm that is safe, attractive and supports social interaction for all age groups; and
 - ix. design to last with a clear stewardship, management and maintenance strategy.
- 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:
- i. Site specific vision and place-making principles;
 - ii. Masterplan setting out the quantum, scale, type, mix and distribution of land uses, housing and community facilities;
 - iii. Green Infrastructure Framework identifying the scale, distribution, type and design of green spaces, biodiversity net gain, strategic drainage and on and off-site linkages;
 - iv. Movement Framework setting out the key access points, strategic highways, street hierarchy and footways and cycleways (on and off site);
 - v. Urban Design Framework and design principles identifying how the site responds to local character and context and key structuring elements and layout principles (including heights and densities);
 - vi. Sustainability & Energy Framework identifying site-wide and building scale opportunities for low and zero carbon;
 - vii. Illustrative Masterplan Layout; and
 - viii. Infrastructure Delivery, Phasing & Management Strategy
- e) Encourage the submission of Strategic Masterplans for the Council's consideration and agreement before the submission of a planning application. We will also confirm the scope and contents of individual Strategic Masterplans with applicants in pre-application discussions. Planning applications must be accompanied by a Strategic Masterplan. Where applications have already been submitted to the Council a Strategic Masterplan should be

agreed with the Council prior to or as part of the grant of planning permission. Adherence to the Strategic Masterplan will be secured through planning conditions and/or legal agreement.

- 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.
- **Policy SP11: Natural resources and sustainability** states that 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;
 - c) Support the principles of the Water Environment (Water Framework Directive) Regulations 2017 and seek to protect, enhance and manage the water environment;
 - d) Give consideration to the potential or actual impact of land contamination and support proposals that involve the remediation of contaminated land; and
 - e) Work with utilities providers, East Hertfordshire District Council and relevant agencies to ensure additional wastewater treatment capacity is delivered without harm to protected European sites.

North Herts Sustainability Supplementary Planning Document (September 2024)

3.22 The North Herts Sustainability Supplementary Planning Document (SPD) sets out the standards required to meet the visions, objectives and policies of the North Herts Local Plan as sustainably as possible. The SPD sets out the Council's sustainability expectations when applying the Local Plan policies. Specifically, the SPD identifies:

- The main sustainable construction requirements under both 'mitigation' to climate change (i.e. ways of reducing greenhouse gas emissions – mainly CO₂) and adaptation to predicted climate change;
- The design and energy-saving/efficiency measures that can result in a development minimising greenhouse gas emissions and energy use and waste. It aims to create places that are



amenable to biodiversity and adaptable to a changing climate (including through the integration of green infrastructure);

- Guidance on renewable and low-carbon energy solutions, for reduced reliance on fossil fuels and finite energy sources, and for efficient use of national grid energy;
- Potential solutions to water shortages and efficiencies requirements;
- The materials and methods used in construction; and
- Clear guidance for anyone applying for planning permission, or wishing to comment upon a planning application, as well as providing a consistent approach to assessing planning applications.

3.23 Three standards – bronze, silver and gold – are set out within the SPD to assist in the application of a holistic approach to sustainability. Measures are set out within checklists to across the following eight themes:

- Optimising passive design & fabric performance;
- Achieving low carbon energy;
- Minimising carbon footprint;
- Healthy placemaking;
- Promoting biodiversity;
- Sustainable travel;
- Conserving water; and
- Incorporating sustainable drainage.

North Herts Council Climate Change Strategy: 2022 – 2027

3.24 The North Herts Council Climate Change Strategy: 2022 – 2027 sets out the Council's plans and commitments relating to the mitigation of and adaptation to climate change. The Strategy sets out what the Council will do to first reduce its own carbon emissions to a carbon neutral position by 2030, and then to help achieve a net zero carbon District by 2040. This is to be achieved through the setting out of policies to enable a reduction in carbon emissions, whilst also encouraging residents and businesses to reduce their own emissions.

3.25 Three key areas of focus are set out, which are considered to offer the greatest scope to influence emissions:

- Reducing emissions from the District Council's estate and operations.
- Reducing the need to travel and improving use of sustainable transport in operations.
- Reduction consumption of resources, increasing recycling and reducing waste.

