

Local Plan Climate Change Policy Support Review

Tonbridge and Malling Borough Council

Quality information

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Executive Summary

Tonbridge and Malling Borough Council (TMBC) has commissioned AECOM to provide technical evidence and justification for clear, deliverable and proportionate policy recommendations to address climate change mitigation and adaptation within the emerging Local Plan. The Local Plan will also act as a key delivery mechanism for the Council's Climate Change Strategy (CCS) that TMBC published in 2020.

The policy recommendations presented support TMBC in ensuring the new Local Plan will adopt a proactive and proportionate strategy to mitigate and adapt to climate change, to meet the requirements of legislation and the National Planning Policy Framework (NPPF), as well as contributing to the borough's response to the climate emergency.

This study addresses climate change adaptation by modelling the likely trajectory of decarbonisation within Tonbridge and Malling, and exploring potential Local Plan interventions to accelerate the process, therefore aiding TMBC in achieving carbon neutral by 2030. For climate change adaptation the study considers the key climate risks and impacts of climate change in Tonbridge and Malling, and investigates realistically achievable mitigation methods that may be implemented into the Local Plan to promote resilience.

The Local Plan must be in accordance with a range of national and international legislation and policy, as follows, which the context review explores in depth.

- **The Paris Climate Agreement (2015):** The agreement's central aim is 'keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C'.
- **UN Sustainable Development Goals (2015):** Promotes sustainable infrastructure, management of water, energy and use of ecosystems.
- **Climate Change Act (2008):** The UK is legally committed to 100% reduction in greenhouse gas (GHG) emissions by 2050.
- **Net Zero Strategy (2021):** Ensure new buildings are prepared for net-zero by having a high standard of energy efficiency and low carbon heating installed.
- **Heat and Buildings Strategy (2021):** Aims to phase out the installation of gas boilers and increase the installation of heat pumps.
- **Planning and Compulsory Purchase Act (2004):** Puts a statutory duty on Local Authorities to include policies in the local plan designed to tackle climate change and the impacts.
- **Planning and Energy Act (2008):** Provides legislative basis for LPAs to exceed the minimum energy efficiency requirements of Building Regs where they are not consistent with relevant national policies.
- **25 Year Environment Plan (25YEP) (2018):** Sets goals to improve the environment.
- **National Planning Policy Framework (NPPF) (2023):** Provides guidance for LPAs drawing up local plans and prioritises the contribution to the achievement of sustainable development.
- **Planning for the Future consultation White Paper (2020):** Package of proposed measures that would comprehensively transform the current planning system in England, if implemented.
- **Levelling-up and Regeneration Bill (2022):** Focuses on accelerating the plan-making process for local authorities.
- **Building Regulations Approved Document Part L (2021):** Reduce CO₂ emissions by 31% (domestic) and 27% (non-domestic) from Part L 2013 regulations.
- **Future Homes Standard (FHS) (2025):** If adopted, a requirement for new buildings to meet significantly higher targets for energy efficiency and carbon savings. 'We expect that an average home built to it will have 75- 80% less carbon emissions than one built to current energy efficiency requirements (Approved Document L 2013).'
- **UK Climate Adaptation, the Climate Change Committee (CCC) (2008):** Established as an independent, statutory body responsible for providing climate adaptation planning advice to the UK Government.

Climate Change Mitigation

For climate change mitigation, the baseline position for Tonbridge and Malling is the current annual emissions of carbon from the borough. Figure 1 presents the breakdown of emissions in Tonbridge and Malling from 2021 DESNZ subnational emissions data. It is clear by Figure 1, that the Transport sector produces the greatest amount of carbon emissions (45%) – therefore policy recommendations regarding this sector are likely to have a significant impact overall. Throughout the report, ‘carbon emissions’ refers to all greenhouse gas emissions, unless explicitly stated otherwise.

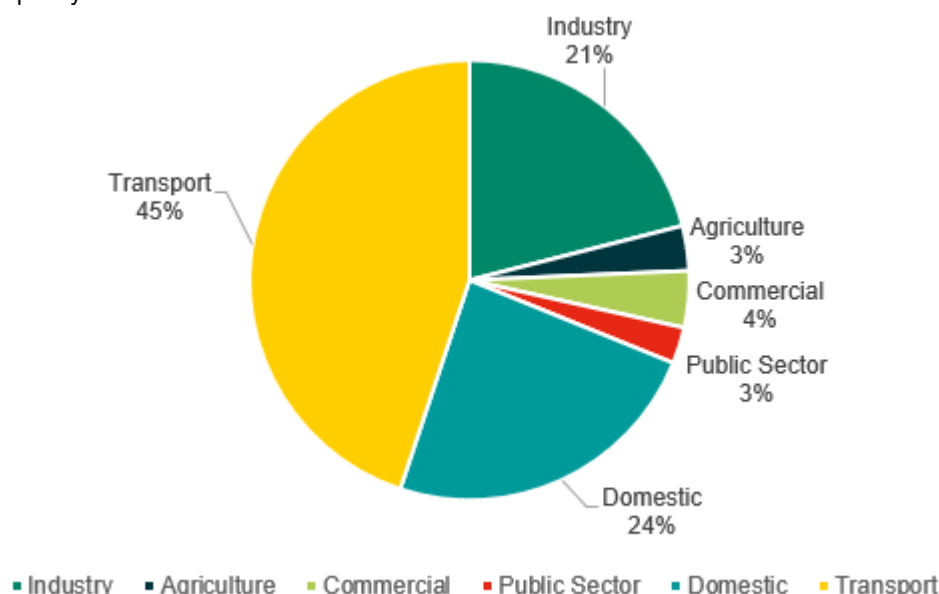


Figure 1: Baseline Annual Carbon Emissions (DESNZ subnational emissions data 2021¹)

The Tonbridge and Malling Housing Land Supply Position as of 31st March 2022 gives a locally derived housing requirement of 839 dwellings per year for the borough and this has been used to project future housing supply up to the end of the plan period. Based on previous dwelling completions data since 2011, we have assumed approximate proportions of houses and flats of 65% and 35% respectively to model the impact of new housing on the expected future baseline. The proportion of housing and flats is important as the interventions and opportunities to reduce carbon emissions varies between development types. For example, for Solar PV, houses are typically more able to benefit from a single system to serve just that property, whereas flats will be required to share a proportion of a larger array, which is likely to result in a lower level of energy generation per household.

Figure 2 illustrates the comparison between the baseline modelling, and the predicted impact on borough emissions associated with the planned growth of 839 dwellings per annum (dpa). The graph also accounts for scenarios with and without grid decarbonisation for a Business As Usual (BAU) scenario, which assumes compliance only with Building Regulations Part L 2021 to the end of the plan period (2041), see scenarios BAU1 and BAU2 in the graph below. The BAU (FHS) scenario refers to grid decarbonisation, Part L 2021 and accounts for the anticipated Future Homes Standard from 2026 (assuming a 12-month transition period in line with previous changes in regulations), see scenario 3 in the graph below. The significant reduction in emissions for BAU3 relative to BAU1 and BAU2 is primarily due to use of heat pumps which we assume will be made the default heating technology in the FHS.

¹ [UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics-2005-to-2021)

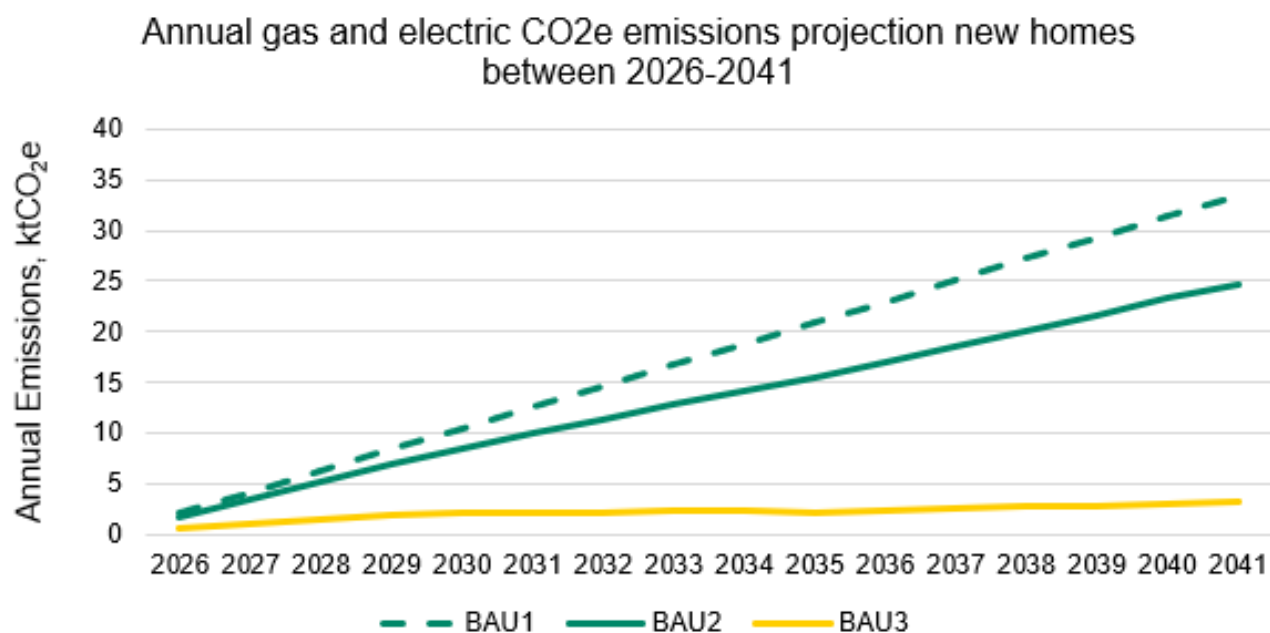


Figure 2: Annual Trend of gas and Electric Carbon Emissions for Tonbridge and Malling associated with the projection of new dwellings between 2026-2041

