

**Hawke Ridge Business Park Ltd and Bellway
Homes Ltd**

Land at Hawke Ridge Business Park

Environmental Statement: Volume 1, Main Text

Chapter 16: Climate Change and Greenhouse Gases



16 CLIMATE CHANGE AND GREENHOUSE GASES

INTRODUCTION

16.1 This Chapter assesses the likely significant effects of the Proposed Development on the environment with regard to climate change. It describes the methods used to assess the effects; the baseline conditions currently existing at the Application Site and in the surrounding area; the mitigation measures required to prevent, reduce or offset any significant adverse effects; and the likely residual effects after these measures have been adopted.

ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

Assessment Methodology

Scope of the Assessment

16.2 The EIA Directive 2014 sets out the rationale for incorporating climate change into the EIA process (Ref 16.1). It states:

“Climate change will continue to cause damage to the environment and compromise economic development. In this regard, it is appropriate to assess the impacts of projects on climate (for example through greenhouse gas emissions) and their vulnerability to climate change.”

16.3 The requirements of the EIA Directive 2014 have been adopted within UK EIA Regulations 2017 and require that the assessment provides

“A description of the likely significant effects of the development on the environment resulting from, inter alia:

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change”.

16.4 The Institute of Sustainability and Environmental Professionals (ISEP) ‘Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation’ also clearly states that the in-combination climate impacts of a development should be assessed. These are the impacts of climate change on receptors identified in other technical areas.



16.5 In consideration of the above, this ES chapter covers:

- An assessment of the likely significant impacts of climate change on the resilience of the Proposed Development during operation; and
- An assessment of the likely significant impacts of the Proposed Development on the environment with regard to climate change through the direct and indirect release of GHG emissions during construction and operation.

16.6 The assessment has followed guidance within the ISEP 'Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation' (Ref 16.2) and ISEP guidance on 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (Ref 16.3).

Climate Change Resilience Assessment

Baseline Data

16.7 Baseline data for the climate change risks posed to the Proposed Development has been gathered using the United Kingdom Climate Projections (UKCP) to establish the climatic data surrounding current seasonal temperatures and precipitation. This assessment analyses the current climate and compares baseline conditions with UKCP18 climate projections (UKCP18) (Ref 16.4).

16.8 The UKCP18 aim to assist decision makers in assessing the climate change risks associated with projects. The projections form part of the Met Office Hadley Centre Climate Programme, which is supported by the Department for Energy Security and Net Zero (DESNZ) and the Department for Environment, Food and Rural Affairs (DEFRA). The UKCP18 provides the most up-to-date assessment of how the climate in the UK may change throughout the 21st century.

16.9 The UKCP18 use a range of future emission trajectories to assess different climate change scenarios. These emission trajectories range from scenarios in which global greenhouse gas (GHG) emissions quickly peak and decline to meet the climate goals of the Paris Agreement, to scenarios where fossil fuel use continues to grow, leading to even higher GHG emissions. The UKCP18 use representative concentration pathways (RCPs) that represent different levels of GHG concentrations in the future. For this assessment, the high (RCP8.5) emission scenario has been used for a set of key climate change parameters. This



scenario was selected in accordance with ISEP Guidance on assessing climate change resilience as the most conservative scenario to ensure all potential risks are addressed.

16.10 In addition, the UK Climate Change Risk Assessment: Government Report (CCRA) (Ref 16.5) and Wiltshire Climate Strategy 2022-2027 (Ref 16.6) have been used to form the basis of this resilience assessment.

Assessment Overview

16.11 The climate change resilience assessment applied to the Proposed Development covers the following stages:

- Defining the future climate baseline;
- Identifying and determining the sensitivity of receptors;
- Reviewing and determining the magnitude of effect;
- Determination of significance; and
- Developing additional adaptation including adaptive management for significant risks.

16.12 Once the sensitive receptors to climate change within the Application Site have been identified, the impact of these climate variables will be evaluated based on the magnitude of effect and the tolerable thresholds will be determined. Following this, the significance will be determined.

16.13 This will be achieved by undertaking a climate change resilience assessment to identify and evaluate the impact on the resilience of the Proposed Development over its assumed life cycle of 60 years.

Significance Criteria

16.14 For the purposes of the climate resilience assessment, the usual EIA significance ratings do not apply but the climate change resilience of the Proposed Development must still be fully estimated and evaluated. Therefore, specific project criteria have been used to determine the significance of effect in line with the ISEP Climate Change Resilience Guidance.

16.15 Each impact identified has been assessed against three variables as shown in Table 16.1. These are Receptor sensitivity (Rs); Probability (P); and Consequence (C) of the risk.



16.16 Using this methodology, each risk is assigned a total score (Total Risk Score = $R_s \times P \times C$) between 1 (no or very low risk) and 27 (very high risk) for three separate years:

- 2030s (2020-2039);
- 2060s (2050-2069); and
- 2090s (2080-2099).

16.17 Scoring risks against three different timescales provides an indication of when action may need to be taken to adapt and increase resilience so the asset in question is able to perform effectively for its intended useful design life. For some risks, action should be taken early to avoid significant disruption and economic impact. Other risks only need to be addressed either shortly before or as they occur. For example, the risk of severe and widespread flooding may need to be addressed early through planning and design activities (such as installing higher drainage capacity and flood protection). In contrast, when considering the resilience of road surfaces to extreme weather events, adaptive management is a more suitable approach as this allows resilience to be built into a project when necessary, during ongoing maintenance or replacement.

16.18 The scores for Receptor sensitivity (R_s), Probability (P) and Consequence (C) are established through the understanding of the specific risk and the level of resilience or exposure of the Proposed Development to climate change and through a review of relevant literature and climate change data. These are shown in Table 16.1.

16.19 Total Risk Scores ($R_s \times P \times C$) are categorised as follows:

- Total Risk Score of 18-27 – Very High Risk for the specified time period (Major Adverse Effect);
- Total Risk Score of 12-17 – High Risk for the specified time period (Moderate Adverse Effect);
- Total Risk Score of 8-11 – Medium risk for the specified time period (Minor Adverse Effect); and
- Total Risk Score of <4 – Low Risk for the specified time period (Negligible Effect).

16.20 Therefore, a risk score of 8 or more means that climate change resilience impacts are considered likely significant prior to mitigation.



Table 16.1 Receptor Sensitivity, Probability and Consequence Factors

Factor	Commentary
Receptor sensitivity (Rs) – refers to the varied ability of a given environment (receptor) to accommodate and recover from external change. This considers the susceptibility of the receptor and the vulnerability of the receptor to potential climate effects. Susceptibility is the receptor's ability to withstand/ be substantially altered by the projected changes to the existing/ prevailing climatic factors (e.g. lose much of its original function and form). Vulnerability is the receptor's dependence on existing/prevailing climatic factors and reliance on these specific existing climate conditions continuing in future. Sensitivity is determined using quantifiable data, where available, the consideration of existing designations, relevant legislation, national and local policy and international, national, regional and local standards.	1 = Low susceptibility and/ or vulnerability 2 = Moderate susceptibility and/ or vulnerability 3 = High susceptibility and/ or high vulnerability
Probability (P) – likelihood of the impact occurring over the specified time period.	1 = Unknown occurrence or relatively low probability of the impact occurring in project lifetime e.g. no occurrence or may occur once 2 = Medium likelihood that the impact will occur in the lifetime of the project e.g. once or more 3 = There is a high likelihood that the impact will occur multiple times in the project lifetime e.g. every 15 years or more
Consequence (C) - This reflects the geographical extent of the effect or the number of receptors affected (e.g. scale), the complexity of the effect, degree of harm to those affected and the duration, frequency and reversibility of effect.	1 = No or minimal consequence e.g. effect is small in scale relative to the project, results in no harm, has a short duration (e.g. 1 day) and is reversible. 2 = Moderate consequence, must meet one of the following thresholds: • Results in some level of harm; or • Medium scale effect that has some potential for cascading effects on other aspects of the Proposed Development. 3 = High consequence, must meet one of the following thresholds: • Irreversible or longer duration (e.g. 1 week) effect on any aspect of the project; • Results in unacceptable harm; or • Large scale effect that has cascading effects on the wider function of the Proposed Development.