Other Considerations

Declaration of a Climate Emergency (May 2019)

3.26 On the 21st May 2019, North Hertfordshire District Council declared a climate emergency, and set a target to attain zero carbon emissions by 2030. In doing so, the Council agreed to:

- 1) Join other councils in declaring a Climate Emergency;
- 2) Ask the Leader to write to the Secretary of State requesting that they provide the necessary powers and resources to make local action on climate change easier;
- 3) Request that, in light of the IPCC report, officers review the council's Climate Change Policy with the aim of bringing a report to Council in autumn of 2019, after consideration by Overview and Scrutiny. The review should include an action plan to achieve a target of zero carbon emissions by 2030 and proposals for regular reporting to Overview and Scrutiny Committee of the progress with the plan;
- 4) Ask officers to ensure that, as the Council's policies are routinely reviewed, specific consideration is given to how policies and our related decisions and actions, affect our contribution to climate change, and where necessary, update these policies to reduce our impact wherever possible;
- 5) Ask officers to investigate the most appropriate training for Members and officers about how to promote carbon neutral policies for consideration by Council;
- 6) Continue to work with partners across the district, county and wide region to deliver widespread carbon reductions.

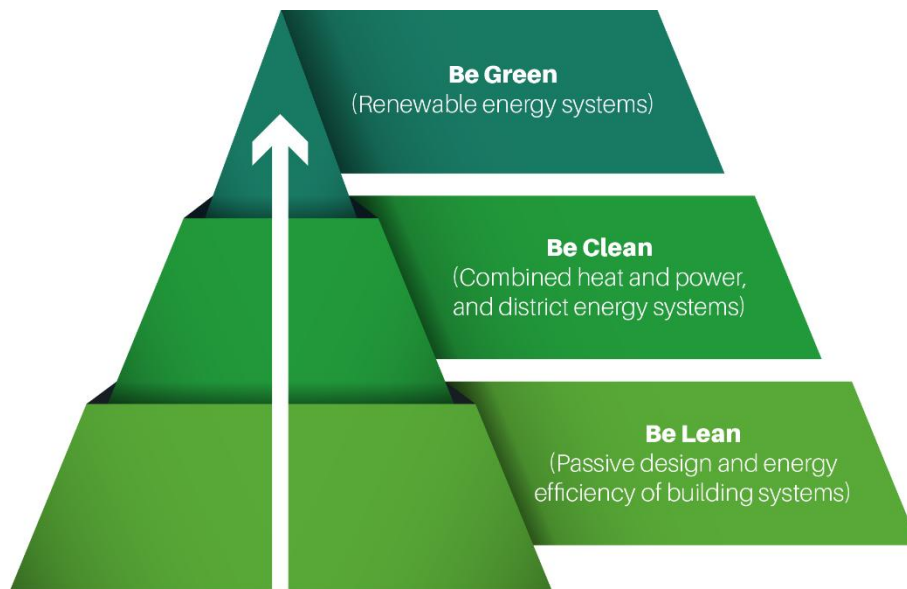
4. ENERGY STRATEGY

- 4.1 With reference to the policy requirements, guidance and industry best practice detailed in Section 3, a comprehensive energy and carbon dioxide (CO₂) emissions assessment has been carried out for the proposed development. The energy performance of the scheme has been analysed and evaluated against the most up-to-date iteration of Part L of the Building Regulations and pertinent North Hertfordshire District Council policies, accounting for economic, technical and functional feasibility.
- 4.2 It should be noted that, due to the nature of the application, there are no detailed designs currently available for the proposed dwellings. Therefore, in order to maintain a degree of flexibility in complying with and exceeding the national standards set out in the Building Regulations on carbon and energy performance, as required by North Hertfordshire District Council, the measures outlined below describe a potential means of achieving this. Therefore, the final dwelling specifications may be subject to change during subsequent design, with additional detail to be provided as part of a Reserved Matters application.