Climate Change Adaptation

The baseline for climate change adaptation will be taken as the existing exposure of TMBC to the risks posed by climate change. This has been informed by the Climate Change Risk Assessment (CCRA) 2022. The assessment of hazards covers the following:

Flood Risk: The River Medway is the primary river system in Tonbridge and Malling and is fed by several rivers and minor rivers. This poses a risk of fluvial flooding (riverine flooding), where water levels rise above the bank level, and water spills into adjacent land. The Environment Agency has declared flood risk from rivers in Tonbridge and Malling as 'high' (chance of flooding is greater than 3.3% annually)

For Tonbridge and Malling, flood risk is a product of rainfall intensity. Currently, the 100-year return period 1-day and 5-day maximum rainfall for the Winter season is estimated to be around 45mm and 72mm, respectively. By 2100, maximum 1 day rainfall is projected to increase to 51mm (13% increase), while maximum 5-day rainfall is projected to increase to 81mm (13% increase). Therefore, surface water runoff is also likely to be a potential risk for the borough.

Water Resources and Water Quality: To determine future drought risk, the future rainfall UKCP18 projections have been evaluated. Average winter rainfall is expected to increase with an approximate anomaly of 20% by 2100. Summer rainfall is expected to decline with an anomaly of almost 50% by 2100. The projected trend of increasing winter rainfall in Tonbridge and Malling may be a positive aspect in drought risk mitigation, as it is essential for replenishing aquifers, which are crucial for maintaining groundwater levels and ensuring a stable water supply. However, the reduced summer rainfall may lead to lower soil moisture levels, increased evaporation rates, and potentially more frequent and severe drought conditions during the warmer months.

Extreme Heat: The mean annual temperature has been projected to rise by approximately 3% by 2100. For agriculture, a mean higher temperature will often have positive outcomes, including longer growing seasons, higher yields and options for new crop varieties, but could also have detrimental impacts on water availability and soil quality.

Extreme Cold: Extreme cold occurs during a period when daily temperatures remain below 0°C. Associated hazards with extreme cold include frost, ice and snow, which impacts transport, infrastructure, and public health, including mortality (and other services, assets and communities). It is expected that the number of extreme cold events will reduce further to a negligible risk as a result of rising temperatures. UKCP18 projections illustrate an expected increase in Winter minimum temperature and the likelihood of extreme cold will continue to reduce.

Air Quality: Data gathered in proximity to the Air Quality Management Areas (AQMAs) for TMBC shows that the main pollutant of concern is NO₂. Air pollution is associated with several adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions.

High Winds: High winds present a hazard to transport, infrastructure, buildings, agriculture, and people. Nationally, there has been no trend in maximum gust speeds recorded. Notable storm events in Tonbridge and Malling includes Storm Eunice (2022), which was the strongest storm in the UK since 1987.

Subsidence: Subsidence is the process by which land or buildings sink to a lower level. This can have a significant impact on infrastructure and buildings. It can affect building foundations, resulting in structural damage, as well as damage to transport infrastructure. From 2030 to 2080, according to the British Geological Survey GeoClimate, the risk of subsidence in Tonbridge and Malling increases.

The UK CCC's Adaptation Sub-committee's Climate Change Risk Assessment sets out the UK understanding of climate risk. The assessment includes 51 potential climate change risk and opportunity areas across 5 areas. Certain risks within this assessment are relevant to the TMBC Local Plan, which include risks to infrastructure, public water supplies, transport, people's health and wellbeing, and businesses.

Policy Options Priorities

The aim of the policy recommendations is to present a discussion of key steps towards accelerating the decarbonisation trajectory that the Council may explore through the Local Plan. The borough's priorities, based on Tonbridge and Malling's baselining, context, and character, are clearly defined in the below table. These priorities define the themes under which each policy recommendation falls.

Tonbridge and Malling Baseline	Scoping and Context	Climate Change Priorities	Policy Option Theme
New development will increase carbon emissions in business as usual scenarios even taking into account the Future Homes Standard.	Greater development requirements including higher levels of housing.	A growth strategy that reduces carbon emissions and addresses climate change risks.	Growth Strategy and Strategic Policy
In Tonbridge and Malling, 28% of carbon emissions are produced by the domestic and commercial sectors. For TMBC to achieve their target to be carbon neutral by 2030 - new development will need to be designed to support climate change mitigation.	Tonbridge and Malling has approximately 1,400 listed buildings and structures, illustrating the significance of heritage to the borough.	Ensure new development is sustainable, energy efficient, low carbon and supports a circular economy.	Design and Circular Economy
		Encourage the retrofit of existing buildings to reduce carbon emissions.	Buildings
Risks to health and wellbeing from high temperatures.	Vulnerable residents and ageing population more at risk of overheating.	Ensure new development is designed to address the risks associated with climate change.	Buildings (Overheating)
Transport emissions are the largest emitter of carbon in the borough.	In Tonbridge and Malling, there is a strong reliance on the use of private car/van, with 85% of households owning at least one vehicle. Additionally, there is poor provision of EV charging infrastructure, with only 3.5% of households having access to a public EV charger within a 5-minute walk.	Reducing the reliance on private transport and the emissions associated with transport.	Transport
Existing and new development are significant contributors of carbon emissions.	TMBC's Climate Change Action Plan supports the implementation of renewable energy measures, and claims responsibility to promote suitable funding schemes, and advise residents.	Support suitable opportunities for low carbon energy generation and storage to serve the borough. Improve infrastructure to support sustainable development and help existing residents to reduce emissions.	Infrastructure and Land Use
Risk to habitats and species due to a changing climate.	Tonbridge and Malling consists of high quality landscape, with two AONBs, several SSSIs alongside swathes of Ancient Woodland and SACs. Additionally, a significant portion of the borough lies within the metropolitan Green Belt.	Work with the natural environment to help reduce emissions and risks associated with a changing climate. Conserve and enhance habitats to support biodiversity and wildlife resilience.	Green Infrastructure and Biodiversity
		Explore opportunities to promote carbon sequestration in the natural environment.	Infrastructure and Land Use (carbon sequestration)

Tonbridge and Malling Baseline	Scoping and Context	Climate Change Priorities	Policy Option Theme
Flood risks from fluvial and surface water.	High risk flood zones in the borough, particularly fluvial flooding, along the South boundary, through which the River Medway runs.	Reduce the impact of flooding, support natural flood management, and ensure developments include sustainable draining systems.	Water Resources and Flooding
Risks to public water supplies from reduced water availability.	Tonbridge and Malling lies within an area of serious water stress.	Reduce water use within new development.	Water Resources and Flooding

Policy Recommendations Summary

The following table provides a summary of the policy recommendations made in this report. Each recommendation in the report has been assessed via a RAG (Red/Amber/Green) rating to determine the borough's high priority recommendations, under impact, local plan making, development management implementation and viability criteria. We have defined each recommendation as either High, Medium, or Low priority for TMBC's Local Plan with regards to mitigating or adapting to climate change, based on the RAG ratings alongside Tonbridge and Malling-specific context.

Ref	Subject	Summary	Priority (L/M/H)
1	Strategic Climate Change Policy	Overall strategic approach to mitigating and adapting to climate change.	H
2	Energy and Climate Change Statement	Require all new developments to complete an Energy and Climate Change Statement, that is checked, enforced, and monitored, to set out energy and climate change measures and to demonstrate compliance with the requirements.	H
3	Guidance and Support	Produce a technical guidance document and consider further materials to support developers in complying with the requirements.	H
4	Energy Hierarchy	Require all new developments to follow a clear energy hierarchy.	H
5	Demand reduction	Require all new developments to reduce energy demand and introduce energy consumption targets where practical and viable.	H / M
6	Overheating	Set requirements for assessing overheating risks and mitigating these through design, and, avoiding the use of active cooling systems unless essential.	H
7	Low Carbon Heating Systems	Require all new developments to install low carbon heating systems that align with carbon neutral policy.	M
8	Onsite Solar Generation	Require all new developments to maximise the potential scale of PV installation and assess the potential for Solar Thermal if appropriate.	H
9	Energy Storage and Demand Management	Require all developments to assess the potential to introduce energy storage and smart energy management systems.	M
10	Whole Lifecycle Carbon	Where appropriate ask developers to consider whole life-cycle carbon emissions and demonstrate steps to minimise these.	M
11	Electric Vehicle Charging Infrastructure	Require new developments to install EV charging and allocate land for public EV charging points across the borough to support both through transit and local traffic.	H

