

## Land at Gosford

### Technical Note 5: Energy Statement

Date 30<sup>th</sup> March 2022

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## 1 Introduction

- 1.1** Brookbanks Consulting Ltd is appointed by Barwood Development Securities Ltd to complete an initial energy appraisal for a proposed residential development at Gosford, Oxfordshire.
- 1.2** The objective of this note is to provide a review of the energy policies outlined with the Local Plan for the Cherwell District.
- 1.3** The note will provide the latest National and Local Policies and provide potential energy provisions which could be implemented into the Site. The note will also address Policy's ESD 4 and ESD 5 and provide comments on the feasibility for these.

## 2 Background information

- 2.1** The proposed development lies to the south-east of the village of Kidlington and is approximately 27.75ha.
- 2.2** The Site is bound to the north by existing agricultural land/fields and to the east by agricultural fields, Water Eaton Lane and the A34. The south of the Site is bound by Oxford Road and the west to Bicester Road. A cemetery is situated adjacent to the north-west of the Site, off Bicester Road.
- 2.3** The site is currently undeveloped agricultural land and the land is not thought to have been historically subject to any significant built development. The Site location and boundary is shown indicatively on **Figure 2-1**, below:

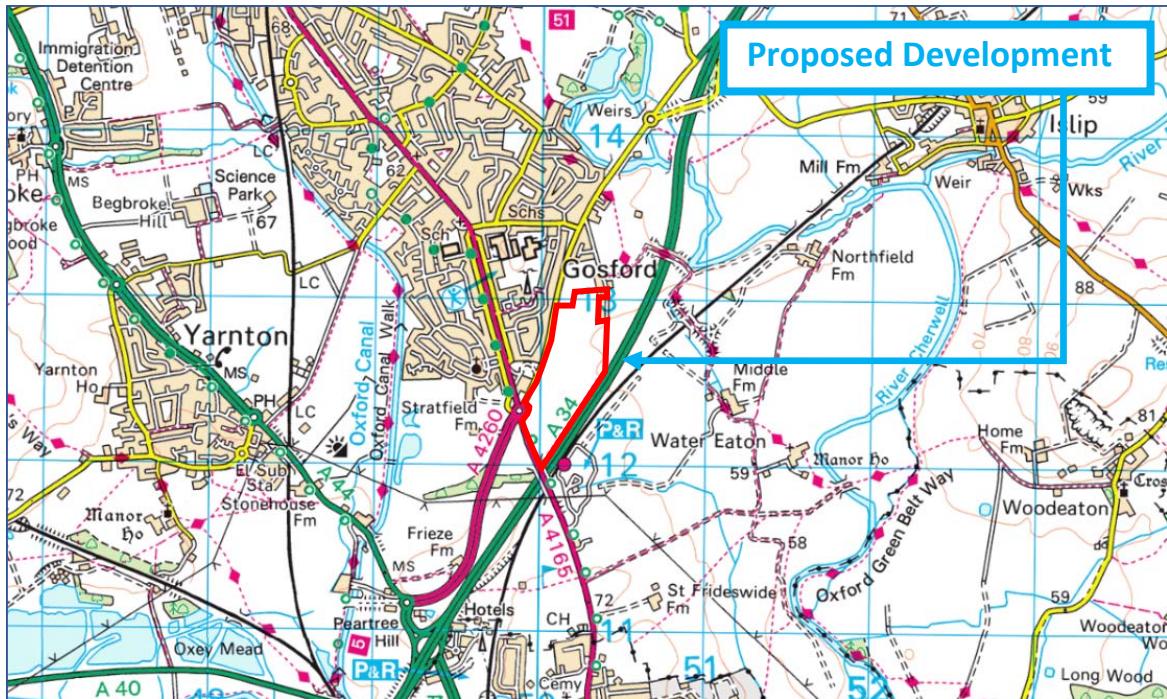


Figure 2-1: Site Location

## Development Criteria

- 2.4** The following development is proposed at the site:

*'Outline planning application for the development of up to 370 homes, public open space (including play areas and woodland planting), sports pitches and pavilion, drainage and engineering works, with all matters reserved (appearance, landscaping, layout and scale) except for vehicular and emergency accesses to Bicester Road'.*

## 3 Policy Review: National Policy

- 3.1** National Policy for Low Carbon and Renewable Energy technology is informed by:

- NPPF (2021) published by the UK Government.
- Local Planning Policy
- UK Building Regulations Part L (2010/2013/2016) published by the UK Government.