The Energy Hierarchy

- 4.3 The proposed strategy is based upon the principles of the Energy Hierarchy on the basis that it is preferable to reduce carbon dioxide emissions through reduced energy consumption above decarbonisation through alternative energy sources.
- 4.4 The tiers of the Energy Hierarchy are:
- Be Lean Use less energy
 - Be Clean Supply energy efficiently
 - Be Green Use renewable energy

Figure 4.1 The Energy Hierarchy



'Be Lean' (Use Less Energy)

4.5 Within the first stage of the energy hierarchy, it is proposed to incorporate high levels of passive and energy efficient design measures in order to reduce the development's energy consumption and associated CO₂ emissions, utilising a 'fabric first' approach to reduce energy demand.

4.6 Details of the passive design and indicative energy efficiency measures proposed have been detailed below.

Domestic

4.7 Passive design utilises daylight, solar energy, shading and stack or wind driven ventilation to illuminate, heat, shade where necessary and ventilate/cool the building, thus requiring less (mechanical) energy to achieve the performance standards for health and wellbeing of the residents.

4.8 Site characteristics relating to local climate, surroundings, scale and size of the development therefore passively influence the potential energy requirement and savings that can be achieved through the consideration of these aspects. The parameters that most influence the potential to utilise sunlight and solar gains are the orientation and layout of buildings, however these are typically driven by various factors other than energy efficiency or bioclimatic design considerations (e.g. aesthetics, function, etc.).

4.9 The orientation of the dwellings will be dictated by the plot orientation in order to give the overall scheme a cohesive design approach. The distances between buildings will be optimised to ensure sufficient access to natural daylight and passive solar gains to the dwellings. Light and solar gain will

also be influenced by the fenestration and the selection of glazing with a high degree of light transmittance.

- 4.10 The following U-values are proposed as an indicative guide for the building elements and will be further evaluated during detailed design, to best minimise heat loss or gain, depending on the time of year. The table demonstrates the compliant performance of the building fabric with the Building Regulations requirements for domestic uses.

Table 4.1 Proposed domestic building fabric U-values

Building Fabric Element	Part L:2021 backstop U-values (W/m ² K)	Proposed U-values (W/m ² K)
Ground floor	0.18	0.10
External wall	0.26	0.15
Roof	0.16	0.10
Windows	1.60 (including frame)	1.20 (including frame)
Doors	1.60	1.00

- 4.11 Subject to confirmation, it is proposed that glazing will be double or triple glazed, argon filled with a low emissivity coating. Although this has yet to be formally specified, it is expected that thermally efficient glazing will be employed, with window U-values of 1.20 W/m²K or better (including frame), a g-value of 0.63 and light transmission of ~70% to improve natural daylight penetration.
- 4.12 A high level of air tightness is proposed, where a level equal to or below 5 m³/h/m² shall be targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating/cooling demand further reduced.
- 4.13 The other significant means of heat loss from dwellings is due to thermal (or cold) bridging. This is typically a construction detail which has higher thermal conductivity than the surrounding materials, creating a path of least resistance for heat transfer. Thermal bridges result in an overall reduction in thermal resistance of the building elements and should be designed out where possible to minimise unwanted heat loss. In order to minimise heat loss through thermal bridges it is intended that low ψ -value will be targeted for each dwelling through the use of construction detailing.

4.14 High efficiency plant, equipment and controls are proposed to limit the energy consumed in order to provide the required level of indoor environmental performance and control. Performance efficiency values have been specified in line with the requirements of the Building Regulations in order to minimise carbon dioxide emissions as far as possible through the 'Be Lean' stage.

- Low energy LED lighting will be installed throughout the residential units.
- In order to remove the need for fossil fuel combustion on-site, it is intended that space and water heating will be provided by electric-only systems, such as air source heat pump (ASHP) technology. This is addressed in more detail in the renewable energy technology section below.
- All residential units will be provided with opening windows to enable a natural ventilation strategy that utilises cross ventilation where feasible to provide fresh air to habitable spaces, without increasing the risk of overheating.
- Energy management systems, such as smart meters, will be installed in all dwellings to enable future residents to monitor their energy usage, and therefore aid in reducing their energy consumption.
- All future residents will be provided with a Home User Guide, to ensure all plant and equipment provided is used correctly and to enable efficiency of use to be maximised.
- Time and temperature zones will be employed in all dwellings and will be controlled by the suitable arrangement of plumbing and electrical systems.