Ref	Subject	Summary	Priority (L/M/H)
12	Active Travel, Cycling and Walking	Require new developments to incorporate active travel measures into the design of new development and provide connectivity to existing infrastructure.	H
13	Maximum Parking Standards	Set maximum parking standards for all new developments subject to local sustainability.	L
14	Transport Carbon Emission Assessment	Require developments to calculate the level of carbon emissions generated from transport.	L
15	Public and Shared Transport	Require new development to include connections to public transport and consider shared transport opportunities where possible.	H
16	Air Quality Assessment Requirements	Larger developments are required to provide air quality assessment and / or mitigation and compensation plans.	M
17	Renewable Energy Infrastructure	Land identification and allocation for renewable energy infrastructure.	M
18	Heat Networks	Support for heat network zones and potential future infrastructure that can be shown to deliver low carbon and cost effective heat.	L
19	Habitat Connectivity	Compulsory habitat connectivity where a site has the potential to connect two existing designated or identified habitats.	H
20	Biodiversity Net Gain Land for Offsite Provision	Identify land for Biodiversity Net Gain Offsetting.	L
21	Building with Nature Standards and Accreditation	Require new development to be designed to the Building with Nature standards.	H
22	Green Infrastructure Delivery in new Developments	Require new development to incorporate effective green infrastructure.	H
23	Living Roofs and Walls	Require new developments to consider incorporating living roofs and walls.	M
24	Compulsory Tree Planting	Require new development to include tree planting as part of the onsite green infrastructure.	M
25	Carbon Sequestration	Support and land identification for sequestration projects and require developments to minimise and compensate for loss in potential.	L
26	Mandate water Consumption Targets	Require water consumption calculations and set water consumption target of 110 litres/person/day for new developments.	H

Ref	Subject	Summary	Priority (L/M/H)
27	Rainwater and Greywater Recycling	Require all new developments to consider rainwater and greywater recycling and incorporate water harvesting measures.	H
28	Flood Risk Management	Safeguard areas with high adaptation potential including protecting and restoring catchments upstream of high flood risk areas.	H
29	Sustainable Drainage Systems (SuDS)	Require Sustainable Drainage Systems in new development.	H
30	Passive Design Analysis	Require all new large developments to conduct a passive design analysis.	H
31	Subsidence	Reduce risks at strategic level, neighbourhood and building scale.	L
32	Circular Economy	Require new development to incorporate circular economy principles	M

1 Introduction

1.1 Purpose of Report

Tonbridge and Malling Borough Council (TMBC) has commissioned AECOM to provide technical evidence and justification for clear, deliverable and proportionate policy recommendations to address climate change mitigation and adaptation within the emerging Local Plan. TMBC published a Council Climate Change Strategy (CCS) in 2020 and identified the Local Plan as a key delivery mechanism for addressing climate change within the borough. This evidence base study, whilst it will be used primarily as evidence for the Local Plan, will also support the Council's work to deliver the CCS across the borough.

This study describes the current baseline with regards to climate change mitigation and adaptation in Tonbridge and Malling Borough. It reviews the carbon emissions baseline to identify the key drivers of emissions within the borough and also provides analysis to identify the risks and vulnerabilities as a result of a changing climate. Throughout the report, 'carbon emissions' refers to all greenhouse gas emissions, unless explicitly stated otherwise.

The study discusses, and takes account of, some of the anticipated changes that may arise in the coming years as a result of the development proposed in the emerging new Local Plan, national policy and wider changes, and presents a series of options for responding to and delivering these through planning policy.

The aim of this report is to support TMBC in ensuring the new Local Plan will adopt a proactive and proportionate strategy to mitigate and adapt to climate change, to meet the requirements of legislation and the National Planning Policy Framework (NPPF), as well as contributing to the borough's response to the climate emergency.

The study provides an evidence base, and from this, a series of recommendations, for TMBC to take forward into the new Local Plan and its subsequent delivery. This study can also provide evidence for informing technical notes, supplementary planning documents and development management decisions, as well as contributing to the quantitative understanding of future emissions and energy use.

Figure 3 describes the process used in this study:

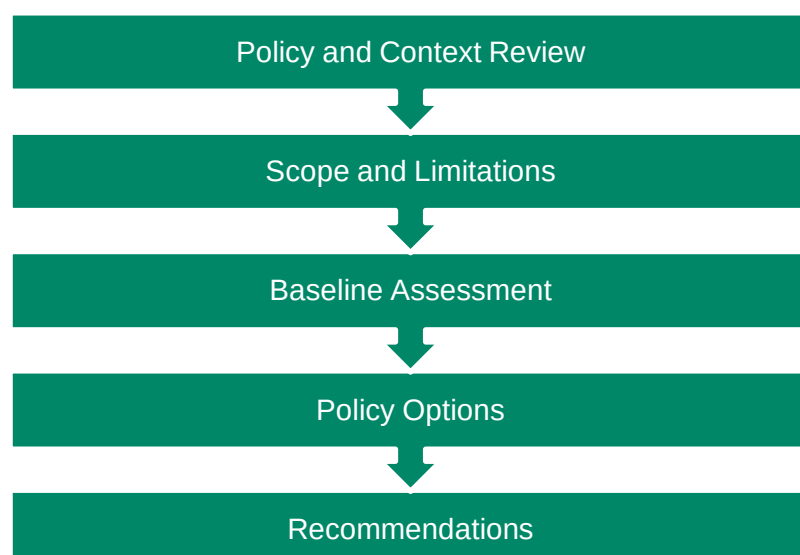


Figure 3: Summary of report approach

2 Policy and Context Review

This chapter provides a summary of the key policies and drivers informing this study, at the international, national and local levels.

2.1 International Policy

The Paris Climate Agreement

On 12 December 2015, United Nations Framework Convention on Climate Change members, including the United Kingdom, reached a landmark agreement to combat climate change and to accelerate and intensify the actions and investments needed for a sustainable low carbon future. The UK ratified the Paris Climate Change Agreement in November 2016. The Agreement's central aim *'is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C'*.

The Tyndall Centre has produced reports to support Local Authorities in understanding the implications of the UN Paris Agreement for local emission reductions, this includes a study for Tonbridge and Malling² which states that:

'The results in this report show that for Tonbridge and Malling to make its fair contribution to delivering the Paris Agreement's commitment to staying "well below 2°C and pursuing 1.5°C" global temperature rise, then an immediate and rapid programme of decarbonisation is needed. At 2017 CO₂ emission levels, Tonbridge and Malling will exceed the recommended budget available within 7 years from 2020. To stay within the recommended carbon budget Tonbridge and Malling will, from 2020 onwards, need to achieve average mitigation rates of CO₂ from energy of around -12.9% per year. This will require that Tonbridge and Malling rapidly transitions away from unabated fossil fuel use.'

UN Sustainable Development Goals

The UK is also committed to achieving the UN's Sustainable Development Goals (Figure 4) which were set out by the UN in 2015 to eradicate extreme poverty, fight inequality and injustice and leave no one behind. They cover a wide range of topics that are relevant to development in Tonbridge and Malling, including but not limited to:

- Goal 6 - Ensure availability and sustainable management of water and sanitation for all.
- Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all.
- Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialisation, foster innovation.
- Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable.
- Goal 13 - Take urgent action to combat climate change and its impacts.
- Goal 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

² <https://carbonbudget.manchester.ac.uk/reports/E07000115/>



Figure 4: UN Sustainable Development Goals

2.2 National Policy and Strategy

2.2.1 National Legislation

Planning and Compulsory Purchase Act 2004

Section 19(1A) of the Planning and Compulsory Purchase Act 2004 (PCPA04) puts a statutory duty on Local Authorities to include policies in the Local Plan designed to tackle climate change and the impacts. This will be tested through the examination in public.

Planning and Energy Act 2008

The Planning and Energy Act 2008 provides the legislative basis for local planning authorities to exceed the minimum energy efficiency requirements of the Building Regulations where they are not inconsistent with relevant national policies for England.

Climate Change Act 2008

Through the Climate Change Act (2008), as amended in 2019, the UK Government is legally committed to a 100% reduction in greenhouse gas (GHG) emissions by the year 2050, compared with a 1990 baseline. As part of this Act, the UK Government is also required to meet interim legally binding targets, known as carbon budgets, which act as steppingstones to 2050. In December 2020, the Government announced that they would increase their 2030 GHG emissions reduction target, from achieving a 57% reduction relative to the 1990 baseline, to a 68% reduction³. Subsequently, the Committee on Climate Change has also recommended an additional reduction target of 78% by 2035, which will in effect, bring forward the UK's previous 80% target by nearly 15 years.

UK Environment Act 2021

The UK government passed the Environment Act into law in November 2021. The proposed targets of the Act cover water, air quality and the diversity of UK wildlife. The Act aims to *'improve the health of rivers by reducing nutrient pollution'*, *'cleaning the air through a target to reduce exposure to PM2.5 (the most harmful air pollutant to human health) by over a third compared to 2018 levels'*, and *'halting the decline in UK wildlife populations through a legally binding target for species abundance by 2030, and a requirement to increase species populations by 10% by 2042.'*

³ <https://www.gov.uk/government/news/uk-sets-ambitious-new-climate-target-ahead-of-un-summit>

'Other targets include halving the waste that ends up at landfill or incineration by 2042 and increasing total tree cover by 3% by 2050.'

