

16.0 CLIMATE CHANGE

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16.1 INTRODUCTION

16.1.1 This chapter has been prepared by Brookbanks Consulting Ltd to present the findings of an assessment of the likely effects of climate change arising from the Proposed Development of Land at Bankside (Phase 2), Banbury.

16.1.2 The assessment considers the potential effects of both the construction and operational phases and identifies both the risks and associated mitigation requirements.

16.2 ASSESSMENT METHODOLOGY

Data sources

16.2.1 During the development of this chapter, the following statutory bodies and interested parties have been consulted regarding the proposals:

- Environment Agency
- Oxfordshire County Council
- Cherwell District Council

Assessment approach

16.2.2 The format of this section of the ES sets out an appraisal of the baseline conditions, followed by a description of the relevant policy context and an identification of potential environmental effects due to the application proposals. The importance of each mechanism and an assessment of each potential effect are then considered along with any mitigation measures and recommendations.

16.2.3 Methods of assessment have been employed that are consistent with current guidance and recommendations in the form of statutory documents and recognised publications to ensure that the findings represent a robust approach to the assessment.

Significance criteria

16.2.4 Tables 16.1 – 16.2 outline the criteria for determining the magnitude and significance of the identified impacts.

Table 16.1: Magnitude

Large	Moderate	Small	Negligible
Loss of Attribute	Losses on integrity of partial loss of attribute	Minor impact or minor attribute loss	Insignificant attribute loss

Table 16.2: Significance

MAGNITUDE	SENSITIVITY			
	High	Medium	Low	Negligible
Large	Major	Major	Moderate	Minor
Moderate	Major	Moderate	Minor	Negligible
Small	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Uncertainties and limitations

16.2.5 Brookbanks Consulting Ltd has utilised third part data in the production of this assessment which has been assumed correct at the time of production.

16.3 RELEVANT POLICY

National Policy

16.3.1 National Policy for Low Carbon and Renewable Energy technology is informed by:

- National Umbrella Policy by way of the Energy White Paper (2003 & 2007), Renewable Energy Strategy (2009) and Climate Change Act (2008) published by the UK Government.
- NPPF (2019) published by the UK Government.
- Local Planning Policy
- National Policy (2011 – 2015 updates)
- UK Building Regulations Part L (2010/2013/2016) published by the UK Government.

16.3.2 The main aim of these documents is to inform policy and provide guidelines to reduce the UK CO₂ 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 CO₂ 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 has driven regional and local planning policy.

16.3.3 The UK Government has set challenging targets for generating electricity from renewable sources. By 2015 15% of electricity generation nationally must be from renewable sources and by 2020, a total of 20% (Energy White Paper: 2003).

16.3.4 In 2009 the UK Renewable Energy Strategy reviewed the current targets and reaffirmed the methodology for the UK achieving a 15% share of total energy from renewable energy sources by 2020. Within this document, renewable technologies for electricity, heat and transport were considered in reaching the 15% target.

National Planning Policy Framework (February 2019)

16.3.5 National Planning Policy Framework (NPPF) was first published in March 2012 and has recently been updated in February 2019. It defines the overarching aims of the Government's sustainable development strategy.

16.3.6 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 local authorities should:

- plan for new development in locations and ways which reduce greenhouse gas emissions;
- actively support energy efficiency improvements to existing buildings; and
- when setting any local requirement for a building's sustainability, do so in a way consistent with the Government's zero carbon buildings policy and adopt nationally described standards.

16.3.7 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 CO₂ emissions. Consequently, it is

imperative all new developments demonstrate sufficiently that no significant negative impact will be caused on what is regarded as the acceptable baseline, the UK Building Regulation standards, and how new developments will look to achieve this.

Local Policy

16.3.8 In order to align with wider UK renewable energy and sustainable development policies, Local Planning Authorities often adopt local planning policies. Minimum levels of energy or carbon savings over energy baseline have also often been specified, to be achieved by way of renewable or low carbon energy generation measures on-plot or within the development, or indeed through building fabric enhancements, where the policy allows. Renewable energy / carbon saving targets in the order of 10-30% are common place.

Cherwell Local Plan 2011-2031 (Adopted July 2015)

16.3.9 In line with Government Policy advice, the Council has adopted a positive approach to the development needs of the District and the policies in the Adopted Local Plan provide a framework for ‘sustainable development’, as outlined below:

Policy PSD 1: Presumption in Favour of Sustainable Development

16.3.10 The Plan has two sets of policies :

‘Policies for Development in Cherwell’, which apply across the entire District and include the following three themes (Section B):

- developing a Sustainable Local Economy

- building Sustainable Communities
- ensuring Sustainable Development.

‘Policies for Cherwell’s Places’, which focuses on development on a number of strategic locations that have been allocated by the Council, in order to deliver their overall development strategy for the District (Section C).

- Section C.3 comprises 19 proposed sites of 100 or more dwellings within Banbury which includes ‘Bankside Phase 2’ (further outline within Policy No: Banbury 4).