16.21 Those risks and opportunities that scored 8 or above (as shown in Table 16.1) have been assessed further to identify potential adaptation responses that could be implemented to reduce the sensitivity, probability, and consequences(s) of the impact.

GHG Assessment

16.22 For the GHG assessment, a summary of the scope of GHG impacts and the sources of emission data, where these have been quantified, is provided in Table 16.2 below.

Table 16.2 GHG Data Sources

Development Phase	Baseline	Proposed Development	Methods and Data Sources
Construction emissions	Baseline is zero as no existing construction is taking place.	Embodied carbon emissions from all materials in Proposed Development; construction transport, construction waste and construction plant.	GHG calculation of embodied carbon based on the LETI Embodied carbon primer 'Business as usual' benchmark per indicative GIA of the Proposed Development.
Operational Transport	Baseline is zero as there is no existing development that would result in transport emissions.	GHG emissions when the site is fully operational (from 2032).	Operational transport emissions estimated based on: • Daily vehicular trips for the Proposed Development from the Transport Assessment prepared by IMA Transport Planning. • DESNZ 2025 Carbon Emissions Factors using a medium sized diesel car. • Average trip distance from the National Travel Survey 2022.
Operational Energy Use	Baseline is zero as there is no existing development that would result in operational energy use.	Energy Strategy for the Proposed Development.	Predictions made in the Energy Strategy produced by AES for the Proposed Development.
Sources: LETI Embodied Carbon Primer (Ref 16.7); DESNZ GHG Conversion Factors for Company Reporting (Ref 16.8).			

Embodied Carbon

16.23 The embodied carbon value has been taken from the Low Energy Transformation Initiative (LETI) Primer Climate Challenge benchmarks for 'Business as Usual' embodied



carbon for non-domestic buildings. The benchmarks are provided as kg of CO_{2e} per square metre of Gross Internal Area (GIA). CO_{2e} is a measure of all six major GHGs (carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). The following benchmarks are therefore provided which are considered a likely-case scenario estimate based on current regulatory minimum requirements:

- Domestic buildings: 800kgCO_{2e}/m²; and
- Non-domestic buildings: 1,000kgCO_{2e}/m².

Significance Criteria

16.24 To assess the impact of the emissions from the Proposed Development in accordance with the ISEP Guidance, the criteria set out in Table 16.3 has been used to determine significance.

Table 16.3 GHG Significance Criteria

Significance	Criteria
Major Adverse (Significant)	The project's GHG emissions are not mitigated or are only compliant with do-minimum standards set through regulation, and do not provide further reductions required by existing local and national policy for projects of this type. A project with major adverse effects is locking in emissions and does not make a meaningful contribution to the UK's trajectory towards net zero.
Moderate Adverse (Significant)	The project's GHG impacts are partially mitigated and may partially meet the applicable existing and emerging policy requirements but would not fully contribute to decarbonisation in line with local and national policy goals for projects of this type. A project with moderate adverse effects falls short of fully contributing to the UK's trajectory towards net zero.
Minor Adverse (not significant)	The project's GHG impacts would be fully consistent with applicable existing and emerging policy requirements and good practice design standards for projects of this type. A project with minor adverse effects is fully in line with measures necessary to achieve the UK's trajectory towards net zero.
Negligible (not significant)	The project's GHG impacts would be reduced through measures that go well beyond existing and emerging policy and design standards for projects of this type, such that radical decarbonisation or net zero is achieved well before 2050. A project with negligible effects provides GHG performance that is well 'ahead of the curve' for the trajectory towards net zero and has minimal residual emissions.
Beneficial (significant)	The project's net GHG impacts are below zero and it causes a reduction in atmospheric GHG concentration, whether directly or indirectly, compared to the without project



Significance	Criteria
	baseline. A project with beneficial effects substantially exceeds net zero requirements with a positive climate impact.

16.25 To contextualise the Proposed Development's construction emissions, CO₂ emissions have been compared to the CO₂ emissions for Wiltshire in 2023 as reported by DESNZ (2,905,300 tonnes) (Ref 16.9), as well as the relevant UK Carbon Budgets.

16.26 The UK carbon budgets are in place to restrict the amount of GHG emissions the UK can legally emit over successive five-year periods. During the anticipated construction programme of the Proposed Development (up to six years), the relevant UK carbon budgets are the 4th Carbon Budget (2023–2027), the 5th Carbon Budget (2028–2032) and the 6th Carbon Budget (2033–2037). For the operational phase of the Proposed Development, the most appropriate carbon budgets published to date are the 6th Carbon Budget (2033–2037) and the 7th Carbon Budget (2038–2042), as these align most closely with the anticipated early years of operation. Further carbon budgets are expected to be established by the UK Government in due course, extending the statutory emissions reduction framework beyond 2042 and covering the remainder of the operational lifetime of the Proposed Development.

16.27 Table 16.4 shows the future UK Carbon Budgets, which are in place to restrict the amount of GHG emission the UK can legally emit in a given five-year period. Seven Carbon Budgets have been released to date, running up to 2042.

Table 16.4 UK Carbon Budgets

Carbon Budget	Total UK Carbon Budget (Mt CO _{2e})
4 th (2023-2027)	1,950
5 th (2028-2032)	1,725
6 th (2033-2037)	1,000
7 th (2038-2042)	535



Assumptions, Exclusion and Limitations

Climate Change Resilience

16.28 This assessment uses the UKCP18 projections of the future climate based on Met Office climate models which represent the current understanding of the climate system. The Met Office's UKCP18 Caveats and limitations report identifies that:

- Climate projections are dependent on future greenhouse gas assumptions;
- Estimated ranges for future climate are conditional; and
- UKCP18 does not capture all possible future outcomes.

16.29 The models used for UKCP18, as with all climate modelling, is inherently based on statistical and dataset choice assumptions with expert judgement playing a role in the various methodological and data choices. The data scenarios, therefore, should be interpreted as climate projections that will have some variance as models and observed impacts are recorded.

GHG Assessment

16.30 Benchmarks used in the calculation of embodied carbon emissions are based on likely case scenario figures from industry documentation. However, there are inevitably variations between buildings and therefore an accurate figure for the embodied carbon is not included as part of this assessment.

16.31 The emissions factors used in the operational transport GHG assessment are based on 2025 UK emissions factors from DESNZ and the likely proportion of petrol/diesel and electric cars when the Proposed Development becomes fully operational (approx. 2032) and are therefore likely to reduce significantly over the continued lifetime of the Proposed Development. However, given the uncertainties associated with the speed of decarbonisation, current emissions factors are considered the most appropriate for this assessment and represent a likely-case scenario.