4.15 Through the measures detailed above, it is intended that the at least 80% of the dwellings brought forward as part of the development achieve an Environmental Performance Certificate (EPC) rating of B, with the remaining dwellings to achieve an EPC rating of C. In addition, an Energy Usage Intensity (EUI) of no more than 60 kWh/m²/year and a Space Heating Demand (SHD) of no more than 40 kW/m²/year will be targeted for all dwellings. Further to this, the Proposed Development will target a 10% reduction in carbon dioxide emissions over the Part L:2021 baseline under the 'Be Lean' tier of the Energy Hierarchy through the incorporation of the measures set out above.

Non-Domestic

4.16 Similarly to the domestic element of the proposed development, the non-domestic component should include a wide range of energy efficiency measures, intended to reduce energy demand.

4.17 The exact nature of the proposed non-domestic space is not confirmed at this stage, however it is intended that the scheme will deliver a local community use or building, in addition to a primary school. The building fabric specification has therefore been driven by the energy demand profile associated with these uses.

- 4.18 The passive design of the non-domestic buildings will, where practicable, include a number of specific energy efficiency features.
- 4.19 The following U-values provide an indicative guide as a means of limiting heat loss through the non-domestic units' building elements and will be further evaluated during detailed design.

Table 4.2 Proposed non-domestic building fabric U-values

Building Fabric Element	Part L:2021 backstop U-values (W/m ² K)	Proposed U-values (W/m ² K)
Ground floor	0.18	0.10
External wall	0.26	0.15
Roof	0.16	0.10
Windows	1.60 (including frame)	1.20 (including frame)
Doors	1.60	1.20

- 4.20 Subject to confirmation, it is proposed that glazing will be double or triple glazed with a low emissivity coating. Although this is yet to be formally specified, it is expected that centre pane U-values will be 1.40 W/m²K or better, with a g-value of 0.64 and a light transmission of 78% to maximise natural daylight penetration.
- 4.21 A high level of air tightness is proposed, where a level equal to or below 3 m³/h/m² shall be targeted, meaning that air infiltration between the internal and the external environment will be largely controlled, and space heating/cooling demand further reduced.
- 4.22 High efficiency plant, equipment and controls are proposed where practicable to limit the energy consumed in order to provide the required level of indoor environmental performance and control. Performance efficiency values have been specified in line with the requirements of the Building Regulations in order to minimise carbon dioxide emissions as far as possible through the 'Be Lean' stage.
- Low energy LED lighting will be installed throughout the non-domestic space. Lighting power densities of 3.0 W/m² per lux are recommended, with daylight dimming and presence detection controls to be applied where practicable to reduce operational lighting energy consumption.

-
- It is recommended that outside air be provided to the non-domestic space(s) via mechanical ventilation with heat recovery (MVHR), with a recommended specific fan power (SFP) of 0.7 W/l/s. This efficiency is in line with that specified in Part L of the Building Regulations.
 - Where required, it is recommended that cooling be provided to the non-domestic space(s) using variable refrigerant flow (VRF) systems, with a cooling seasonal energy efficiency ratio of at least 5.0.
 - Energy usage will be metered to ensure that charging for energy is linked to usage.
 - Where relevant, the electricity power factor should be greater than 0.95, and light metering with warnings about out of range values will be utilised as part of the building management system.

4.23 Through the measures detailed above, it is intended that a high level of energy efficiency will be achieved for the non-domestic element of the proposed development. Where relevant, it is intended that the non-domestic buildings brought forward achieve a BREEAM Rating of 'Excellent', where feasible and applicable.

'Be Clean' (Supply Energy Efficiently)

4.24 The potential for the proposed development to incorporate a low carbon heating system has been reviewed for the scheme.

4.25 Local heat and power sources minimise distribution losses and achieve greater efficiencies when compared to a separate energy system. This in turn reduces the site-wide energy consumption and associated carbon dioxide emissions.