With regards to water demand, the Environment Act sets out a target for the volume of potable water supplied per day per head of population in England, by 31st March 2038, of at least 20% lower than the 2019-20 baseline.

A key component of the Act is the introduction of Biodiversity Net Gain (BNG). The Environment Act 2021 makes 10% biodiversity net gain mandatory for most major developments from January 2024 (new applications only) and for small sites from April 2024.

The Environment Act also includes the mechanism for Local Nature Recovery Strategies (LNRS) which will agree priorities for nature recovery and propose actions in the locations where it would make a particular contribution to achieving those priorities. The Kent Nature Partnership with Kent County Council are leading on the development of the LNRS for Kent.

2.2.2 National Climate Related Strategies

25 Year Environment Plan 2018

In 2018 the government published its 25 Year Environment Plan (25YEP) which set out goals for improving the environment, within a generation, and leaving it in a better state than we found it. The Environmental Improvement Plan (EIP) 2023 is the first revision of the 25 Year Environment Plan and aims to restore nature, reduce environmental pollution, and increase the prosperity of our country. The EIP also includes commitments to reduce water use, and balance competing uses of land to include climate mitigation and adaptation, as well as enhancing nature-based solutions to improve adaptation and protection from floods, droughts and wildfires.

Net Zero Strategy 2021

The UK Government published its Net Zero Strategy in October 2021⁴, this sets out the plan to achieving the net zero target. With regards to new buildings the strategy states that:

'[the Government] will introduce regulations from 2025 through the Future Homes Standard to ensure all new homes in England are ready for net zero by having a high standard of energy efficiency and low carbon heating installed as standard. This should mean that all new homes will be fitted with a low carbon heat source such as a heat pump or connected to a low carbon heat network. To reinforce this, we will consult on whether it is appropriate to end new gas grid connections, or whether to remove the duty to connect from the Gas Distribution Networks'

Heat and Buildings Strategy 2021

The Government also published its Heat and Buildings Strategy in October 2021⁵. One of the key elements of this strategy is the ambition to phase out the installation of natural gas boilers beyond 2035. This means that any gas boilers installed in new buildings now would need to be replaced by low carbon heating systems at the end of their life. Alongside this the Government has a commitment to rapidly increase the installation of heat pumps with a minimum market capacity of 600,000 heat pumps per year by 2028, up from 35,000 per year in 2020.

For new buildings the strategy has the following key commitment: *'Ensuring all new buildings in England are ready for Net Zero from 2025: We are bringing in the Future Homes Standard and have consulted on the Future Buildings Standard for new-builds in England. Government's ambition is to build 300,000 new homes a year by the mid-2020s. We anticipate at least a third of our 2028 heat pump target to be installed in new-build domestic properties annually. To enable this, we will introduce new standards through legislation (such as Building Regulations) to ensure new homes and buildings will be fitted with low-carbon heating and high levels of energy efficiency, so that new buildings do not have to be retrofitted in the future. We will also consult on ending new connections to the gas grid.'*

2.2.3 National Planning and Building Policy

Written Ministerial Statement of 25 March 2015

⁴ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

⁵ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1044598/6.7408_BEIS_Clean_Heat_Buildings_Strategy_Stage_2_v5_WEB.pdf

The Planning and Energy Act 2008 includes provisions for Local Plans to exceed the minimum energy efficiency requirements of the Building Regulations where they are not inconsistent with the relevant policies for England.

The Written Ministerial Statement of 25 March 2015 (WMS 2015) clarified that at the time, in relation to energy performance of residential dwelling, Local Plans could include policies which require compliance with energy performance standards that exceed the energy requirements of Building Regulations (up to a prescribed level) until commencement of amendments to the Planning and Energy Act 2008 in the Deregulation Bill.

However, the provisions in the Deregulation Act 2015, have not been enacted, and the Government has confirmed that they will not do so in their response to the Future Homes Standard consultation. It has further been confirmed by the Department for Levelling up, Housing and Communities (DLUHC) and the Department for Business, Energy and Industrial Strategy (BEIS) during the examination into the Local Plan Partial Update for Bath and North East Somerset Council, that *'Plan-makers may continue to set energy efficiency standards at the local level which go beyond national Building Regulations standards if they wish'*⁶ for new homes.

It is clear that Local Planning Authorities can require higher energy efficiency standards in the Local Plan, however the NPPG states that these can only be *'up to the equivalent of Level 4 of the Code for Sustainable Homes'*⁷ and this was confirmed by the WMS 2015.

The amendments to Part L of the Building Regulations in 2021 (now in force) in respect of energy efficiency standards, now require energy efficiency standards to a level which exceeds that in Level 4 of the Code for Sustainable Homes (Part L 2021 is a 31% reduction over Part L 2013 and Code for Sustainable Homes Level 4 is a 19% reduction over Part L 2013). In addition, the Government has stated that this is an interim measure before the Future Homes Standard is enacted in 2025. Therefore, it is clear that the WMS 2015 is now out of date and does not reflect the Government's action to meet the legal commitments set out in the CCA2008.

We are therefore able to conclude that buildings standards above what was set out in the WMS 2015 can be included in Local Plan policy, subject to viability testing, as they support the provisions within the NPPF to mitigate climate change as well as the Government commitment to reducing energy demand. This has further been confirmed by the recently adopted policies for Bath and North East Somerset and Cornwall and in the report of the Inspectors.

UK Proposed Planning Reforms 2019-2022

The UK Government has made many different proposals for national planning reforms since the 2019 general election, reflecting the fact that there have been six Ministers for Housing since the start of the Parliament and five of those since the start of 2022. Although the approach to reform has undergone frequent changes the Government has indicated that the national housing target to build 300,000 net new homes each year by the mid-2020s in England remains unchanged.

The **Planning for the Future consultation White Paper** was published by the Ministry of Housing, Communities and Local Government on 6th August 2020. This consultation set out a package of proposed measures that, if implemented, would comprehensively transform the current planning system in England. The stated aim is to streamline and modernise the planning process to build homes quicker, including to improve design and sustainability outcomes. It included the introduction of a quasi-zoning system, whereby the Local Plan would designate land as growth, renewal or protected area.

A revised approach was adopted in the **Levelling-up and Regeneration Bill in May 2022**, including plans for 'a genuinely plan-led system' and a focus on speeding up the plan-making process for local authorities, with tools such as National Development Management Policies (NDMPs) and voluntary spatial development strategies.

On 6 December 2022, the Government made a written ministerial statement, announcing its intention, subject to consultation, to make local housing targets "an advisory starting point, a guide that is not mandatory", and to "end the obligation on local authorities to maintain a rolling five-year supply of land for housing where their plans are up-to-date". Following this the Government launched the consultation on its proposed reforms, alongside a revised version of the NPPF with indicative changes to reflect the Government's proposed policy change.

⁶ EXAM10 Note on Local Energy Efficiency Targets 4 July 2022
<https://beta.bathnes.gov.uk/sites/default/files/EXAM%2010%20Note%20on%20Local%20Energy%20Efficiency%20Targets%20FINAL.pdf>

⁷ NPPG Paragraph 12 ID: 6-012-20190315

Chapter 7⁸ of the consultation states that “*The planning system should, as a whole, reflect the government’s ambition to help business and communities protect and enhance the environment for future generations, build a net zero carbon future, and adapt to the impacts of climate change.*”

The consultation states that the NPPF already addresses climate change and that this is supported by the Environment Act and the new National Design Guide and forthcoming design codes. It goes on to state that:

‘3. The government wants to build on these existing protections to make sure that protecting and improving the environment and tackling climate change are central considerations in planning. In principle, planning policies and decisions can support this in 6 main ways:

- protecting important natural, landscape and heritage assets, whilst also incorporating nature, landscape and public space into development and its surroundings;*
- supporting habitat creation and nature recovery in ways which benefit nature and people. For instance, nature based solutions can store carbon, assist adaptation (e.g. by reducing water run-off rates) and protect and enhance ecology;*
- promoting locational and design decisions that reduce exposure to pollution and hazards and respond to changing climate conditions, for example the risk of overheating, surface-water flooding, and water scarcity;*
- enabling renewable and low carbon energy production and distribution, at both a commercial and household scale; and policies for regulating carbon-generating extraction and energy generation;*
- promoting development locations, and designs and layouts, that contribute to healthier lifestyles, energy and resource efficiency consumption, for example by reducing the need to travel, increasing public transport connectivity and accessibility and promoting active travel i.e. walking, wheeling and cycling; and*
- bringing together the spatial strategy for a place in a way which addresses these in a holistic way and reflects its unique characteristics, whilst also providing a clear framework for development and regeneration.’*

The consultation closed on 2 March 2023 and received around 26,000 responses. The Government was due to publish the consultation outcome and NPPF revisions in ‘spring 2023’, but it has not yet done so.