LEGISLATION, PLANNING POLICY AND GUIDANCE

International

The Paris Agreement (2016)

16.32 The Paris Agreement is an international agreement on climate change created as a result of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties in 2015 (Ref 16.10).

16.33 The Paris Agreement introduced a number of targets with regard to climate change adaptation and mitigation:

- Mitigation: reducing emissions – a long-term goal to limit global average temperature rise to ‘well below’ 2°C above pre-industrial levels and a rapid reduction in global emissions in accordance with the best available science, after peaking as soon as possible;
- Transparency and global stocktake – Government meetings every five years to set more ambitious targets as required by science;
- Adaptation – Government agreement to strengthen society’s ability to deal with the impacts of climate change; and
- Loss and damage – recognising the importance of averting, minimising and addressing loss and damage associated with the negative effects of climate change; and acknowledging the need to cooperate and enhance the understanding, action and support in areas such as early warning systems, emergency preparedness and risk insurance.

16.34 Signatory nations are required to produce Nationally Determined Contributions (NDCs) that set out their targets to meet the Paris Agreement through national level policy. Many businesses are also taking action to meet the long-term goal, for example by setting their own carbon targets and developing sustainability strategies. Some have done this formally through the Science Based Targets initiative that helps businesses set targets to reduce greenhouse gas emissions in line with the level of decarbonisation required to meet the 2°C temperature rise.



National

The Climate Change Act (2008)

16.35 The Climate Change Act 2008 (Ref 16.11) as amended in 2019, commits the UK to achieving net zero greenhouse gas emissions by 2050. It also provides for a Committee on Climate Change (CCC), which sets out binding carbon budgets on the Government for five-year periods.

16.36 The system of carbon budgeting constrains the total amount of emissions in a given time period and sets out a procedure for assessing the risks of the impact of climate change for the UK, stimulating a requirement for the Government to develop an adaptation programme.

16.37 The Climate Change Act was amended in 2019 by introducing a new target for reducing UK greenhouse gas emissions by a minimum of 100% by 2050 from a 1990 baseline. This is otherwise known as a net zero target. Some emissions can remain if they are offset by removal from the atmosphere and/ or by trading in carbon units.

16.38 The most recent seventh carbon budget covers the period 2037-2042 and requires annual emissions to be limited to an average of 87% below 1990 levels by 2040.

16.39 The Climate Change Act introduced new powers and duties on climate change adaptation and mitigation, these included:

- A UK-wide Climate Change Risk Assessment that must occur every five years;
- A National Adaptation Programme that must be put in place and reviewed every five years to address the most pressing climate change risks;
- Government power to require 'bodies with functions of a public nature' and 'statutory undertakers' – e.g. water and energy utilities – to report on how they have assessed the risks of climate change to their work, and their response; and
- Adaptation Sub-Committee of the independent CCC in order to oversee progress on the national programme and advise on the risk assessment.

National Planning Policy Framework (2025)

16.40 The revised National Planning Policy Framework (NPPF) was revised in December 2024, replacing the previous NPPF that was adopted in 2021 (Ref 16.12). The revised NPPF



sets out the Government's planning policies for England and how they are expected to be applied. It sets out a framework that aims to achieve sustainable development throughout the planning system with three overarching objectives – economic, social and environmental.

16.41 At the heart of the NPPF is a 'presumption in favour of sustainable development', which requires Local Authorities as part of any plan-making or decision-making, to provide clear guidance on how the presumption should be applied locally.

16.42 The NPPF sets out how to deliver sustainable development under 14 subheadings. Subheading 14 of the NPPF outlines how development plans should be planning for climate change and taking a proactive approach to mitigating and adapting to climate change. It also sets out that new development should be planned to avoid increasing vulnerability to climate change and a development should help to reduce greenhouse gas emissions.

UK Climate Change Risk Assessment (2022)

16.43 The Government published the UK Climate Change Risk Assessment (CCRA) Government Report on 18th January 2022, the third in a five-yearly cycle (Ref 16.5). The methodology enables the comparison of over 62 risks and opportunities, from a number of disparate sectors, based on the magnitude of the impact and confidence in the evidence base.

16.44 The CCRA analysis indicates that buildings and infrastructure will be affected by both extreme weather events and long-term gradual change in the climate. The challenges arise from higher temperatures and changing rainfall patterns.

16.45 Relevant risks identified in the UK Climate Change Risk Assessment (2022) include:

- Risk to soils from changing climatic conditions, including seasonal aridity and wetness;
- Risks from climate change to landscape character;
- Risks to infrastructure networks (water, energy, transport, ICT) from cascading failures;
- Risks to infrastructure from river, surface water and groundwater flooding;
- Risks to transport networks from slope and embankment failure, high and low temperatures, high winds and lightning;
- Risks to subterranean and surface infrastructure from subsidence;
- Risks to public water supplies from reduced water availability;



- Risks to health and wellbeing from high temperatures, changes in air pollution, and changes in aeroallergens;
- Risks to people, communities and buildings from river and surface flooding;
- Risks and opportunities from winter household energy demand;
- Risks to business sites from flooding;
- Risks to health and social care delivery;
- Risks to business from disruption to supply chains and distribution networks;
- Risks to UK food availability, safety, and quality from climate change overseas;
- Risks to international law and governance from climate change overseas that will impact the UK; and
- Risks to finance, investment and insurance including access to capital for businesses.

16.46 Opportunities identified in the UK Climate Change Risk Assessment (2022) include:

- Opportunities from climate change to landscape character;
- Opportunities for health and wellbeing for higher temperatures;
- Opportunities for businesses from changes in demand for goods and services;
- Opportunities for UK food availability and exports from climate impacts overseas; and
- Opportunities from changes in summer and winter household energy demand.

Local

Wiltshire Core Strategy

16.47 The Wiltshire Core Strategy Development Plan Document (ref: 16.13) was formally adopted in January 2015. The plan provides a positive and flexible overarching planning policy framework for Wiltshire for the period up to 2026. This strategy has been developed by the Council working closely with Wiltshire's communities, as well as businesses and interest groups, both local and national. The aim is to deliver sustainable growth for the communities of Wiltshire that best meets their needs now and for the future. The policies that are of relevance to this ES chapter include but are not limited to the following:

16.48 Core Policy 41 - Sustainable construction and low-carbon energy: New development, building conversions, refurbishments and extensions will be encouraged to incorporate design measures to reduce energy demand. Development will be well insulated and designed to take advantage of natural light and heat from the sun and use natural air movement for ventilation,



whilst maximising cooling in the summer. New homes (excluding extensions and conversions) will be required to achieve at least Level 4 (in full) of the Code for Sustainable Homes. All proposals for major development will be required to submit a Sustainable Energy Strategy alongside the planning application outlining the low-carbon strategy for the proposal.

16.49 Core Policy 60 - Sustainable Transport: The council will use its planning and transport powers to help reduce the need to travel, particularly by private car, and support and encourage the sustainable, safe, and efficient movement of people and goods within and through Wiltshire. This will be achieved by:

- Planning developments in accessible locations.
- Promoting sustainable transport alternatives to the use of the private car.
- Maintaining and selectively improving the local transport network, in accordance with its functional importance and in partnership with other transport planning bodies, service providers, and the business community.
- Promoting appropriate demand management measures.
- Influencing the routing of freight within and through the county.
- Assessing and, where necessary, mitigating the impact of developments on transport users, local communities, and the environment.