4.26 The potential integration of a district heating network or a conventional gas-fired combined heat and power (CHP) plant to provide low carbon heat and power on-site has been evaluated for the development, in compliance with industry best practice and appropriate planning policies.

District Heating Feasibility

4.27 The potential for the proposed development to incorporate a low carbon heating system has been reviewed for the scheme.

4.28 Local heat and power sources minimise distribution losses and achieve greater efficiencies when compared to a separate energy system. This in turn reduces the site-wide energy consumption and associated carbon dioxide emissions.

-
- 4.29 The potential integration of a district heating network (DHN) or a conventional gas-fired combined heat and power (CHP) plant to provide low carbon heat and power on-site has been evaluated for the development, in compliance with industry best practice and appropriate planning policies.

District Heating Feasibility

- 4.30 The feasibility of a DHN is heavily dependent on a location's heat demand. In turn, heat demand in the locality is dependent on building usage and the surrounding area heat demand density. The establishment of a new DHN is capital intensive and, to ensure economic viability, requires areas of high thermal demand density in order to minimise losses and associated costs. A threshold thermal density value of 50 kWh/m² is typically required to ensure viability, as is a location in proximity to an anchor heat load, such as a hospital.
- 4.31 Figure 4.2 below displays the development site within its proposed surroundings. From this, it can be concluded that the site itself is undeveloped, with relatively low-density residential settlement to the southwest and south. The surrounding area is therefore likely to be characterised by a low heat demand, and it is considered that no anchor heat load is present within the surroundings of the site.

Figure 4.2 Site and surroundings

 Approximate site boundary



- 4.32 There are no existing or proposed district heating networks within close proximity to the site. In addition, due to the relatively low density of the development, and the cost of the infrastructure required to connect a peri-urban location to a district heat network, it is not deemed cost effective to establish a district heat network on the site as part of the proposed development.
- 4.33 The proposed development will deliver buildings that are designed to comply with the most up to date iteration of the Building Regulations and the Future Homes Standard, which will reduce the energy demand of the buildings. It is anticipated, therefore, that the thermal demand density of the

proposed development will be far less than the threshold value stated above. Further to this, densities well in excess of 100 dwellings per hectare are typically required at a minimum to ensure the efficient operation of a DHN. As demonstrated in Figure 2.1 above, the proposed development will not seek to deliver the densities required to support the efficient operation of a DHN.

- 4.34 Therefore, based on the low density of the proposed development, and the costs associated with the establishment of a DHN in a peri-urban location, in combination with the fact that there are no existing or proposed DHNs within close proximity to the site, it is not considered to be feasible to incorporate a DHN as part of the proposed development.

Combined Heat and Power Feasibility

- 4.35 Based on the anticipated timescale of the proposed development and the predicted trajectory of the national electricity grid decarbonisation, the establishment of a CHP network powered by fossil fuels is not considered to be a carbon efficient approach.
- 4.36 It is considered that projected changes to the carbon content of electricity and gas will result in technologies that have lower operational emissions than CHP, and which are able to optimise local energy sources, being the preferred option for serving the heating demands of the built environment. These technologies are likely to be able to offset more carbon emissions than traditional, gas-engine CHP systems.
- 4.37 The incorporation of a gas-fired CHP network will lock the development into relatively carbon intensive gas-fired heating and hot water technology, and will not facilitate the transition to less carbon intensive solutions.

'Be Green' (Utilise Renewable Technologies)

- 4.38 The proposed development has given consideration to renewable energy technologies that may be applicable to deliver the required level of carbon dioxide savings over the Part L:2021 baseline, and the likely local effects on the environment.
- 4.39 In determining the appropriate renewable technology for the site, a number of factors including carbon dioxide savings, site constraints, and potential visual impacts have been considered. Further details of each technology and its associated assessment in relation to the development are provided below.
- **Biomass** – This technology is not considered a practical solution for reducing carbon dioxide emissions, in the view of storage space requirements for combustible material, and the transport related carbon emissions which are not normally accounted for within energy modelling. Furthermore, high nitrous oxide (NOx) and particulate matter (PMx) emissions are associated with the use of biomass fuel, and as the proposed development is located within proximity to

existing, and will introduce new, residential dwellings, the permitted emissions will be restricted. It is noted that alternative technologies, such as ceramic filters or bag filters, have the potential to significantly reduce the emissions associated with biomass fuels, and this may therefore be explored as the design of the proposed development continues to progress.