Building Regulations 2021

Part L of the Building Regulations is the key mechanism for implementing the Building Act (1984) with regard to the conservation of fuel and power in buildings in the UK. In June 2022 an updated Part L 2021 came into force replacing the previous Part L 2013 version. This is intended as an interim step before the adoption of the Future Homes Standard (FHS) and Future Buildings Standards (FBS) in 2025.

The recently updated Part L 2021 is intended to deliver an average 31% and 27% reduction in regulated CO₂ emissions, compared to the previous Part L 2013 regulations, for domestic and non-domestic buildings respectively. The updated building regulations set a Target CO₂ Emission Rate (TER) and Target Primary Energy Rate (TPER) based on a notional building with an improved fabric specification, waste-water heat recovery and a gas boiler. They also set a minimum Target Fabric Energy Efficiency (TFEE) standard.

A key change to the Part L 2021 Approved Document was to amend the transitional arrangements for when new Building Regulations are implemented to close an existing loophole where multi-phase developments could be developed out under historic building regulations. Transitional arrangements are now applicable at a building, rather than site, level, meaning that buildings within phased developments may be required to meet different editions of the Building Regulations. The Standard Assessment Procedure (SAP) calculation process that underpins Part L has also been substantially updated.

The Standard Assessment Procedure (SAP) is the methodology used by Government to assess and compare the energy and environmental performance of dwellings. The SAP methodology is used for Part L of the Building Regulations, which is in turn used to demonstrate CO₂ emission performance of new development proposals against local authority planning policy targets. A key change in the latest version, SAP 10.2, is that the grid electricity CO₂ emission factor has been reduced to 0.136 kgCO₂ per kWh; this is a quarter of the 0.519 kgCO₂

⁸ <https://www.gov.uk/government/consultations/levelling-up-and-regeneration-bill-reforms-to-national-planning-policy/levelling-up-and-regeneration-bill-reforms-to-national-planning-policy#chapter-7--protecting-the-environment-and-tackling-climate-change>

per kWh figure that was used in SAP 2012. This reflects a rapid reduction in the carbon intensity of grid electricity in the period since the last adopted SAP update. These lower emission factors for grid electricity have reduced the CO₂ savings from electricity generation technologies such as PV and CHP but have substantially increased the carbon savings for technologies such as heat pumps which use electricity. Progressive reduction in grid electricity CO₂ emission factors combined with electrification of heating and transport, is one of the primary routes for the UK to meet its net zero targets and as noted above the Government has committed to decarbonise the electricity grid by 2035.

Provisions in the Planning and Energy Act (2008) allow local planning authorities to set energy efficiency standards in their development plan policies that exceed the energy efficiency requirements of the Building Regulations. It also allows Local Authorities to impose reasonable requirements for a proportion of energy used in development in their area to be energy from renewable and/or low carbon energy sources in the locality of the development (sometimes referred to as the 'Merton Rule').⁹

Since 2015 the UK Government has indicated that some of these powers might be removed in future, making it uncertain whether local planning authorities can continue to apply their existing or new planning policies. The Housing Standards Review undertaken in 2014/15 proposed to standardise performance requirements nationally, and this was codified by the Deregulation Act (2015), but the relevant provision was never enacted. In March 2019, new Planning Policy Guidance was issued, which confirmed that, for domestic buildings, Local Authorities can require new buildings to achieve up to a 19% improvement in CO₂ emissions compared with Part L 2013; and for non-domestic buildings, Local Authorities are 'not restricted or limited' in the standards they can set.¹⁰

In January 2021 the Government reiterated that, '*local planning authorities will retain powers to set local energy efficiency standards for new homes*' for the time being, but emphasised that this could change in future.¹¹ According to the Government's Future Homes Standard (FHS) Consultation document:¹²

'As we move to the higher energy standards required by Part L 2020 and the Future Homes Standard, there may be no need for local authorities to seek higher standards and the power in the Planning and Energy Act 2008 may become redundant.'

To summarise, although it is unclear the detail of what will be in place in the future, it is the case that Local Authorities are currently able to set higher standards of building energy performance than those outlined in the Building Regulations.

National Planning Policy Framework 2023

The NPPF, initially published in 2012, sets out Government planning policy for England and provides guidance for local planning authorities drafting ~~drawing-up~~ local plans and is a material consideration for those determining applications. The NPPF was most recently updated in 2023.¹³ The NPPF (2023) states that, '*the purpose of the planning system is to contribute to the achievement of sustainable development*.' The most relevant points for plan-making around climate change are that:

- Plans should take a proactive approach to mitigating and adapting to climate change in line with the objectives and provisions of the Climate Change Act 2008.
- New development should be planned for in ways that avoid increased vulnerability to the range of impacts arising from climate change and can help to reduce greenhouse gas emissions.
- Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.
- National Planning Policy Guidance (NPPG) clarifies, '*In their development plan policies, local planning authorities: Can set energy performance standards for new housing or the adaptation of buildings to provide*

⁹ Planning and Energy Act (2008). Available at: https://www.legislation.gov.uk/ukpga/2008/21/pdfs/ukpga_20080021_en.pdf

¹⁰ Ministry of Housing, Communities & Local Government and The Rt Hon Lord Pickles, 'Planning update' (March 2015).

Available at: <https://www.gov.uk/government/speeches/planning-update-march-2015>

¹¹ Ministry of Housing, Communities & Local Government, 'The Future Homes Standard: Consultation on changes to Part L and Part F of the Building Regulations for new dwellings: Government response' (2021). Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/956094/Government_response_to_Future_Homes_Standard_consultation.pdf

¹² Ministry of Housing, Communities & Local Government, 'The Future Homes Standard: Consultation on changes to Part L and Part F of the Building Regulations for new dwellings' (2019). Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/852605/Future_Homes_Standard_2019_Consultation.pdf

¹³ Ministry of Housing, Communities and Local Government, National Planning Policy Framework (2023), Available at: [National Planning Policy Framework - Guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/101671/National_Planning_Policy_Framework_-_Guidance_-_GOV.UK)

dwellings, that are higher than the building regulations, but only up to the equivalent of Level 4 of the Code for Sustainable Homes. Are not restricted or limited in setting energy performance standards above the building regulations for non-housing developments. ¹⁴

- To help increase the use and supply of renewable and low carbon energy and heat, plans should:
 - provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
 - consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
 - identify opportunities for development to draw its energy supply from decentralised, renewable, or low carbon energy supply systems and for collocating potential heat customers and suppliers.

The NPPF contains the majority of National Planning Policy for England with regards to Plan Making and material considerations for determining planning applications. The NPPF states that:

‘The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure. ¹⁵

The Local Plan plays a crucial role in shaping places for the future and contributing ‘to the achievement of sustainable development’¹⁶. Local Authorities have an opportunity to make tangible improvements to the built and natural environment that will help support communities as they develop and respond to current and future climate challenges. As a result, measures to address climate change will be found throughout the Local Plan.

The National Planning Practice Guidance (NPPG) provides additional guidance on the measures by which climate change can be addressed through a Local Plan. It states that ‘Addressing climate change is one of the core land use planning principles which the NPPF expects to underpin both plan making and decision making.’¹⁷

Table 1 summarises key sections within the NPPF that relate to climate change.

Topic	Potential Climate Change Measures	NPPF Paras	NPPG Ref
Growth strategy	Promoting sustainable patterns of growth which help to: • reduce the need to travel, • promote low carbon movement • make best and most efficient use of land • support efficient redevelopment and regeneration • promote climate resilient communities • avoid areas most at risk to climate change	7, 109, 123,124,157, 159, 161	Climate Change; Plan-making
Building Standards	Building design standards to: • ensure energy efficiency • reduce overheating • reduce greenhouse gas emissions • increase onsite renewable and low carbon energy generation	157, 158 159	Climate Change

¹⁴ Paragraph: 012 Reference ID: 6-012-20190315 <https://www.gov.uk/guidance/climate-change#can-a-local-planning-authority-set-higher-energy-performance-standards-than-the-building-regulations-in-their-local-plan>

¹⁵ NPPF Paras 152-153

¹⁶ NPPF Para 7

¹⁷ NPPG Paragraph:001 Reference ID: 6-001-20140306

Topic	Potential Climate Change Measures	NPPF Paras	NPPG Ref
Sustainable Transport	Design that promotes and supports active travel and reduces reliance on private vehicles. Promote cycling and walking opportunities. Supporting public transport and electric vehicle charging infrastructure. Travel plans	108, 110, 111,116	Climate Change; Transport evidence bases; Travel Plans, Transport Assessments and Statements
Renewable and Low Carbon Energy Generation	Proactively and positively increase the use and supply of renewable and low carbon energy and heat. Identify suitable land to deliver renewable and low carbon energy generation and storage. Support community initiatives.	160	Climate Change; Renewable and low carbon energy
Water resources and flooding	Avoid development in areas liable to flood and reduce surface water flooding, Mitigate, manage and adapt to coastal change Promote water efficiency, protect water resources, water quality and reduce the impact of droughts	158, 165, 177	Climate Change; Flood risk and coastal change; Housing: optional technical standards Water supply, wastewater and water quality
Infrastructure	Support infrastructure to promote sustainable patterns of behaviour and use. Promoting climate resilient infrastructure	7, 157, 158	Climate Change; Plan-making
Natural Environment and Biodiversity	Conserve and enhance land for different uses including: • Biodiversity value • Flood mitigation • Carbon sequestration • Food production	124(b), 180, 185	Climate Change; Natural environment
Design	Promote sustainable design features that reduce carbon emissions and promote climate resilience including: • Incorporating multifunctional green infrastructure, • use of materials, • orientation and layout	135, 136, 168	Climate Change; Natural environment