16.50 Core Policy 61 - Transport and new development: New development should be located and designed to reduce the need to travel particularly by private car, and to encourage the use of sustainable transport alternatives.

16.51 Core Policy 67 - Flood Risk: All new development will include measures to reduce the rate of rainwater run-off and improve rainwater infiltration to soil and ground (sustainable urban drainage) unless site or environmental conditions make these measures unsuitable

Wiltshire Climate Strategy 2022-2027

16.52 The purpose of the Wiltshire Climate Strategy (Ref 16.6) is to highlight key areas that those Wiltshire can focus on in the next five years as well as setting out some important context on policy and emissions data. This strategy is structured around seven delivery themes – transport, home and the built environment, natural environment, food and farming, energy, green economy, resource and waste and carbon neutral council.

- Transport - Achieving zero emissions surface transport in Wiltshire is a challenge which will require action across all areas, with a significant role



played by zero emissions vehicles, in conjunction with reducing trips and shifting modes. Zero emissions transport is a necessary priority, since transport produces the largest proportion of emissions in the county.

- Homes and the Built Environment - New buildings need to be net zero carbon as soon as possible, using less energy and running on low carbon sources of electricity and heat. Existing buildings need to be retrofitted along the same principles. All buildings also need to be able to cope with the impacts of climate change.
- Natural Environment, food and farming - A healthy natural environment is crucial to achieving net zero and providing ways for people and wildlife to adapt to the stresses of climate change. Central to the challenge is the efficient and sensitive use of land for all our needs – local food production, preserving habitats, generating energy, absorbing carbon dioxide and providing homes.
- Energy – Reducing overall energy consumption, as well as using low carbon forms of energy, including from microgeneration. There are also opportunities to explore in terms of ‘smart’ and digital solutions that help to smooth demand, and ensure fair distribution of energy and new technologies.
- Green economy – Wiltshire to grow a net zero, climate resilient economy. This includes opportunities for training and more jobs in green sectors, as well as building up supply chains to enable objectives in other delivery themes.
- Resources and waste - Using the waste hierarchy ‘reduce, reuse, recycle, recover energy’ helps reduce the energy and emissions associated with extracting, manufacturing, transporting and storing products used.
- Carbon Neutral Council - This section sets out the areas of work that will help Wiltshire Council become a carbon neutral organisation. The council’s role also extends to providing leadership and opportunities to share knowledge.

BASELINE CONDITIONS

16.53 The Application Site of the Proposed Development is located in the Met Office district of England South West and Wales South. Average baseline climate conditions based on data from the years 1991-2020 for this region (Ref 16.14) are shown in Table 16.5 below.



Table 16.5 Baseline climate conditions for England South West and Wales South (1991-2020)

Month	Average baseline climate conditions 1991-2020		
	Average Maximum Temperature	Average Minimum Temperature	Average Rainfall (mm)
January	7.79°C	2.31°C	138.22
April	12.78°C	4.56°C	78.49
July	20.11°C	11.77°C	84.11
October	14.12°C	9.90°C	139.55
Annual	13.67°C	6.5°C	1,277.37

Source: Met Office (2020)

16.54 Future climate projections under UKCP18 for the 25 km Grid Cell (38648,153278) within which the Application Site is located, are presented in Table 16.6 for 2030, 2060 and 2090. The emission scenario RCP8.5 (high emissions scenario) was used and projections for the 50th percentile under both scenarios are displayed. The wider range shows the range of projections for 5th percentile to 95th percentile under each climate variable. These projections within Table 16.6 indicate the changes in temperature and precipitation for the projected years (2030, 2060 and 2090).

Table 16.6 UKCP18 Future Climate Change Projections Relative to the 1981-2000 Baseline Period under RCP8.5

Climate Variable	Predicted Change from Baseline Period 1981-2000 under RCP8.5					
	2030 (2020-2039)		2060 (2050-2069)		2090 (2080-2099)	
	RCP8.5 (50th percentile)	Wider Range	RCP8.5 (50th percentile)	Wider Range	RCP8.5 (50th percentile)	Wider Range
Mean Air Temperature (°C)						
Annual Average	0.9	0.2 – 1.7	2.2	0.8 – 3.7	4.1	1.8 – 6.5
Winter Average	0.8	-0.2 – 1.9	1.9	0.2 – 3.6	3.3	0.7 – 6
Summer Average	1.2	0 – 2.4	2.9	0.7 – 5.2	5.7	1.8 – 9.6
Mean Precipitation (%)						
Winter Average	7	-8 - 23	12	-10 - 39	26	-5 - 66



Climate Variable	Predicted Change from Baseline Period 1981-2000 under RCP8.5					
	2030 (2020-2039)		2060 (2050-2069)		2090 (2080-2099)	
	RCP8.5 (50th percentile)	Wider Range	RCP8.5 (50th percentile)	Wider Range	RCP8.5 (50th percentile)	Wider Range
Summer Average	-8	-36 - 19	-25	-57 - 10	-42	-75 - 4

Table 16.6 shows the following changes in climate variables projected under the high GHG emission scenario (RCP8.5) in the 2030s, 2060s and 2090s:

- Increases in air temperatures with higher increases in summer air temperatures (associated with an increased frequency of heatwaves);
- Increased variability in precipitation (associated with an increased frequency of heavy rainfall events, storms and droughts);
- An average reduction in summer precipitation (associated with an increased frequency of summer droughts); and
- An average increase in winter precipitation (associated with an increased frequency of heavy rainfall events and winter storms).

16.55 The magnitude and variability of these changes increases over time with the biggest changes by the 2090s. The magnitude of these changes would also be lower if less global GHGs are emitted than those modelled in the RCP8.5 scenario.

GHG Baseline

16.56 For the purpose of this assessment, the baseline for the GHG assessment has been assumed to be zero, given that the existing site is not occupied by any buildings, in comparison to the Proposed Development, and this would represent a likely-baseline scenario when assessing the change from the baseline throughout construction and once the Proposed Development is complete and operational.



IDENTIFICATION AND EVALUATION OF KEY EFFECTS

Construction Phase

GHG Assessment

16.57 An indicative area for the Application Site is 14.58 ha comprising up to 249 homes alongside a 64 bed care home, retail units, and a drive through unit (sui generis). This is broken down in Table 16.7 below.

Table 16.7 Development Areas

Building Use		
	GIA (m ²)	Embodied Carbon (kg CO _{2e} /m ²)
Residential	23,136	18,508,800
Care Home	2,960	2,368,000
Retail	720	720,000
Sui Generis (drive through)	242	242,000
'Non-residential'	3,922	3,922,000
Total	30,980	25,760,800

16.58 The area figures have been multiplied by the benchmarks set out in paragraph 16.23 which are considered to be representative of the resulting embodied carbon for the Proposed Development; these are set out below:

- Domestic (residential and care home) = 20,876.8 tonnes CO_{2e}
- Non-domestic (retail and sui generis) = 4,884 tonnes CO_{2e}

16.59 The total construction carbon emissions for these aspects of the Proposed Development are approximately 25,760.8 tonnes CO_{2e}. These emissions are associated with material embodied carbon, transport, and construction activities. The total CO_{2e} emissions are 0.0015% of the 5th UK Carbon Budget (2028-2032) and 0.0026% of the 6th UK Carbon Budget (2033-2037).