- **Air Source Heat Pumps (ASHP)** – Given the site location and the lack of local existing or proposed heat networks, the use of air source heat pump (ASHP) technology is considered appropriate to serve the space and heating demands of the proposed dwellings. ASHPs do not produce emissions at the point of use, and do not impact on air quality within their locality. This technology is therefore considered appropriate for the proposed development, and should the intention be to incorporate ASHPs, details of their integration would be provided as part of a Reserved Matters Application. It is noted that, should this type of system be employed to deliver space heating, low temperature systems, such as underfloor heating or low temperature radiators, would be recommended. Furthermore, should this technology be incorporated within the proposed development, it is recommended that acoustic measures to limit the noise generated by the outside unit of any ASHP systems employed during operation are considered.
- **Ground Source Heat Pumps (GSHP)** – As detailed above for air source heat pump (ASHP) technology, the location of the site means that the incorporation of ground source heat pump (GSHP) technology may also be appropriate to serve the space and water heating demands of the proposed development. Ground temperatures are typically stable throughout the year, and GSHPs are therefore able to provide a consistent level of performance throughout the year. It is highlighted, however, that there are uncertainties concerning the thermal properties of the ground, and that ground investigation and borehole drilling has the potential to be cost prohibitive, with the potential that a suitable energy source is not present. Furthermore, there is potential that the carbon dioxide and energy cost savings arising from the use of GSHP systems may not be significant when compared to that of ASHP systems, particularly as high-grade heat is required to generate domestic hot water. It is also noted that GSHP systems are typically around twice as expensive as ASHP technology, which may therefore make the use of this technology economically unviable. Notwithstanding, the use of GSHP technology is potentially appropriate and feasible within the proposed development, and the potential use of systems of this type will continue to be considered as the detailed design of the proposed development progresses.
- **Photovoltaics (PV)** – This technology is considered to be appropriate for the proposed development, in light of the potential to deliver a proposed layout that includes for dwellings with areas of unobstructed south-east to south-west facing roof space. This technology may therefore be employed to generate renewable energy on-site, with the potential excess power to be exported to the grid or harnessed using battery storage. The use of this technology, which typically has minimal maintenance requirements, should therefore be considered during the detailed design stage to contribute to the proposed development's compliance with Part L:2021

of the Building Regulations and the Future Homes Standard. As such, it is recommended that the incorporation of PV technology continues to be explored through the detailed design stage and, should this technology be incorporated, details of the PV systems to be employed be provided as part of a Reserved Matters application.

- **Solar Thermal Hot Water (STHW)** – This technology may also be considered appropriate for the proposed development, in light of the potential to deliver dwellings with areas of unobstructed southeast to south-west facing roof space. The incorporation of this technology can contribute to the meeting of a building's domestic hot water demand, and this technology can be employed effectively alongside a range of heating systems. It is noted that the incorporation of this technology would need to account for the requirements of other technologies that may be employed, such as heat pump or PV systems. In addition to this, the potential for hot water demand to fall outside the energy generating period for STHW systems should be accounted for, as this may result in a reduced ability for this technology to significantly reduce carbon dioxide emissions during operation. The potential incorporation of this technology within the proposed development will continue to be explored throughout the detailed design stage, and should this technology be included for, details of the systems will be provided as part of a Reserved Matters Application.
- **Wind Turbines** – Wind turbines may be employed to harness the kinetic energy of wind to generate electricity on-site. The employment of this technology should account for the need for a steady source of wind that does not have an uneven direction. This technology is typically incorporated at the roof level of buildings that are significantly higher than their immediate surroundings, or within an open area, to ensure disruption to prevailing winds is minimised. When accounting for the nature of the proposed development and the area within which it is situated, it is considered that the incorporation of this technology is inappropriate.