Table 1: Climate Change measures within the NPPF

Future Homes Standard and Future Buildings Standard 2025

Under the Future Homes Standard (FHS), new buildings would be required to meet significantly higher targets for energy efficiency and carbon savings. In the consultation paper The Government states that *'As part of the journey to 2050 we have committed to introducing the Future Homes Standard in 2025. This consultation sets out what we think a home built to the Future Homes Standard will be like. We expect that an average home built to it will have 75- 80% less carbon emissions than one built to current energy efficiency requirements (Approved Document L 2013). We expect this will be achieved through very high fabric standards and a low carbon heating system. This means a new home built to the Future Homes Standard might have a heat pump, triple glazing and standards for walls, floors and roofs that significantly limit any heat loss.'*

The Future Buildings Standard is a similar plan for decarbonising new non-domestic buildings, the consultation paper published in January 2021¹⁸ states that: *'Our vision for the Future Buildings Standard is designed to transition non-domestic buildings to use low-carbon heat sources for heating and hot water. This in turn means that new buildings constructed to the standard will be fit for the future with the ability to become carbon neutral over time as the electricity grid and heat networks decarbonise'*. The paper describes how this will be achieved through performance-based standards around higher levels of fabric and energy efficiency standards and the use of low carbon heating technologies, particularly heat pumps and heat networks.

The UK Climate Change Act 2008 (2050 Target Amendment) Order 2019 legally commits the UK Government to deliver net-zero emissions by the year 2050, compared with a 1990 baseline.¹⁹ Each Local Authority is expected to contribute to meeting the targets set out in the Act, and to reducing overall demand for energy.

UK Climate Adaptation

In the UK to date, strategic climate change adaptation planning has occurred at the national level although in recent years local authorities have taken an active role in identifying climate risks and initiating plans. In 2008, the Climate Change Committee (CCC) was established as part of the 2008 Climate Change Act²⁰, as an independent statutory body responsible for providing advice to the UK Government. Their responsibilities also include updating Parliament on climate programmes, such as the National Adaptation Plan, and their implementation.

The CCC published the third UK Climate Change Risk Assessment (CCRA) Technical Report in June 2021, which identifies the priority climate change risks to the UK and some potential opportunity areas which could be unlocked through changing conditions.²¹ The National Adaptation Programme (to be updated for the 2021 CCRA), indicates how the UK will respond to the risks and opportunities.

More broadly, adaptation must be incorporated and mainstreamed through other national legislation and guidance, including such as the Civil Contingencies Act (2004), Flood and Water Management Act (2010), the Town and Country Planning Regulations (2012), the National Planning Policy Framework, the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 and within section 19 (1A) of the Planning and Compulsory Purchase Act 2004, as amended under the Planning Act 2008.²²

While there is a structure to national level climate adaptation planning, local authorities have had limited involvement. However, they have an essential role to plan in local adaptation through:

- providing local leadership;
- adapting local services, infrastructure, and assets; and
- collaboration with local partners.²³

¹⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/956037/Future_Buildings_Standard_consultation_document.pdf

¹⁹ The original (2008) target of 80% was amended through subsequent legislation in 2019. See 'The Climate Change Act 2008 (2050 Target Amendment) Order 2019': <http://www.legislation.gov.uk/ukxi/2019/1056/contents/made>

²⁰ The Climate Change Act was updated in 2019.

²¹ Betts, R.A. and Brown, K. 2021. Introduction. In: The Third UK Climate Change Risk Assessment Technical Report. Prepared for the Climate Change Committee, London.

²² ADEPT, Defra and Local Adaptation Advisory Panel (2019). Preparing for a changing climate: good practice guidance for local government.

²³ Ibid.

2.3 Local Policy

Adopted Core Strategy and Development Plan

The current Adopted Core Strategy in use by TMBC is the LDF: Core Strategy (2007)²⁴, which contains the following relevant Climate Change related policies:

Policy CP1 – Waste

- Quality of land, air, and water will be preserved, and wherever possible, enhanced.
- Minimise waste generation, reduce the need to travel and minimise water & energy consumption – need for 10% of energy requirements to be generated on site from alternative energy sources and the potential for recycling water.

Policy CP2 – Sustainable Transport

- New developments should be well located to public transport, cycle and pedestrian routes. The need to travel should be minimised by the implementation of Travel Plans

Policy CP7 – Development in AONBs

- Development will not be proposed, or permitted, which would be detrimental to AONB, other than in the exceptional circumstances of:
 - Major development that is demonstrably in the national interests, where there are no alternative sites; or
 - Any other development that is essential to meet local social or economic needs

Policy CP10 – Flood Risk

- Development should first seek to make use of areas with no or low flood risk, before areas at higher risk. Development that's acceptable or exceptionally justified must:
 - Be subject to a Flood Risk Assessment (FRA)
 - Include an appropriately safe means of escape above flood levels anticipated during the lifetime of the development
 - Be designed and controlled to mitigate the effects of flooding on site and potential impact of the development on flooding elsewhere in the floodplain.

Policy CP18 – Strategic Housing Location

- Land to the South of Borough Green at Isles Quarry West is identified as a strategic housing location to meet housing needs in the more remote part of the Malling rural area.

Policy CP25 – Mitigation Measures for Material Harm to Natural or Historic Resources

- Where development that causes material harm to a natural or historic resource is exceptionally justified, appropriate mitigation measures will be required, such as:
 - Improvements to travel infrastructure
 - Landscaping and tree planting to screen lighting or visual impacts, and reduce noise
 - New wildlife habitats to replace those lost
 - Enhancing existing wildlife habitats
 - Flood alleviation measures
 - Recycling facilities
 - Pollution control and waste minimisation measures

²⁴ [Core strategy \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/core-strategy)

The policies align with TMBC's aim to ensure that all new development is in accordance with the principles of sustainability, including:

- Efficient use of land
- Designed to minimise energy consumption
- Optimise use of renewable resources
- Use sustainable construction techniques

Alongside this, TMBC has adopted a Development Plan Document titled 'Managing Development and the Environment'²⁵, consisting of additional Climate Change related Policies that all new development must adhere to, which are as follows.

Policy CC1 – Mitigation: Sustainable Design

- All proposals will be required to incorporate passive design measures to reduce energy demand.
- Proposals will be required to be well insulated and airtight, and designed to take advantage of natural light and heat from the Sun. Natural air movement will be used for ventilation, whilst maximising cooling in the Summer.
- This should be achieved by such of the following means as practicable:
 - Orientating windows within 30° of South
 - Locating windows at heights to allow lower Sun angles in Winter, and installing shading devices to prevent overheating during Summer
 - Using soft landscaping
 - Integrating passive ventilation
 - Planting green roofs to moderate temperature of the building
 - Proposals for new residential development will not be permitted unless at least 10% of the estimated CO₂ emission savings for each dwelling are achieved from installed low or zero carbon technologies.

Policy CC2 – Mitigation: Waste Minimisation

- Proposals will not be permitted unless they are designed and constructed to minimise waste production
- Site Waste Management Plans, when required, must include procedures for minimising waste on site as well as sorting, re-using and recycling the waste that is produced.
- Proposals will not be permitted unless they incorporate adequate space for the storage of recyclable and non-recyclable waste.

Policy CC3 – Adaptation: Sustainable Drainage

- Development will not be permitted if it has an unacceptable effect on the water environment
- Development proposals will not be permitted unless they incorporate Sustainable Drainage Systems (SuDS) appropriate to the local ground water and soil conditions, the local drainage regimes and in accordance with Groundwater Regulations. When used, they will be required to deliver recreation and wildlife benefits, where appropriate and practicable.
- Proposals incorporating SuDS must include an agreement to ensure future management, maintenance and replacement of the SuDS structures.
- Where it is not practicable to use SuDS, the proposal will need to demonstrate an appropriate alternative means of surface water drainage to ground watercourses or surface water sewers.

Policy CC4 – Adaptation: Winter Water Storage

- Encouraged development of Winter water storage
- Reservoirs, where practicable, should be designed to incorporate wildlife and landscape features

²⁵ [Development Plan – Tonbridge and Malling Borough Council \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/development-plan)

Emerging Local Plan and Local Plan Regulation 18 Consultation (2022)

The Council is currently in the process of drafting a new Local Plan to cover the period up to 2041. The Plan will aim to address and contribute to the objectives of the Council's Climate Change Strategy (2020-30) and associated action plans – which includes an aspiration for Tonbridge and Malling to be Carbon neutral by 2030²⁶.

A key aspiration for the Local Plan is to ensure that new development is adequately planned for, making the best use of previously developed land (brownfield sites) to meet the borough's housing target, and ensuring that proposals address the need for new facilities and infrastructure from the outset.