16.60 Please note, CO_{2e} comprises all greenhouse gas emissions which have been multiplied by their Global Warming Potential (GWP). Therefore, assuming a six year



construction period, the approximate annual average embodied carbon emissions would be 4,293.46 tonnes CO₂e per annum. This equates to 0.14% of Wiltshire's 2023 CO₂ emissions (2,905,300 tonnes CO₂) (Ref 16.9).

16.61 Prior to the implementation of mitigation, GHG emissions are considered a **Moderate Adverse** (significant) effect.

Operational phase

16.62 A set of effects for climate change resilience during the operation of the Proposed Development have been identified as below:

- Surface water flooding to the public realm and ground floor developments;
- Overheating in residential and retail buildings, and across the site including associated health implications particularly for resident elderly populations;
- Soft landscaping failure including to amenity greenspaces, due to increased extreme weather events and summer temperatures; and
- Water shortages for public use and for landscaping due to summer droughts.

16.63 To identify risks, the high emissions scenario data in Table 16.6 was used to estimate the risk prior to any adaptation measures being implemented because this would present the higher end of the climate scenarios in terms of effect severity and therefore ensure that all risks were fully evaluated. Mitigation measures for the risks are identified in the mitigation section of this chapter.

16.64 Each of these risks has been estimated using the scoring methodology set out in Table 16.1 and evaluated using the $R_s \times P \times C$ calculation to produce an associated level of risk.

16.65 The results of the risk estimation and evaluation are displayed in Table 16.8.

Table 16.8 Total risk score of the Proposed Development prior to mitigation

Impact	Timescale	Receptor Sensitivity (R_s)	Probability (P)	Consequence (C)	Total Risk Score ($R_s \times P \times C$)	Risk
Surface water flooding	2030	1	2	2	4	Minor Adverse
	2060	2	2	2	8	Minor



Impact	Timescale	Receptor Sensitivity (R _s)	Probability (P)	Consequence (C)	Total Risk Score (R _s x P x C)	Risk
						Adverse
	2090	2	3	2	12	Moderate Adverse
Overheating across the Site	2030	2	2	1	4	Minor Adverse
	2060	2	3	2	12	Moderate Adverse
	2090	3	3	2	18	Major Adverse
Soft landscaping failure	2030	2	2	2	8	Minor Adverse
	2060	2	3	3	18	Major adverse
	2090	3	3	3	27	Major adverse
Water shortages	2030	2	2	3	12	Moderate Adverse
	2060	2	3	3	18	Major Adverse
	2090	3	3	3	27	Major Adverse

Key Climate Change Risks

16.66 Using the calculated risk scores in Table 16.8 above, effects associated with climate change on the built environment at the Proposed Development will result in significant impacts on the following areas, prior to mitigation:

- Surface water flooding – **Minor Adverse** risk for 2030s and 2060s and **Moderate Adverse** risk for 2090s. The Flood Risk Assessment for the Application Site, prepared by Tumu Consulting, confirms that the Application Site is largely located within Flood Zone 1. However, climate projections have demonstrated increased heavy rainfall events which are subsequently linked to flash flood events. The car parks, the ground floor of the buildings and site users may therefore be affected by the increase in frequency and severity of flooding events in future climate change scenarios.



- Overheating – **Minor Adverse** risk for 2030s, **Moderate Adverse** for 2060s and **Major Adverse** risk for 2090s. With increased ambient and peak summer temperatures comes an increase in the likelihood and severity of overheating in all buildings on site. This could have negative effects on the health of the site end-users and is particularly significant in the care home given the heat-vulnerability of elderly inhabitants. Overheating outside may also impact the comfort of pedestrian users.
- Soft landscaping failure – **Minor Adverse** risk for 2030s and **Major Adverse** for 2060s and 2090s. The predicted increase in extreme weather events, such as heatwaves, droughts and storms, will damage the extensive landscape features if they are not sustainably designed to withstand a reduced water balance and the higher ambient temperatures.
- Water shortages – **Moderate Adverse** risk for 2030s and **Major Adverse** for 2060s and 2090s. The Proposed Development will be affected by the likely increase in water shortages, resulting from a reduction in total annual rainfall, particularly during summer months. Additionally, an increase in severe rainfall events will result in more surface water runoff and fewer opportunities for natural infiltration, leading to an increased risk of water shortage for public use and landscaping.

GHG Assessment

Transport

16.67 The assessment of transport related GHG emissions from the Proposed Development in operation is shown in Table 16.9. This is based on the Application Site being fully operational in approximately 2032 after the up to six year construction period. This uses annual trips to and from the Proposed Development from the Transport Assessment prepared by IMA Transport Planning, the GHG emission factors from DESNZ 2025, and the average distances derived from The National Travel Survey. Further emissions would be produced from sustainable transport sources such as public transport however, these are likely to be significantly lower than those from car.

**Table 16.9 GHG emissions from Operational Transport**

Mode of transport	Annual Development Trips	2025 DESNZ Emission factor (kgCO _{2e} per km)	Average Trip Distance (km)	CO _{2e} tonnes per annum
Car (medium diesel)	1,295,385	0.17174	14.5	3,227
Walk	557,720	0	1.4	0
Cycle	32,485	0	5.0	0
Bus Users	55,115	0.78016	20.8	895

Note: The emission factor has been assumed based using DESNZ 2025 data (Ref 16.8)*

16.68 Overall, the Proposed Development is predicted to generate 4,122 tonnes CO_{2e} per annum from operational transport during the first operational year, which is 0.14% of the GHG emissions for Wiltshire (2023). This is 0.0002% of the Fifth UK Carbon Budget and 0.0004% of the Sixth UK Carbon Budget.

16.69 Prior to implementation of the Travel Plan, the Proposed Development is considered to have a **Moderate Adverse** (significant) operational transport effect. Following implementation of the travel plan, sustainable transport measures will be introduced, including secure cycle parking for all units, wayfinding signage for walking routes to the town centre and nearby amenities, and information on safe walking routes and journey times. Public transport will be promoted through links to current timetables and information on bus and rail connections to the Application Site, while car sharing will be encouraged to reduce single-occupancy vehicle trips. All units will also be provided with Electric Vehicle Charging Points.

Energy Consumption

16.70 The Proposed Development has been designed with sustainability and energy saving in mind, and has been designed to achieve compliance with Part L1A of the Building Regulations through a combination of high-performance building fabric, efficient building services, and on-site renewable energy generation. The dwellings are primarily heated using gas-fired boilers, supplemented by photovoltaic (PV) panels installed across the Proposed Development. The calculated Dwelling Emission Rate (DER) is 250,595 kgCO₂/year, compared to a Target Emission Rate (TER) of 258,741 kgCO₂/year, representing an overall carbon emissions reduction of 3.15% beyond the regulatory baseline. For context, this is equivalent to 0.0086% of the total CO_{2e} emissions released in Wiltshire in 2023.



16.71 In accordance with the energy hierarchy, the design first prioritises reducing energy demand through a fabric-first approach. The building envelope achieves U-values of 0.24 W/m²K for external walls, 0.11 W/m²K for floors, 0.09 W/m²K for roofs, 1.4 W/m²K for windows, and 1.3 W/m²K for French doors. To further reduce regulated carbon emissions, a total of 577 kWp of photovoltaic capacity is proposed across the 249 dwellings, contributing renewable electricity generation and supporting compliance with Part L1A requirements.