4.40 Based on the information set out above, it is recommended that air source heat pump (ASHP) systems and rooftop photovoltaic (PV) panels will be employed to serve the heating demands of both the domestic and non-domestic components of the development, and to generate carbon free electricity on-site. The incorporation of these technologies will aid the achievement of a significant reduction of carbon emissions in operation when compared to the Part L:2021 of the Building Regulations baseline, which is in line with the aspirations of the proposed scheme, as well as the requirements of North Hertfordshire District Council.

5. SUMMARY

- 5.1 This Energy Statement provides an overview as to how the development of GA2, Land north of Great Ashby contributes to the achievement of CO₂ emissions reductions and gives an overview of the potential design proposals that will ensure the development operates in an energy efficient manner over the lifespan of the scheme.
- 5.2 The proposed development incorporates carbon reduction measures which are significantly in compliance with current policy requirements, and aim to achieve a significant reduction in carbon emissions in operation. By designing to rigorous energy standards, employing electric-only systems, and integrating renewable energy technologies, the application will respond directly to the Climate Emergency declared by the Council in May 2019, and will be compatible with the Government's intended trajectory to achieve net zero carbon emissions by 2050. These measures combine to provide a significant carbon dioxide emissions savings compared to the Part L:2021 baseline, aiming to comply with, and where possible exceed, the current requirements of North Hertfordshire District Council.
- 5.3 The measures proposed at each level of the Energy Hierarchy are set out below.
- 5.4 The suggested 'Be Lean' measures include:
- High levels of building fabric insulation to minimise heat loss;
 - A balanced proportion of façade glazing to ensure natural daylight provision without increasing overheating risk;
 - High levels of air tightness to reduce heat loss through infiltration;
 - The use of construction details to minimise heat loss through thermal bridging;
 - Low energy LED lighting to minimise artificial lighting energy consumption;
 - Openable windows, utilising cross ventilation where feasible, will be provided for all buildings to enable a natural ventilation strategy without increasing the risk of overheating;
 - Employment of mechanical ventilation with heat recovery (MVHR) to provide fresh air to the proposed non-domestic spaces; and
 - A high specification of heating controls to ensure operational efficiency.