- 3.2** The main aim of these documents is to inform policy and provide guidelines to reduce UK CO<sub>2</sub> emissions, as this is currently considered to be the largest man made contributor to climate change. The Climate Change Act 2008 (CCA08), is the first statutory legislation limiting CO<sub>2</sub> emissions anywhere in the world. CCA2008 mandates that carbon emissions are reduced by 80% by 2050 (against a 1990 baseline), with targets set at 34% by 2020 and 60% at 2030. It is this primary legislation that drives local planning policy.

## National Planning Policy Framework (NPPF)

- 3.3** The National Planning Policy Framework (NPPF) was first published in March 2012 and was last updated in July 2021. It defines the overarching aims of the Government's sustainable development strategy.
- 3.4** The NPPF outlines that local authorities should adopt proactive strategies to mitigate and adapt to climate change and that to support the move to a low carbon future new development should be planned in ways that:
- “Avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
  - Can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards.”
- 3.5** Within the Achieving Sustainable Development section the following objectives have been identified:
- a) *an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;*
  - b) *a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being; and*
  - c) *an environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*
- These objectives should be delivered through the preparation and implementation of plans and the application of the policies in this Framework; they are not criteria against which every decision can or should be judged. Planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.*
- 3.6** Furthermore, The NPPF outlines that local authorities should adopt proactive strategies to mitigate and adapt to climate change and that to support the move to a low carbon future new development should be planned in ways that *“can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government’s policy for national technical standards.”*
- 3.7** The NPPF stresses that the importance of sustainability in new developments is to ensure that during construction and operation the development minimises environmental impact. The Government is keen to limit the environmental impact of new construction projects through the reduction of CO<sub>2</sub> emissions.

## Part L and F Step Changes and the Future Homes Standard

- 3.8** With the abandonment of the Code for Sustainable Homes (CfSH) and the Zero Carbon Homes, national standards are now defined largely by the UK Building Regulations.
- 3.9** In June 2019, the Government set a commitment in the Climate Change Act 2008 for the United Kingdom to reach 'net zero' greenhouse gas emissions by 2050.
- 3.10** As part of the Government's intention to lead all future improvements through the UK Building Regulations, in October 2019, the Ministry of Housing, Communities and Local Government issued a Consultation on changes to Part L (conservation of fuel and power) and Part F (ventilation) of the Building Regulations for new dwellings.
- 3.11** This consultation sets out the Government's plans for achieving the Future Homes Standard (FHS) by 2025, to provide low carbon heating and high levels of energy efficiency, including proposed options to increase the energy efficiency requirements for new homes through a step change to Part L of the Building Regulations.
- 3.12** The consultation considered two options for the proposed step changes to Part L, which are set out below:
- **Option 1:** 20% reduction in carbon emissions compared to the current standard for an average home. It is anticipated that this could be delivered by very high fabric standards (typically with triple glazing and minimal heat loss from walls, ceilings, and roofs).
  - **Option 2:** 31% reduction in carbon emissions compared to the current standard. It is anticipated that this could be delivered based on the installation of carbon-saving technology such as photovoltaic (solar) panels and better fabric standards, though not as high as Option 1.
- 3.13** Following a second consultation carried out by Future Home Standards (FHS) from 18 January to 13 April 2021, '*Option 2*' is the confirmed route forward, with all new homes required to have a 31% reduction in CO<sub>2</sub> emissions from 2022 in comparison to current standards.
- 3.14** In order to deliver the 31% reduction, new homes will be assessed against four performance metrics:
- **Primary Energy**
  - **The Fabric Energy Efficiency Standards (FEES)**
  - **Minimum standards for fabric and fixed building services**
  - **Carbon dioxide emissions.**
- 3.15** New interim Part L and Part F legislation was released from December 2021 and enacted from June 2022, before more significant changes in 2025 that will require a 75% reduction in CO<sub>2</sub> emissions, in line with FHS.
- 3.16** It is evident that a fabric first approach will be pivotal to the future construction of housing, with new builds 'future-proofed' to be able to achieve carbon zero and have low carbon heating initiative.
- 3.17** Launch of a technical consultation is planned for Spring 2023 on the proposed specification for the FHS, with regulations to be developed in 2024 for implementation in 2025.
- 3.18** The timescales set out above make it clear that these more stringent and more demanding Building Regulations standards will apply to the construction of the majority of the proposed development, meaning