16.72 In addition, Core Policy 41 requires new development, building conversions, refurbishments and extensions to incorporate design measures to reduce energy demand. On this basis, the Proposed Development is considered to have a **Minor Adverse** (not significant) effect in relation to operational energy.

ASSESSMENT OF CUMULATIVE EFFECTS

16.73 The assessment of the effects of the Proposed Development on, and as a result of climate change considers the committed developments surrounding the Proposed Development.

16.74 Please note, it is not possible to provide a detailed assessment accounting for all proposed developments in the area that may have a cumulative effect with the Proposed Development due to the global nature of climate change and the fact that the effects will not occur within a defined boundary. The emissions that each scheme makes will have some effect on climate change, but it will be a proportionally very small amount. However, the impact on climate change from the Proposed Development in combination with other developments is considered to have been minimised as far as possible as each of the cumulative schemes will have produced Flood Risk Assessments, Transport Assessments and Energy Strategies that help them individually adapt to and mitigate against climate change.

In-combination climate change effects

16.75 Climate change is not predicted to result in any effect interactions during construction given the low magnitude of climate change induced changes to weather patterns up to 2031.

16.76 The interaction of climate change and other EIA topic areas is therefore set out below for the operational phase.



Table 16.10: In-combination climate change effects

Assessment	In-combination effects with Climate Change
Transportation	During construction, climate change has the potential to result in short-term reduced accessibility of the site due to the increased frequency of extreme weather events. It could also reduce the likelihood of the uptake of sustainable transport modes during extreme weather events. However, it is considered that this will not result in any likely significant in-combination climate effects. Therefore, climate change factors are not expected to cause a material change in the construction assessment in the Transport and Access ES Chapter.
Air Quality	Increased ambient temperatures and changes in precipitation patterns have the potential to alter the concentration of air pollutants during construction. For particulate matter, summer droughts may exacerbate pollutant concentrations. The concentration of other sources of transport emissions will not be affected by climate change factors. During construction, the magnitude of these climate effects on dust is likely to be minimal and best practice measures will be implemented to minimise dust and transport emissions. Therefore, there are no likely significant in-combination climate effects associated with air quality. During operation, NO_x concentrations are unlikely to be directly affected by increased ambient temperatures and future climate change. However, hot dry summers could exacerbate PM_{2.5} and PM₁₀ concentrations.
Socio-economic	The increased frequency of extreme weather events, heatwaves and flooding is likely to cause some minimal short-term disruption and delays to construction work. However, the in-combination climate effects associated with socio-economics are predicted to be Negligible given that climate change is not predicted to result in any effects during construction that will reduce the provision of secure employment opportunities. Therefore, climate change factors are not expected to cause a material change in the assessment of construction effects in the Socio-economic ES Chapter.
Landscape and Visual	Due to pressure from water shortages, extreme weather events and increased annual temperatures it is considered that the terrestrial landscape and visual effects of the Proposed Development are likely to change as a result of climate change unless careful planning is carried out. More ecologically diverse landscapes will adapt more readily to climate change.
Ecology	Climate change has the potential to affect the distribution of habitats and fauna within the UK and alter the timing of seasonal events. Hydrological changes will have a particular impact on aquatic ecosystems, likely creating greater chance of extreme flood or drought events. Where relevant, the drainage designs and associated flood risk assessment have taken into account of potential changes to hydrology as a result of climate change. Other retained habitats such as hedgerows and woodland planting are likely to be relatively resilient to future climate changes. Evidence suggests that climate change is likely to affect the ranges of a number of faunal species, with shifts towards the north, whilst potential has been identified for climate change to result in potential emergence of new invasive species. However, such changes are unlikely to be relevant at the site scale. Nonetheless, proposed management of the landscape will be subject to ongoing monitoring in order to ensure they remain appropriate. Overall, the potential impacts of climate change on ecology are complex and difficult to separate from other anthropogenic effects. However, more diverse communities are more likely to readily adapt to climate change. Overall, the Proposed Development will provide areas of mature, high quality, diverse, habitats, as well as retaining the majority of existing green infrastructure. The diversity and extent of new habitats on-site will aim to maximise the site's resilience to climate change in the future.



ENHANCEMENT, MITIGATION AND RESIDUAL EFFECTS

Mitigation Measures

16.77 Mitigation measures are required to reduce as far as possible the impacts the Proposed Development will have on climate change, i.e. the nature and magnitude of greenhouse gas emissions.

16.78 Whilst the design approach to mitigation is provided in this chapter, other chapters and accompanying reports should be read, in particular:

- Energy Statement;
- Waste Minimisation Statement; and
- Chapter 12 – Water Quality, Hydrology and Flood Risk.

16.79 The information below sets out the mitigation measures that are to be implemented.

Construction Phase

16.80 All materials used in the development will be carefully selected with consideration for their embodied environmental impacts. Wherever possible, the Application Site and building will incorporate locally and sustainably sourced materials that are durable and robust, ensuring a long lifespan with minimal need for maintenance or replacement. Waste minimisation initiatives have been incorporated in the design process of the Proposed Development, advocating an environmentally sensitive scheme in accordance with the principles of sustainable development with the aim of minimising waste generation. Where appropriate, facilities for the convenient management, storage and recycling of domestic waste are set out in the application. These proposals recognise that good design and layout of these facilities, can help to improve sustainable waste management as required in the Council's Guide for Developers.

16.81 A Waste Minimisation Strategy has been prepared to provide a strategy for waste minimisation in connection with the Proposed Development. Further details will be submitted as required to discharge any relevant planning conditions, for example the Site Waste Management Plan (SWMP).

16.82 Where possible the Proposed Development will seek to maximise the use of standardised components, utilising those that arrive on-site as complete as possible to reduce



waste on site. Where practical, materials from local and easily renewable resources will be encouraged to reduce the environmental impacts of transport. Any practical opportunities to recycle waste on site and utilise materials for construction processes will be identified in the SWMP. Such materials will be stored on site before their processing and reuse. Materials for disposal will be segregated into recyclable streams and waste for landfill and will be removed by licensed waste handling contractors.

16.83 The SWMP will include commitments to on-site working practices including storage and waste management to reduce waste at source, re-use and recycling waste where practical. Material wastage will be further reduced through the effective handling, storage and delivery of materials to prevent loss or damage through exposure to the weather, mud and on-site vehicles. The SWMP will also:

- Set out measures to prevent, reduce and recover waste
- Identify opportunities for waste reductions at the design stage
- Forecast the waste arising
- Record waste carriers, waste management facilities and record actual waste movements
- Prepare waste management actions and;
- Benchmark processes against Standard, Good and Best Practice.

16.84 Further measures to avoid creating unnecessary waste will include efficient purchasing arrangements to avoid over ordering and the use of suppliers who collect and reuse/recycle packaging materials. These processes will be overseen by the appointed Site Manager whose responsibilities will be clearly identified in the SWMP. If any hazardous waste is generated during the construction process, then appropriate facilities will be made for easy and safe segregation of waste and its collection by appropriate local agents.

Operational Phase

Climate change adaptation measures

16.85 Adaptation measures to address the significant risks identified in Table 16.8 have been developed and will be incorporated into the design for the following risks:

- Surface water flooding;
- Overheating in commercial and residential buildings;
- Soft landscaping failure; and



- Water shortages.