The Council undertook a Regulation 18 Consultation²⁷ in Autumn 2022. The consultation covered a variety of topics, with a focus on housing delivery, protecting the countryside, providing new services, supporting active travel, and supporting local business.

With regards to climate change, the Consultation states several matters to be addressed, with an apparent focus on sustainable transport, biodiversity, and green infrastructure.

In terms of sustainable transport, TMBC is preparing a new Active Travel Strategy (LCWIP) to identify cycling and walking infrastructure priorities²⁸ – In accordance with Government technical guidance²⁹. Additionally, the Plan states that a variety of key existing transport issues may be resolved by the following:³⁰

- *Providing funding for more commercially sustainable bus services*
- *Improve access to rail stations, especially for walking, cycling and disabled passengers*
- *Improve availability of dedicated cycle routes*
- *Improve footpath network, including the provision of safe crossings*
- *Ensure sufficient parking in residential areas*
- *Provide additional road capacity where necessary³⁰*

Relating to biodiversity, the Plan states that Kent Nature Partnership (KNP) has identified several Biodiversity Opportunity Areas (BOAs) across the county, where biodiversity enhancements, restoration or creating could be targeted to improve resilience to climate change³¹ – TMBC may address these areas in accordance with the Kent Biodiversity Action Plan.

Furthermore, the Regulation 18 Consultation states that TMBC may consider setting a minimum requirement for tree canopy coverage on new developments³². To determine the feasibility of this, TMBC has commissioned the preparation of a Green Infrastructure Strategy, which will demonstrate the borough's position on biodiversity evidence and tree canopy cover. The work will build on existing evidence: The Green Infrastructure and Ecological Network Report (2018) in accordance with the NPPF. KCC have also undertaken work to identify existing tree canopy coverage, with Tonbridge and Malling obtaining 28% canopy coverage – an 11% increase in comparison to the County's 17% average per authority³³. With regards to sustainable construction, the Plan states that the Council are considering setting requirements for a certain proportion of development on major sites to be built using Modern Methods of Construction (MMC)³⁴.

²⁶ Regulation 18 Page 80, Section 5.12.8

²⁷ [Regulation 18 local plan \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/regulation-18-local-plan)

²⁸ Regulation 18 Page 47, Section 5.5.14

²⁹ Planning local cycling and walking networks - GOV.UK (www.gov.uk)

³⁰ Regulation 18 Page 49, Section 5.5.26

³¹ Regulation 18 Page 65, Section 5.9.13

³² Regulation 18 Page 81, Section 5.12.9

³³ [Canopy cover report \(kent.gov.uk\)](https://www.kent.gov.uk/canopy-cover-report)

³⁴ Regulation 18 Page 80, Section 5.12.4

Corporate Climate Change Strategy (2020-30)³⁵

A TMBC motion adopted by full Council in 2019 sets out the aspiration to be carbon neutral by 2030. The implemented strategy, and draft policies below aim to assist in obtaining the goal.

Renewable Electricity:

- Renewable Heat Incentive (RHI) accreditation – a government scheme to encourage the uptake of renewable heat technologies through financial incentives.
- TMBC will reduce emissions from energy consumption in all Council buildings, in-house policies and procedures and ensure that climate change is a recognised commitment in the Corporate Strategy.

Adaptation and Sustainable Development:

- Promoting the Flood Warden Scheme – assist residents/businesses to prepare and adapt to climate change.
- Update planning policies and development allocations in the new Local Plan to ensure developments respond to sustainability considerations:
 - Maximise opportunities to reduce energy demand through orientation of rooms to harness natural light, and through landscaping to prevent overheating (*Draft Policy LP14*).
 - Maximise opportunities for sustainable travel, where practicable (*Draft Policy LP23*).
 - Major developments will, where practicable and proportional, provide opportunities for habitat creation (*Draft Policy LP19*) and maximise opportunities for net biodiversity gains on site (*Draft Policy LP27-31*).
 - New dwellings will be required to make provision for an EV charging point with each property.
 - New dwellings will be required to meet the Building Regulations optional requirement for tighter water efficiency of 110 litres/person/day (*Draft Policy LP44*).

Transport:

- Undertake an anti-idling campaign to eliminate emissions from idling engines
- Seeking the establishment of a new Quality Bus Partnership
- Work towards all taxis eventually becoming Ultra Low Emission Vehicles (ULEV)
- Fleet (such as parking/enforcement vehicles) will be replaced to be ULEVs.
- Contractors (such as waste and recycling providers) will be encouraged to use ULEVs in order to undertake work for the Council

Housing:

- Promote retrofitting of insulation measures and efficient heating
- Support the decarbonisation of energy supply through low carbon electricity (e.g. PV panel installation)

2.4 Local Partner Documents and Strategies

Kent County Council

The Tonbridge and Malling Borough lies within the county of Kent. Kent County Council (KCC) has stated that they intend to limit their contribution to global warming, and that the entire county should be net-zero by 2050. The key focus of KCC will be on *'sustainable transport, increasing biodiversity, improving our buildings, and supporting Kent businesses.'*

To remain on-track to become a net-zero county by 2050, KCC produced the Kent and Medway Low Emissions Strategy³⁶ in 2020, which outlines its own actions and expectations for Local Plan Authorities, such as Tonbridge and Malling Borough Council, with regards to mitigating the impact of Climate Change. In the strategy, one clear priority for KCC is 'Planning and Development', with a short-term goal of *'developing a clean growth and climate*

³⁵ [Climate change strategy 2020 to 2030 – Tonbridge and Malling Borough Council \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/climate-change-strategy-2020-to-2030)

³⁶ [Kent and Medway Low Emissions Strategy](#)

change strategic planning framework for local plans and development'. In the longer term (by 2030), the Council aims to *'fully integrate clean growth and climate change into local plans and policies.'*

Another priority, which may be supported by TMBC, is 'Green Infrastructure', which supports the Kent Biodiversity Strategy and currently aims to identify *'natural environment 'quick wins' and areas where tree establishment is needed'*.

The Kent Biodiversity Strategy³⁷ was published in 2020, and covers a 25-year period. The aims of the strategy include *'the maintenance, restoration, and creation of habitats that are thriving with wildlife and plants.'*, to *'protect and recover threatened species and enhance the wildlife habitats that Kent is particularly important for'*, and also, *'to provide a natural environment that inspires citizen engagement and is well used and appreciated.'*

Kent Nature Partnership

With regards to Biodiversity, the Kent Nature Partnership³⁸ (KNP) is proposing a county-wide approach to Biodiversity Net Gain to be adopted by all Kent planning authorities, that will *'deliver good outcomes for both nature and communities, as well as providing consistency for developers.'* The KNP promotes the adoption of +20% BNG target for the County's planning authorities. Should TMBC want to include 20% BNG in the Local Plan this would need to be tested through the whole-plan Viability Study and will need to be balanced against other Local Plan priorities.

Furthermore, KNP are responsible for the Local Nature Recovery Strategy³⁹ (LNRS) which will cover the entirety of Kent and Medway. It will consist of a system of spatial strategies, which will *'establish priorities and map proposals for specific actions to drive nature's recovery and provide wider environmental benefits'*.

Kent Downs Areas of Outstanding Natural Beauty

A proportion of the Kent Downs Area of Outstanding Natural Beauty⁴⁰ (AONB) lies within the Tonbridge and Malling Borough with a smaller proportion in the High Weald AONB. The Kent Downs AONB Management Plan states that *'a strategic, evidence-led approach to both the adaptation to and mitigation of the impacts of climate change on the natural beauty and historic character of the Kent Downs, and its human consequences, will be pursued with a target that AONB landscape management is carbon neutral by 2030 and the AONB Unit is carbon neutral by 2025.'* The Plan provides several nature-based approaches that assist in creating a resilient environment in the face of climate change, including tree and hedgerow establishment, and permanent grassland creation and management.

High Weald Areas of Outstanding Natural Beauty

A small proportion of the south of Tonbridge and Malling borough lies within the High Weald to the south of Tonbridge. The High Weald AONB Management Plan (2019-2024)⁴¹ specifies several objectives in response to the priority issues across the AONB. Objective G3 relates specifically to climate and aims *'to help secure climatic conditions and rates of change which support continued enhancement of the High Weald's valued landscape and habitats'*. To achieve this, particular attention will be aimed toward *'achieving reductions in energy demand and supporting alternative sustainable transport options'*.

³⁷ [The Kent Biodiversity Strategy](#)

³⁸ [Kent Nature Partnership](#)

³⁹ [Local Nature Recovery Strategy](#)

⁴⁰ [Kent Downs Area of Outstanding Natural Beauty](#)

⁴¹ highweald.org/~documents/publications/aonb-management-plan/high-weald-managment-plan-4th-edition-2019-2024/?layout=default

2.5 Review of Local Plan Policies

The following table provides a review of Local Plan policies that aim to mitigate and adapt to climate change through measures beyond those required by national policy or building regulations. These policies have been considered when creating policy option recommendations for TMBC, to assist in producing a Local Plan that acts on climate change beyond the required minimum. The review has selected the policies most relevant to this study and has not been limited to recently adopted plans. Many recently adopted plans have only limited climate change-related policies, which may be perceived as a missed opportunity, particularly compared to the instances where some local authorities have gone much further than the minimum requirements. Although some policies are older, they still conform with national policy, are relevant and provide an example of good practice.