16.3.11 Mitigating and adapting to the impacts of climate change are an important priority for the District and will be achieved through policies ESD 1-7:

Policy ESD 1: Mitigating and Adapting to Climate Change

Policy ESD 2: Energy Hierarchy and Allowable Solutions

Policy ESD 3: Sustainable Construction

Policy ESD 4: Decentralised Energy Systems

Policy ESD 5: Renewable Energy

16.4 BASELINE CONDITIONS

16.4.1 In 2004, more than a quarter of the UK’s carbon dioxide emissions – a major cause of climate change – came from the energy used to run our domestic residences - heating, lighting, hot water and all other energy uses in the home.

- 16.4.2 Additionally, the construction of UK homes has a range of other environmental impacts, for example through water use, waste generation and use of polluting materials, each of which will have energy expenditure (with related carbon emissions) inherent.
- 16.4.3 Historic rates of energy embodiment and use within homes is recognised as being both wasteful and unsustainable for the future good of natural resources, changes to climate and the likely effects resulting. The use of energy and related carbon dioxide emissions in the construction, operation, alteration and ultimate removal of any development is an issue of concern, not just locally, but nationally and globally.
- 16.4.4 Whilst some climate change is now seen as inevitable in the short term as a result of human activity generally, changes in activities towards better energy efficiency and more sustainable sourcing of resources including energy are being promoted in order to limit effects on climate change.
- 16.4.5 Governmental policies, public concerns, and serious pressure groups are calling for measures to promote reduced environmental impact in all areas of our lives and activities, including the provision of new homes. The aim here is for new homes to have lower building impacts, lower running costs, and related features that additionally enhance health and well-being. Consequently, there is an increased need for home builders to demonstrate their capacity in sustainable home building, and to market the sustainability of their homes to homebuyers.
- 16.4.6 If all the homes forecast as needed in the country are built, then by 2050, as much as one-third of the total housing stock will have been built between now and then. Current house building plans therefore offer an important opportunity to build high standards

of sustainability into a significant proportion of homes that will be in use in the future. Developments therefore have a key role in this opportunity to build a future housing stock which both meets needs and protects the environment from the effects of excessive energy use and consequential climate changes related to that.

The Projected Future Baseline

16.4.7 The baseline conditions into the future would remain the same, with a negligible impact from climate change, should the Proposed Development not proceed.

16.5 POTENTIAL EFFECTS

16.5.1 The potential effects of the development proposals on energy use and related climate change arise both from the construction and operation phases of the development. The mechanisms are as follows:

Construction Stage

- *Direct and indirect excessive use of natural resources leading to shortage of energy, climate change and associated environmental effects.*

16.5.2 As a result of the use of the additional housing stock the development resources and energy will be expended both directly and indirectly.

16.5.3 It is unavoidable that new homes, offices and the like need energy to be constructed, altered or demolished, in the form of resources brought in and used, and to provide

light, heat and power for equipment on site, and as a generator or attractor for traffic. The assessment is therefore not to determine whether the development impacts on the local, national or global environment as a result of the energy used and related carbon emissions, but rather to consider and evaluate whether resources are being used in an efficient manner that minimises carbon emissions to sustainable proportions.

16.5.4 From a constructional viewpoint, the careful use of energy and appropriate selection of raw materials is paramount in reducing potential environmental effects.

16.5.5 Energy efficiency practices will be delivered on site through a Construction Environmental Management Plan (CEMP). The strategy will maximise the use of materials recycled from the site and/or materials from renewable resources. The following options will be considered in the construction of the dwellings:

- The use of recycled aggregates, where appropriate, for foundations, sub-bases, hard-standings and pavement materials.
- The selection of construction materials will be evaluated using the BRE Green Guide to Specification.
- The care design of build elements to minimise building related impacts and energy and material usage.
- A proportion of solid or laminated wood used in the construction of the main development elements will be from managed/sustainable forests (FSC/UKWAS or similar approved).
- No use of on-site diesel generators, except for short term supplies. Where possible, a proportion of imported energy to be from renewable energy sources.

16.5.6 Locally sourced and/or produced materials used throughout the construction process may be favoured to reduce transportation costs, reduce the energy requirements associated in material extraction and manufacture. The use of recycled or recovered materials, will also assist in improving energy efficiency.

16.5.7 The use of ozone depleting and environmentally damaging materials and chemicals will be avoided during both the construction and operational phases of the development. This will be achieved through a sustainable management process in partnership with the developers and the establishment of appropriate targets.

16.5.8 As a result of the development proposals, the environmental effect is considered to be minor adverse.

Operational Stage

- **Direct and indirect excessive use of natural resources** leading to shortage of energy, climate change and associated environmental effects.

16.5.9 In mitigation of the potential effects of the new development, it is proposed to reduce energy demands in operation consistent with standards that are above normal UK Building Regulations. It is proposed to develop buildings that are efficient and sustainable in the way that they use resources and energy, by the integration of higher sustainability performance standards within the design.