that a range of low carbon and resource efficiency measures will be a requirement as the scheme is delivered.

- 3.19 Part of this strategy is the reliance of low carbon heating, specifically heat pumps, to deliver heat to homes and remove the reliance on gas heating. Heat networks are referred to, but only because of the potential ability to move to low and zero carbon technologies with minimal disruption to homeowners.
- 3.20 While emphasis on energy efficiency is made within the consultation document, the proposals, as currently written, could allow for inefficient buildings with compensatory technologies as opposed to the previous strategies to achieve Zero Carbon, which relied on fabric improvements first, with low and zero carbon (LZC) technologies to bridge the gap.
- 3.21 There is an undoubted reliance on the future de-carbonisation of the grid electricity to do the “heavy lifting” and provide the remaining 25-30% carbon reduction over and above the FHS to achieve the zero-carbon target by 2050.
- 3.22 It should be noted that the Part L and FHS is only concerned with an individual dwelling for assessment and not the development as a whole.

## UK Building Regulations Part S: Electric Vehicle Charging Points

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- 3.23 As part of the Government’s aims to achieve net zero greenhouse gas emissions by 2050, policies are being put in place, including Regulations that state all new cars and vans should be fully zero emissions, which will see Electric Vehicles (EVs) become increasing common.
- 3.24 Consultation took place in July 2019 for proposals to alter existing residential and non-residential building regulations to include electric vehicle infrastructure requirements. The Government outlined that:
  - Proposed new residential buildings with more than 10 parking spaces, must have ducting infrastructure installed for every parking space
  - Proposed non-residential buildings with more than 10 parking spaces must have at least one ChargePoint installed and ducting infrastructure should be installed for at least 1 in every 5 spaces
  - From 2025, existing non-residential buildings with more than 20 parking spaces will require at least 1 charge point
- 3.25 Easy access to chargers will be essential for the mass transition to Electric Vehicles (EVs) for personal transportation. Alongside the decarbonisation of the national grid (discussed in the next section), increased uptake of EVs will significantly lower carbon emissions from transportation.
- 3.26 The Government has confirmed that it expects all chargers to be “Smart” devices, which will ensure charging will be available without the electricity network being overloaded.
- 3.27 The changes are expected to be implemented predominantly through amendments to the Building Regulations 2010 and will be enacted through the Electric Vehicle Charging Points (New Buildings) Bill.
- 3.28 The approved document supporting Part S of Schedule 1 to the Building Regulations 2010 takes effect as of Jun 2022.