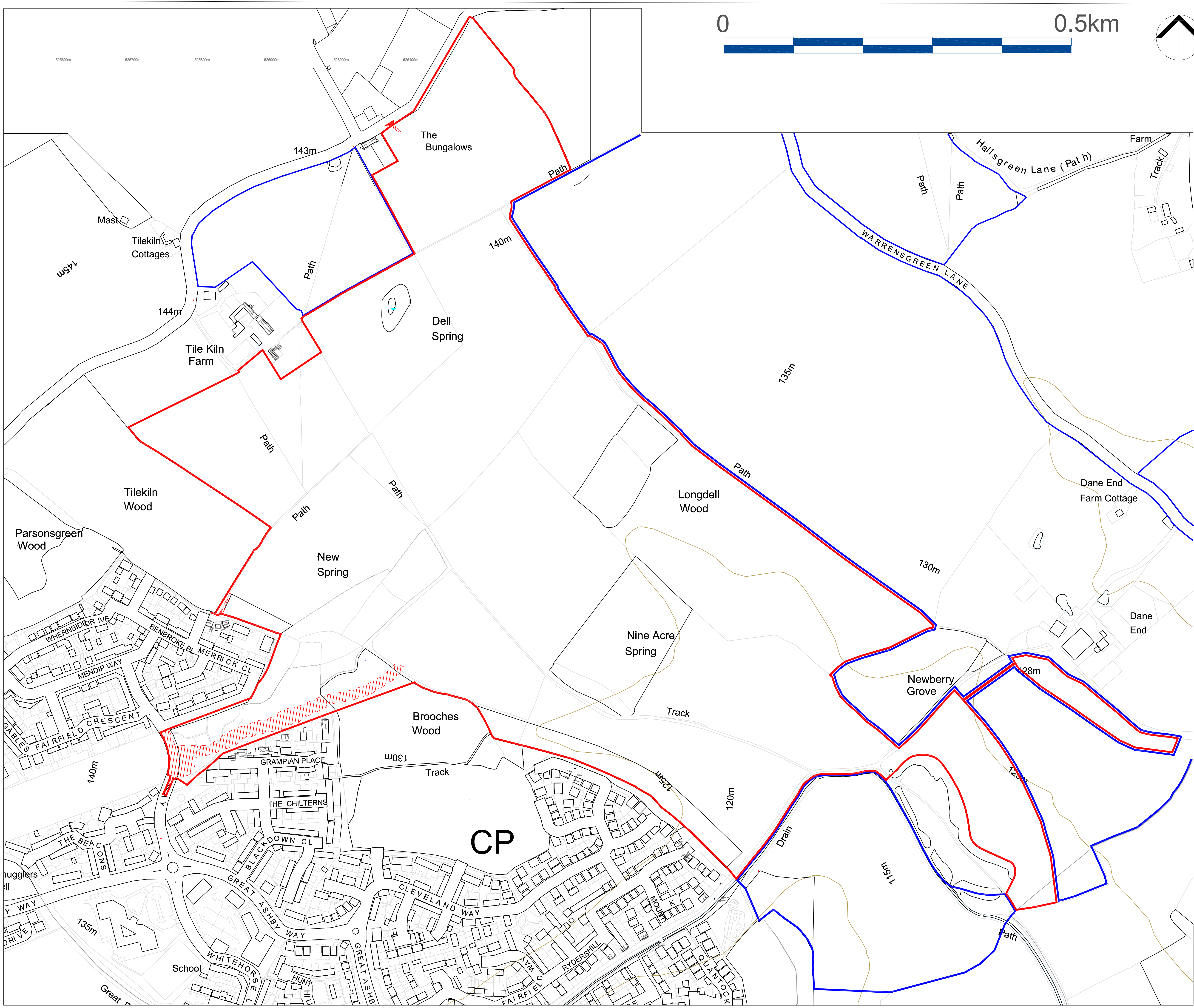
5.5 The suggested 'Be Green' measures include:

- The incorporation of highly efficient, electric-only heating systems, such as heat pumps, to deliver space and water heating for the domestic element, and space heating and cooling, where relevant, for the non-domestic elements; and
- The potential employment of rooftop photovoltaic (PV) technology to provide low carbon electricity on-site.

5.6 The nature of this application means that the strategies contained within this statement will inform the detailed design of the proposed development, which will be determined at a later date as part of Reserved Matters applications. However, it is anticipated that the incorporation of the measures outlined above would facilitate a significant reduction in carbon dioxide emissions over the Part L:2021 Building Regulations baseline for all proposed dwellings and non-domestic spaces. This is in compliance with the current requirements of North Hertfordshire District Council.

5.7 Overall, the proposals for the scheme are in line with the principles of sustainable development as well as the policy requirements of the NPPF and North Hertfordshire District Council, and will provide a development that promotes these principles in operation.

A1. SITE LOCATION PLAN



-  Application Site Boundary: 62.90ha
-  Detailed Application Boundary: 0.80ha
-  Other land within the ownership of the Applicant or their parent company

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CLIENT Picture Estates Ltd

PROJECT GA2 - North East Stevenage

TITLE Application Site Plan

DRAWN BY	SG	CHECKED BY	SG
SCALE @ A1	1:2,500	DATE	JULY_2024
PROJECT NO.	23_M004	DRAWING NO.	DL07
		REV.	D

iceni Projects accept no responsibility for any unauthorised amendments to this drawing. Only figured dimensions are to be worked to.

A2. GENERAL NOTES

- A2.1 The report is based on information available at the time of the writing and discussions with the client during any project meetings. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by Iceni Projects Ltd for inaccuracies in the data supplied by any other party.
- A2.2 The review of planning policy and other requirements does not constitute a detailed review. Its purpose is as a guide to provide the context for the development and to determine the likely requirements of the Local Authority.
- A2.3 No site visits have been carried out, unless otherwise specified.
- A2.4 This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in guidance may necessitate a re-interpretation of the report in whole or in part after its original submission.
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-