Surface water flooding

16.86 The Flood Risk Assessment by Tumu confirms the Application Site is within Flood Zone 1 (low risk), with a 1% annual probability of river flooding.

16.87 Surface water flood risk is limited to small, isolated areas caused by site-specific depressions, which will be addressed through a drainage strategy incorporating Sustainable Drainage Systems (SuDS) principles, attenuation ponds, permeable paving, rainwater harvesting, retained drainage ditches and controlled discharge to the Bitham Brook Tributary.

16.88 There is very low risk from tidal, groundwater, sewer or reservoir flooding. Floor levels and development setbacks are above modelled flood levels including those projected from climate change events.

16.89 In conclusion, the FRA and Drainage Strategy confirm the development is safe from flooding, will not increase off-site flood risk, and complies with the 2025 NPPF, Wiltshire Core Strategy Policy 67.

Overheating in residential and commercial buildings

16.90 A number of design measures will be implemented to reduce energy consumption in the buildings in accordance with Core Policy 41 of the Wiltshire Core Strategy. These are set out below:

- All dwellings are dual aspect, enabling effective cross ventilation to improve natural airflow and assist with the purging of excess heat.
- The site layout has been designed so that the majority of dwellings are orientated on an east–west axis, avoiding fully south-facing elevations and thereby reducing the risk of excessive solar gains.
- Windows have been specified with low g-values to limit unwanted solar heat gains while maintaining good levels of natural daylight.
- The Proposed Development has been designed at a relatively low density, reducing the potential for a localised urban heat island effect.
- All windows are fully openable, maximising the available free area for natural ventilation and enhancing the building's ability to purge excess heat.



Soft landscaping failure

16.91 A Landscape Plan prepared by Greenhalgh Landscape Architecture is being submitted with this application. The Plan has considered the orientation of the Application Site with regard to planting, layout and sustainable drainage opportunities, to support the resilience of the landscape.

16.92 The key features of the Proposed Development are:

- New native woodland planting to extend and buffer existing woodland blocks and provide foraging and commuting habitat for SAC bat species;
- Provision of climate-resilient species to be planted as part of the landscaping strategy;
- New species-rich native hedgerow planting to enhance connectivity across the Application Site and with the wider landscape, and supplementary planting of retained hedgerows;
- Creation of species-rich grassland within the SANG and open space, managed by traditional-style hay cutting or low-intensity grazing;
- Enhancement of Bitham Brook tributary corridor and creation of wetland features within the SuDS scheme, benefitting riparian mammals, amphibians, birds and foraging bats;
- Retention and management of dark commuting and foraging corridors for bats along the western, eastern and southern boundaries;
- Integrated biodiversity features within the built development, including integral bat boxes, swift and other bird nest bricks, and hedgerow highways (gaps in garden fencing), in accordance with local policy requirements; and
- Provision of habitat piles, hibernacula and skylark plots (or equivalent managed grassland) to benefit reptiles, invertebrates and ground-nesting birds.

16.93 Collectively, the proposed landscape and ecological measures will enhance the resilience of the Application Site to the effects of climate change by creating a robust, diverse and well-connected green infrastructure network. The retention and enhancement of existing habitats, together with the creation of new woodland, hedgerows, species-rich grassland, wetland habitats and sustainable drainage features, will improve ecological connectivity, support biodiversity and increase the landscape's capacity to adapt to changing environmental conditions. The incorporation of diverse native planting and integrated biodiversity features throughout the Proposed Development will help to ensure the long-term establishment of



resilient habitats, contributing to a multifunctional landscape that supports biodiversity, manages water sustainably and is better able to withstand future climate pressures.

Greenhouse gas mitigation measures

Transport

16.94 The Proposed Development will minimise GHG emissions from travel by encouraging the use of more sustainable forms of transport, in line with Core Policy 60 and 61. The Application Site benefits from good accessibility to public transport, with the nearest bus stops located on Hawkeridge Road, either side of Mill Lane, approximately a four-minute walk from the Application Site. Westbury railway station is also accessible, located approximately 2km away on foot, further enhancing the Application Site's sustainable transport connections. A Transport Assessment has been prepared by IMA Transport Planning, alongside a Travel Plan which sets out a range of measures to encourage travel to and from the Application Site by active and public transport. These measures are summarised below:

- Appointment of a Travel Plan Coordinator (TPC) to set out the objectives of the Travel Plan for all residents, informing them of the sustainable transport modes available and the potential benefits to be derived from the Travel Plan, including savings in time and cost, supporting a healthy lifestyle and reducing the household carbon footprint.
- Promotion of walking as the most sustainable, accessible and healthy mode of travel, including information on the benefits of walking, details of main amenities within walking distance, safe routes and journey times. Additionally, clear waymarking signs will be provided on the routes to the town centre.
- Promotion of cycling through information provision on the benefits of cycling, details of the main amenities within cycling distance, safe routes and journey times, and monitoring of maintenance issues and reporting to the highway authority. Local cycle proficiency courses will be promoted, as well as the provision of secure and convenient cycle parking for all dwellings.
- Promotion of public transport through provision of information on amenities and employment centres accessible by bus and rail, links to current timetable information provided on the housebuilder website, and one free First Bus FirstWeek Ticket per household. Furthermore, liaison with First Bus will ensure services run at suitable times and gain access to any promotions.



- Car sharing will be encouraged through availability of promotional materials explaining the benefits of car sharing from organisations such as Liftshare.com.
- All dwellings will be provided with access to Electric Vehicle Charging Points (EVCPs).

16.95 The proposed sustainable transport measures above comply with Core Policies 60 and 61 of the Wiltshire Core Strategy in that they support the shift to a low-carbon future through the increased provision of facilities to support cycling, enhancing pedestrian access and encouraging the uptake of public transport. The Proposed Development is accompanied by a Transport Assessment and includes a Travel Plan to encourage vehicle movements.

Operational Energy

16.96 As set out in paragraphs 16.69-16.71, the Proposed Development incorporates a greenhouse gas mitigation strategy focused on reducing operational energy use, aligned with the energy hierarchy. Key measures include a combination of high-performance building fabric, efficient building services, and on-site renewable energy generation.

16.97 In accordance with the energy hierarchy, the design first prioritises reducing energy demand through a fabric-first approach. To further reduce regulated carbon emissions, a total of 577 kWp of photovoltaic capacity is proposed across the 249 dwellings, contributing renewable electricity generation and supporting compliance with Part L1A requirements.

16.98 In addition, Core Policy 41 requires new development, building conversions, refurbishments and extensions to incorporate design measures to reduce energy demand. On this basis, the Proposed Development is considered to have a **Minor Adverse** (not significant) effect in relation to operational energy.

Operational Waste Management

16.99 The detailed element of the application references provision of facilities within the Proposed Development to encourage the recycling and appropriate disposal of household waste in accordance with local and national policy allowing for convenient sorting and storage. These facilities will allow for segregation between recyclable and non-recyclable waste streams. These waste management and storage facilities have been designed so that these facilities can be safely accessed by the Council's fleet of refuse vehicles as required in the



Council's Guide for Developers. Further information is contained in the Transport Statement that accompanies the application.