## Decarbonisation of the National Grid

- 3.29** Decarbonising the National Grid is an essential element to achieving the Government's targets for reducing emissions, with a view to establishing net zero by 2050.
- 3.30** Clean energy will be required to power increases in electric vehicles, home heat pumps as well as a range of other sustainable initiatives.
- 3.31** In October 2021, the Government announced significant funding in support of generating more nuclear power, marking twelve months since the publication of the Prime Minister's 10 Point Plan for a *Green Industrial Revolution*.
- 3.32** The ten-point plan, released in November 2020, set out the approach that the Government intends to take to "*build back better, support green jobs, and accelerate our path to net zero*".
- 3.33** The 10 points are:
- **"Offshore wind:** Producing enough offshore wind to power every home, quadrupling how much we produce to 40GW by 2030, supporting up to 60,000 jobs.
  - **Hydrogen:** Working with industry aiming to generate 5GW of low-carbon hydrogen production capacity by 2030 for industry, transport, power and homes, and aiming to develop the first town heated entirely by hydrogen by the end of the decade.
  - **Nuclear:** Advancing nuclear as a clean energy source, across large-scale nuclear and developing the next generation of small and advanced reactors, which could support 10,000 jobs.
  - **Electric vehicles:** Backing UK car manufacturing bases to accelerate the transition to electric vehicles and transforming our national infrastructure to better support electric vehicles.
  - **Public transport, cycling and walking:** Making cycling and walking more attractive ways to travel and investing in zero-emission public transport of the future.
  - **Jet Zero and greener maritime:** Supporting difficult-to-decarbonise industries to become greener through research projects for zero-emission planes and ships.
  - **Homes and public buildings:** Making UK homes, schools and hospitals greener, warmer and more energy efficient, while creating 50,000 jobs by 2030, and a target to install 600,000 heat pumps every year by 2028.
  - **Carbon capture:** Becoming a world-leader in technology to capture and store harmful emissions away from the atmosphere, with a target to remove 10MT of carbon dioxide by 2030, equivalent to all emissions of the industrial Humber today.
  - **Nature:** Protecting and restoring the natural environment, planting 30,000 hectares of trees every year, while creating and retaining thousands of jobs.
  - **Innovation and finance:** Developing the cutting-edge technologies needed to reach these new energy ambitions and make the City of London the global centre of green finance. "

## 4 Policy Review: Local Policy

### The Cherwell Local Plan 2011-2031

- 4.1 The Local Planning Authority for the Site is Cherwell District Council and the Local Policy for Low Carbon and Renewable Energy Technology is informed by the Local Plan 2011-2031 (2015), Parts 1 and 2.
- 4.2 The Cherwell Local Plan 2011-2031, adopted 20th July 2015, sets out the strategic objectives and policies for the district
- 4.3 Two key policies are identified for the Site which are **Policy ESD 4: Decentralised Energy Systems** and **Policy ESD 5: Renewable Energy**. These are provided below:

#### **Policy ESD 4: Decentralised Energy Systems**

**The use of decentralised energy systems, providing either heating (District Heating (DH)) or heating and power (Combined Heat and Power (CHP)) will be encouraged in all new developments.**

**A feasibility assessment for DH/CHP, including consideration of biomass fuelled CHP, will be required for:**

- **All residential developments for 100 dwellings or more**
- **All residential developments in off-gas areas for 50 dwellings or more**
- **All applications for non-domestic developments above 1000<sup>m2</sup> floorspace.**

**The feasibility assessment should be informed by the renewable energy map at Appendix 5 ‘Maps’ and the national mapping of heat demand densities undertaken by the Department for Energy and Climate Change (DECC) (see Appendix 3: Evidence Base ).**

**Where feasibility assessments demonstrate that decentralised energy systems are deliverable and viable, such systems will be required as part of the development unless an alternative solution would deliver the same or increased benefit.**

Figure 4-1: Policy ESD 4: Decentralised Energy Systems

- 4.4 Policy ESD 4 sets out support of the Council for decentralising the energy systems.
- 4.5 B.194 outlines that the “Renewable Energy and Sustainability Construction Study” identified District Heating and Combined Heat and Power to have an important role in lowering carbon and delivering renewable power and heat for the district.
- 4.6 B.195 outlines that the systems can be either renewable or non-renewable, with the majority of UK District Heating networks linked to a gas fired system or use waste heat from industrial processes.