16.5.10 With implementation of the appropriate mitigation, by way of a commitment to the guidance provided within Buildings Regulations, the environmental effect of the development is assessed as negligible.

16.6 MITIGATION MEASURES

16.6.1 During the detailed design stage, further design features which could contribute to providing appropriate resilience to climate change and sustainability will be considered, along with where there may be opportunities to introduce adaptive measures later in the design process.

16.6.2 The following mitigation measures are proposed elsewhere in this ES and are considered relevant to mitigating the effects of climate change and enhancing sustainable development.

Construction Stage: short to medium term

16.6.3 As the Application Proposals are at the outline planning stage, detailed information about the buildings proposed and construction is not yet known. As such, it will not be possible to consider a full remit of potential and appropriate adaptive measures and construction methods. However, where appropriate during the masterplanning stage of the project, the designers and project team have considered design features which could contribute to providing appropriate resilience to climate change. This has also identified where there may be opportunities to introduce adaptive measures later in the design process. Consideration of climate change will be embedded in to each stage of project design.

16.6.4 The following inherent design/embedded mitigation measures increase the Application Proposals resilience to climate change and are included in the scheme design, as detailed within this ES, parameter plans and concept masterplan:

- Location of development within appropriate Flood Zones and masterplan design to factor-in flood risks associated with climate change;
- Incorporation of sustainable drainage systems (SuDS) including swales and open channels integrated with the landscaping design. Attenuation basins are proposed as part of the development which will contain up to the 1 in 100 annual probability flood event with 40% climate change allowances;
- Implementation of drought resistant planting strategy; and
- Development of an environment to promote healthy lifestyle for all members of the community by providing a variety of open spaces. This will enable the community to adapt in warmer temperatures as human behaviour may change.

16.6.5 These requirements should be considered in the context of deliverability and development viability. The final targets and provision of on-site renewable and low carbon energy will be confirmed and subject to development feasibility and viability testing at the reserved matters stage.

16.6.6 The CEMP, to be agreed prior to construction, will set out the measures to manage construction works, including measures in relation to general health and safety for workers, water quality monitoring after extreme weather events and the control of construction traffic as part of a freight and construction vehicle management plan.

16.6.7 Materials should be responsibly sourced with the use of recycled and locally sourced materials where appropriate. There are a number of UK organisations promoting the review and reduction of embodied carbon and supply chain emissions associated with construction as part of their sustainability initiatives. These include WRAP, the UK Green Building Council and the Green Construction Board. There is also a European initiative, CEN TC 350 - Sustainability of construction works, responsible for the

development of voluntary horizontal standardized methods for the assessment of the sustainability aspects of new and existing construction works. The Application Proposals will consider aligning with these and other best practice guidance to reduce embodied carbon impacts from the development.

16.6.8 Following mitigation, the construction stage effects are assessed to be negligible.

Post-completion stage

16.6.9 The Application Proposals will comply with the mandatory requirements of Part L of the Building Regulations (2013) and could incorporate and optimises the use of passive and active measures to reduce energy use and supply energy efficiently in line with the national energy hierarchy.

16.6.10 Sustainable use of water resources and reduction in water consumption for each dwelling will be incorporated to achieve internal potable water consumption of 125 litres per person per day.

16.6.11 The Proposed Development is to maximise the use of sustainable modes of transport such as walking, cycling and public transport and to reduce single car occupancy. Reducing the need to travel by car will reduce associated GHG emissions during occupation of the Application Proposals.

16.6.12 With the incorporation of SuDS, surface water runoff will be limited and the risk of localised flooding should not be significantly increased. Attenuation basins are proposed as part of the development which will contain up to the 1 in 100 annual probability flood event with 40% climate change allowances.

16.6.13 The provision of open space and a drought resistant plant strategy would increase the Proposed Developments resilience to climate change and promote health lifestyles for all members of the community.

16.6.14 With the successful implementation of the mitigation strategy, the residual post-completion effect of the Proposed Development in terms of waste is assessed as being negligible.

16.7 RESIDUAL EFFECTS

Construction stage

16.7.1 The CEMP, to be agreed prior to construction, will set out measures to manage construction works, including appropriate flood risk measures and due consideration of the impacts of extreme weather events and related conditions. With the incorporation of such mitigation, no greater than negligible effects are predicted to arise.

Post-completion stage

16.7.2 The mitigation measures discussed within this chapter contribute toward the resilience of the Application Proposals to climate change, reducing the significance of the majority effects to negligible. However, effects on human health due to changes in long term seasonal averages and the provision of services and isolation due to extreme weather events are considered to reduce to minor adverse.

16.7.3 Again, taking into account the proposed mitigation measures outlined, no greater than negligible effects are predicted to arise.

Summary of effects

16.7.4 The Proposed Development will be designed to avoid significant adverse effects resulting during the operational phase and during construction works.

16.8 CUMULATIVE EFFECTS

16.8.1 It is anticipated that regulatory control will ensure all Proposed Development sites achieve the baseline standards in relation to sustainable development and as such, no cumulative impacts are anticipated.