16.100 The proposed commercial operations within the Proposed Development will also encourage the recycling and appropriate disposal of any commercial waste in accordance with local and national policy allowing for convenient sorting and storage. These facilities will allow for segregation between recyclable and non-recyclable waste streams. These waste management and storage facilities have been designed so that these facilities can be safely accessed by a contracted commercial waste collection service provider.

Residual Effects

Climate change risks

16.101 Following the climate change resilience mitigation measures, the residual effects are predicted to be:

- Surface water flooding – **Negligible** for 2030s, 2060s and 2090s, given that the proposed discharge rates will be limited to the 1 in 100 year plus 40% climate change event. The surface water drainage strategy will incorporate SuDS such as permeable paving, attenuation ponds, and rainwater harvesting, reducing flood risk by restricting surface water flows, complying with Core Policy 67 of the Wiltshire Core Strategy.
- Overheating – **Minor Adverse** (not significant) for 2030s, 2060s and 2090s, as excessive solar gain and subsequent building overheating, will be minimised through the use of low g-values, dual aspect dwellings to enable cross-ventilation, and openable windows to purge excess heat, complying with Core Policy 41.
- Soft landscaping failure – **Negligible** for 2030s, **Minor Adverse** (not significant) for 2060s and 2090s. Whilst future climate change may affect the long-term establishment and condition of planting, the proposed landscape strategy has been designed to enhance resilience through the retention and enhancement of existing habitats, the creation of a diverse network of native woodland, species-rich hedgerows, grassland and wetland habitats, and the integration of sustainable drainage features. These measures will strengthen ecological connectivity, improve habitat diversity and increase the landscape's capacity to adapt to changing climatic conditions, supporting the long-term



establishment of climate resilient green infrastructure. In doing so, the Proposed Development supports the objectives of Core Policy 50 by enhancing biodiversity, ecological connectivity and the long-term management of habitats, and Core Policy 51 by protecting and enhancing landscape character through a robust and climate-resilient landscape framework.

GHG Assessment

16.102 Following the mitigation measures described above for the Proposed Development, the residual GHG effects are considered to be as follows:

- **Minor Adverse** (not significant) for construction embodied carbon (materials, waste, transport and plant) given the mitigation measures are considered appropriate in line with the requirements of Core Policies 60 and 61 of the Wiltshire Core Strategy;
- **Minor Adverse** (not significant) for operational transport, given that the Proposed Development meets all relevant good practice and policy criteria. The Proposed Development is considered to align with the UK net zero trajectory considering the mitigation measures set out in this chapter, including new pedestrian and cycle routes and cycle storage provisions to encourage low carbon transport; and
- **Minor Adverse** (not significant) for operational energy, given the mitigation measures demonstrate compliance with national policy (Building Regulations requirements) and those in Core Policy 41 of the Wiltshire Core Strategy.

SUMMARY

16.103 Table 16.11 summarises the likely significant effects, identified mitigation measures and the likely residual effects identified within this Chapter.

Table 16.11: Climate Change Resilience and GHG Summary Table

Potential Effect	Nature of Effect (Permanent or Temporary)	Significance	Mitigation/ Enhancement Measures	Residual Effects
Construction Effects – GHG Emissions				
Greenhouse gas emissions from construction embodied carbon (materials, waste, transport and	Temporary impact, permanent climate implications	Moderate Adverse (significant)	CEMP, Waste Minimisation Statement, use of locally sourced materials with low environmental	Minor Adverse (not significant)



Potential Effect	Nature of Effect (Permanent or Temporary)	Significance	Mitigation/ Enhancement Measures	Residual Effects
plant)			impact. Segregation of recyclable waste streams and best practice waste storage and management practices to be included in SWMP.	
Operation effects – Climate Change Resilience				
Surface water flooding	Permanent	Minor Adverse (not significant) for 2030 and 2060 and Moderate Adverse (significant) for 2090.	Flood Risk Assessment and Drainage Strategy incorporating climate change allowances; integrated SuDS including permeable paving, attenuation basins/ponds, rainwater management and controlled discharge to the Bitham Brook tributary, reducing runoff and increasing resilience to more intense rainfall events.	Negligible (not significant) for 2030, 2060 and 2090.
Overheating	Permanent	Minor Adverse (not significant) risk for 2030, Moderate Adverse (significant) for 2060 and Major Adverse (significant) for 2090.	Building design measures set out in the Energy Strategy, including passive solar design, orientation, dual-aspect dwellings, effective cross-ventilation, openable windows, low g-values and high-performance building fabric to minimise overheating whilst maintaining occupant comfort.	Minor Adverse (not significant)
Soft landscaping failure	Permanent	Soft landscaping failure – Minor Adverse (not significant) risk for 2030 and Major Adverse (significant) for 2060 and 2090	Comprehensive landscape strategy incorporating retention and enhancement of existing habitats; creation of native woodland, species-rich hedgerows, grassland and wetland habitats; integrated SuDS;	Negligible for 2030, Minor Adverse (not significant) for 2060 and 2090.



Potential Effect	Nature of Effect (Permanent or Temporary)	Significance	Mitigation/ Enhancement Measures	Residual Effects
			diverse native planting and long-term landscape management to create a resilient, multifunctional green infrastructure network that supports biodiversity adaptation and ecological connectivity.	
Operation effects – GHG emissions				
Operational transport emissions	Permanent	Moderate Adverse (significant)	Travel Plan; improvements to walking and cycling infrastructure; enhanced pedestrian access and crossings; promotion of public transport, car sharing, EV charging infrastructure and sustainable travel choices.	Minor Adverse (not significant)
Operational energy emissions – regulated	Permanent	Moderate Adverse (significant) and Major Adverse (significant) for 2060 and 2090.	Energy Strategy incorporating fabric-first design, high-performance building fabric, efficient building services, low-carbon heating and on-site renewable energy generation (photovoltaics), in accordance with Core Policy 41.	Minor Adverse (not significant)

REFERENCES

Ref 16.1: Directive 2014/52/EU of the European Parliament and of the Council on the assessment of effects of certain public and private projects on the environment.

Ref 16.2: ISEP (2020); Environmental Impact Assessment Guide to: Climate Change Resilience & Adaptation.

Ref 16.3: ISEP (2022); Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance, Second Edition.



Ref 16.4: Met Office UK (2018), UK Climate Change Projections.

Ref 16.5: HM Government, (2022); UK Climate Change Risk Assessment 2022.

Ref 16.6: Wiltshire Council Climate Strategy 2022-2027

[Wiltshire Council Climate Strategy 2022.pdf](#)

Ref 16.7: London Energy Transformation Initiative (2020); LETI Embodied Carbon Primer, Supplementary guidance to the Climate Emergency Design Guide.

Ref 16.8: DESNZ (2025); GHG Conversion Factors for Company Reporting.

<https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2025>

Ref 16.9: DESNZ (2025); UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2023. From: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-statistics-2005-to-2023>

Ref 16.10: UNFCCC (2016), Paris Agreement.

Ref 16.11: UK Government (2008), The Climate Change Act.

Ref 16.12: UK Government (2024), National Planning Policy Framework. From:

https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

Ref 16.13: Wiltshire Core Strategy (2015) wiltshire.gov.uk/media/372/Wiltshire-Core-Strategy-adopted-2015/pdf/Wiltshire_Core_Strategy_2015.pdf?m=1735555642237

Ref 16.14: Met Office Regional climate conditions 1971-2000