### Policy ESD 5: Renewable Energy

The Council supports renewable and low carbon energy provision wherever any adverse impacts can be addressed satisfactorily. The potential local environmental, economic and community benefits of renewable energy schemes will be a material consideration in determining planning applications.

Planning applications involving renewable energy development will be encouraged provided that there is no unacceptable adverse impact, including cumulative impact, on the following issues, which are considered to be of particular local significance in Cherwell:

- Landscape and biodiversity including designations, protected habitats and species, and Conservation Target Areas
- Visual impacts on local landscapes
- The historic environment including designated and non designated assets and their settings
- The Green Belt, particularly visual impacts on openness
- Aviation activities
- Highways and access issues, and
- Residential amenity.

A feasibility assessment of the potential for significant on site renewable energy provision (above any provision required to meet national building standards) will be required for:

- All residential developments for 100 dwellings or more
- All residential developments in off-gas areas for 50 dwellings or more
- All applications for non-domestic developments above 1000<sup>m<sup>2</sup></sup> floorspace.

Where feasibility assessments demonstrate that on site renewable energy provision is deliverable and viable, this will be required as part of the development unless an alternative solution would deliver the same or increased benefit. This may include consideration of 'allowable solutions' as Government Policy evolves.

Figure 4-2: Policy ESD 5: Renewable Energy

- 4.7 B.197 provides confirmation of the support of the council for renewable energy where appropriate in order to contribute to national carbon emission reductions and renewable energy generation targets.
- 4.8 B.199 outlines the ownership of wind power and other renewable energy schemes will be encouraged with the Cherwell area, and B.201 highlighting increasing interest in the development of large scale PV arrays in Cherwell.

## 5 Review of Policy ESD 4 and ESD 5

### Policy ESD 4

- 5.1 Addressing Policy ESD 4, the Local Plan identifies a commitment to ensure affordable, secure, and low carbon heating is addressed for new developments, with studies for the area identifying District Heating and/or Combined Heat and Power as an important role to reduce carbon emissions and promote more renewable power. However, a key issue in this is that non-renewable sources can still be utilised as the fuel source for these heating methods.
- 5.2 As outlined in Section 3, the progression of Future Home Standards, now post dates the Local Plan implementation date. In addition, modern heating equipment development is generally going to be more efficient and renewable than the 30% loss anticipated from a District Heating system. There is also the potential for more renewable energy sources to be utilised, which would provide further reductions in CO<sub>2</sub> emissions.

### Policy ESD 5

- 5.3 Building on this, and addressing Policy ESD 5, there are now a range of technologies and efficiencies that will allow developments to significantly reduce their carbon emissions and impacts for the future, to ensure renewable energy provision is deliverable and viable.
- 5.4 The below section provides a brief summary of some of the strategies which could be implemented for the Site to ensure a renewable energy provision for the Site.

#### Future Homes Standard

- 5.5 This standard reduces energy demand by 70% from current Part L demand and will build on the 31% reduction over current energy demands on the new Part L, due to be introduced in 2022.
- 5.6 This energy reduction could be achieved through Fabric Energy Efficiency.
- 5.7 Passive measures are design features from architectural and building fabric selection that reduce the building energy requirement. Active measures are associated with the specification, control and use of building services that will increase the efficiency of the energy used, hence reducing the building energy requirements.
- 5.8 Lighting is a regulated energy demand and has been assumed to require 5kWh/m<sup>2</sup> constantly across all upcoming standards.
- 5.9 The Energy Efficiency in Buildings Chartered Institution of Building Services Engineers (CIBSE) Guide F (2016) explains that building design should adopt energy efficiency lighting principles:
  - “Energy efficient lighting should:
    - Maximise natural daylight
    - Avoid unnecessarily high illuminance
    - Incorporate the most efficient luminaires, control gear and lamps

- Include effective lighting controls”

### Solar Master Planning

- 5.10 There is a potential for the masterplan to be designed to optimise the solar gains through design. Dwellings could be aligned to maximise the solar gain with a minimum angle of 22 degrees to the south, with approximately a third maximising the solar gain, with an alignment of 44 degrees to the south.
- 5.11 Roofs of buildings could be orientated south where feasible for solar thermal/photovoltaic installation. PV is most efficient when positioned south facing at a pitch of 30-35 degrees from horizontal, limiting shading, according to the Energy Saving Trust.
- 5.12 Additionally, houses will benefit from solar heating and lighting through passive gains. Whilst it is not feasible to ensure all units achieve an East to West orientation, it is still possible to provide renewable/solar panels to roofs running North to South and still benefit from renewable energy although at a reduced rate.
- 5.13 These initiatives will allow for a circa **10% reduction** in space heating demand in the first instance before any further technologies are installed.

### Air Source Heat Pumps

- 5.14 Air source heat pumps (ASHPs) provide an active, mechanical mechanism for reducing space heating demand.
- 5.15 It is widely acknowledged that for every 1kWh of electricity inputted to ASHPs, approximately 3kWh of heat can be delivered, generating an approximate Coefficient of Performance (CoP) of 3. This reduces space heating requirements by approximately one third.

### Carbon Sequestering

- 5.16 Carbon sequestering strategies can be implemented across the proposed development to contribute to offsetting any remaining carbon emissions.
- 5.17 Solar masterplanning elements such as solar shading can reduce carbon emissions by 5% and carbon sequestering can also be applied as a carbon sink. This can be evaluated to identify areas of potential planting, density and species mix to calculate an approximate carbon reduction over 30 years.

### Sustainable transport initiatives and Car charging facilities

- 5.18 Sustainable transport initiatives will lower the amount of carbon emitted to the environment in the first instance.
- 5.19 In line with the upcoming Part S of the Building Regulations, each dwelling could be installed with EV charging points. This will support sustainable travel in and around the proposed development.
- 5.20 The latest Transport Assessment for the Site outlines:

*“In order to ensure that all new developments are equipped with the necessary infrastructure, the application site will include, where practical, appropriate provision for electric car charging points. Electric vehicle parking should be counted as part of the total parking provision, with bays clearly marked.”*

## 6 Summary

- 6.1** This note has provided an overview of the potential energy strategy options which could be implemented for the Site, in order to meet both national and local policy requirements in accordance with NPPF and Future Homes Standard, whilst adding value to the local area, in line with the Local Plan 2011-2031.
- 6.2** Based on the Cherwell Local Plan 2011-2031, adopted 20th July 2015, it is recommended in Policy ESD 4, that District Heating and/or Combined Heat and Power System are implemented for developments within the district. However, this note has demonstrated that alternative renewable energy sources could be implemented in lieu of District Heating or Combined Heat and Power Systems. The advancement of Future Home Standards, and modern heating equipment development will be more efficient and renewable than the 30% carbon reduction which is likely from a District Heating system. In addition, more renewable energy sources can be utilised to provide further reductions in CO<sub>2</sub> emissions.
- 6.3** This note has demonstrated the range of renewable options, which could be implemented where required, and this further builds on the potential to use alternative heating systems than District Heating and/or Combined Heat and Power Systems.
- 6.4** As stated the progression of Future Home Standards, now post dates the Local Plan implementation date and therefore Policy ESD4 and ESD5 are now seen to be superseded by this progression.

## 7 Limitations

- 7.1** The conclusions and recommendations contained herein are limited to those given the general availability of background information and the planned usage of the site.
- 7.2** Third party information has been used in the preparation of this report, which Brookbanks Consulting Ltd, by necessity assumes is correct at the time of writing. While all reasonable checks have been made on data sources and the accuracy of data, Brookbanks Consulting Ltd accepts no liability for same.
- 7.3** The benefits of this report are provided solely to Barwood Development Securities Ltd for the proposed development Land at Gosford only.
- 7.4** Brookbanks Consulting Ltd excludes third party rights for the information contained in the report.