The review has been focused on authorities with similarities to Tonbridge and Malling and therefore it does not include many of the London Boroughs. In addition, some authorities have been included even if there is only one policy that is relevant to this study.

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
Welwyn Hatfield Adopted Local Plan, October 2023⁴²	The location of new development should prioritise previously developed land. [Policy SP1]		Development should include provision of facilities for charging plug-in and other ultra-low emission vehicles. [Policy SADM3]			For sites of 500 dwellings or more, the Council will prepare an SPD to account for the unique heritage of the town and set out a design framework and detailed guidance within which sites should come forward for development. [Policy SP15]
Central Lincolnshire Adopted Local Plan, April 2023⁴³	Proposals should follow the design expectation hierarchy: Orientation, Form, Fabric, Heat Supply, Renewable generation.	Proposal for CHP network will only be supported if the power source is renewable, or very low carbon based.	EV Charging points in proposals should be appropriately located for easy and convenient access.	All developments must deliver a minimum of 10% measurable BNG. [Policy S61]	All new dwellings should achieve optional Technical Housing Standard of 110l/person/day.	Supporting a Circular Economy [Policy S10]

⁴² [Local Plan 2016 - 2036 \(welhat.gov.uk\)](https://www.welhat.gov.uk/local-plan-2016-2036/)

⁴³ [Local Plan for adoption Approved by Committee.pdf \(n-kesteven.gov.uk\)](https://www.n-kesteven.gov.uk/local-plan-for-adoption-approved-by-committee.pdf)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
	[Policy S6] No dwelling can have a total energy demand >60 kWh/m²/annum irrespective of renewable generation. [Policy S7]	[Policy S9] Development should not significantly harm technical performance of approved or existing renewable energy generation facilities. [Policy S15]	[Policy NS18]		Residential developments with a garden area must include a rain harvesting water butt of minimum 100l capacity. [Policy S12]	
Worthing Borough Council Adopted Local Plan, March 2023⁴⁴	All domestic development will achieve a minimum 20% CO₂ reduction from Part L 2013 through energy efficiency measures, non-domestic will achieve a minimum 27%. All new-build housing should seek to achieve an A rating EPC (minimum B rating). Non-domestic properties should achieve a B rating EPC. Take design measures to prevent overheating, and minimise construction waste.	Renewable energy should meet at least 10% of predicted total energy requirements. [Policy DM17]	Promoting car club schemes New development should be designed and located to incorporate facilities for EV charging points – consequently mitigating air pollution. Ensure that new development is located in sustainable locations – to reduce the need to travel by car. [Policy DM15]	Where achievable, a +20%BNG is encouraged on site, and is required for developments on previously developed sites. [Policy DM18] In all new developments there should be no net loss of trees – any trees lost should, where practical, be replaced on a greater than 1:1 basis to support levels of canopy cover and biodiversity. Major developments are encouraged to achieve	Surface Water Drainage scheme should use SuDS unless there is clear evidence that it would be inappropriate. Flood Risk Assessments are required for specific sites. [Policy DM20] All new residential development must achieve, as a minimum, a water use of no more than 110l/person/day [Policy DM21]	Pollution mitigation measures [Policy DM22] Conserve and enhance the historic environment, and designated heritage assets. [Policies DM23 & DM24]

⁴⁴ <https://www.adur-worthing.gov.uk/>

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
	[Policy DM16]			Building with Nature Full Award (Excellent). [Policy DM19]		
Epping Forest District Council Adopted Local Plan, March 2023⁴⁵	All new development must achieve a high quality of design and contribute to the distinctive character of the local area. [Policy DM9]	Incorporation of low carbon and renewable energy measures in new and existing development will be encouraged regarding both standalone installations and micro-renewables integrated into development. [Policy DM20]			All proposals must seek to manage surface water using the most appropriate SuDS solution using the Council's preferred hierarchy (storing rainwater for later use is held in highest regard). [Policy DM16]	Larger proposals will be required to undertake an Air Quality Assessment. [Policy DM22]
Cornwall Climate Emergency DPD, February 2023⁴⁶	New residential buildings must achieve net-zero carbon. Sets space heating target of <30kWh/m ² /annum, and energy consumption target of <40kWh/m ² /annum. [Policy SEC1]	Climate Emergency Development Plan Document - Renewables must contribute to meeting Cornwall's target of 100% renewable electricity supply by 2030. Renewables should still allow for provision of 10% BNG. [Policy RE1]				

⁴⁵ [Epping Forest District Local Plan 2011-2033 Part One \(eppingforestdc.gov.uk\)](https://eppingforestdc.gov.uk/)

⁴⁶ [Climate Emergency Development Plan Document - Strategic Planning \(cornwall.gov.uk\)](https://cornwall.gov.uk/)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
Salford City Council Adopted Local Plan, January 2023⁴⁷		All new developments, except for standalone low carbon or renewable energy schemes, shall accord with the following energy hierarchy: Minimise energy demand, Maximise energy efficiency, Utilise renewable energy, Utilise low carbon energy, Utilise other energy sources. [Policy EG1]	Transport hierarchy: Pedestrians, Cyclists, Public transport users, Commercial deliveries and specialised service vehicles, Other motor traffic. [Policy A2]	Green Belt will be afforded strong protection. Positive use of the Green Belt will be supported, where it enhances green infrastructure functions, such as improved public access and habitat restoration. [Policy GB1]		
Dover District Local Plan Regulation 19, October 2022⁴⁸	All new residential dwellings must achieve an increase in fabric standards to deliver a 'fabric first' approach to new development. [Policy CC1]	All new residential dwellings must include the use of on-site renewable and low carbon energy technologies. [Policy CC1]		A minimum of two new trees will be required to be planted for each new dwelling (it is presumed that these will be planted on site). [Policy CC8]	The Council will strongly support developments that seek to reduce daily water consumption below 110 l/person/day, through the use of additional measures, such as rainwater harvesting. [Policy CC4]	Minimise waste and promote recycling, during construction and occupation. [Policy CC2]

⁴⁷ [Adopted Salford Local Plan: Development management policies and designations](#)

⁴⁸ [SD01 Dover District Local Plan to 2040 - Regulation 19 Submission Document Oct 22](#)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
Tewkesbury Borough Adopted Local Plan, June 2022⁴⁹				All proposals for major development will be required to provide a high standard of design for green infrastructure – including the Building with Nature Standards. [Policy NAT3]		
Eastleigh Borough Adopted Local Plan, April 2022⁵⁰	New development should have regard to the need to limit greenhouse gas emissions, including through carbon sequestration. [Policy S1]	New development should encourage the generation renewable energy. [Policy S1]	New development should minimise the need to travel longer distances, and prioritise active travel. [Policy S1]	Provision of green infrastructure incorporated into all new development with multifunctional spaces connected by primary, secondary, and tertiary links. [Policy S9]		
Blackburn with Darwen Borough Local Plan Consultation, Regulation 19, January 2022⁵¹				Major developments should seek to achieve the Building with Nature Design Award. [Policy CP6]		

⁴⁹ [Local plan — Tewkesbury Borough Council \(squarespace.com\)](#)

⁵⁰ [to-be-published-final-local-plan-april-2022-v4.pdf \(eastleigh.gov.uk\)](#)

⁵¹ [SD1-Regulation-19-Publication-Local-Plan-January-2022.pdf \(blackburn-darwen.org.uk\)](#)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
Central Bedfordshire Adopted Local Plan, July 2021⁵²		Council will support the development of wind energy and solar farm development where it can show that mitigation is provided as part of the proposal. [Policy CC2]	New developments will be required to provide active charging posts, passive provision or contributions for future installation, as demand of ULEVs increases. [Policy T5]	Existing GI should be protected from development. Development that adversely affects GI or affects the future implementation of GI will not be permitted. [Policy EE1] Important habitats, sites of geological and geomorphological interest will be protected, maintained, and enhanced. [Policy EE3]	All developments that impact surface water flow paths will be required to use SuDS to reduce surface runoff. [Policy CC5]	
The Greater London Authority (GLA) London Plan, March 2021⁵³	A minimum on-site CO₂ reduction of at least 35% beyond Building Regulations Target Emission Rate (TER). [Policy SI 2]	Energy Hierarchy: be lean (use less energy), be clean (exploit local energy resources), be green (maximise renewable energy opportunities), be seen (monitor and report on energy performance). [Policy SI 2]	N/A – transport very different from Tonbridge and Malling borough.	Development should provide urban greening as a fundamental element of site and building design. [Policy G5]		Development proposals should calculate whole-life carbon emissions through a nationally recognised Whole Life Cycle Carbon Assessment, and demonstrate actions taken to reduce life-cycle carbon. [Policy SI 2]

⁵² [Communications - Central Bedfordshire Local Plan 2015 – 2035.pdf](#)

⁵³ [the_london_plan_2021.pdf](#)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
						Development proposals should provide circular economy outcomes and aim to be net zero waste. This should be demonstrated through the provision of a Circular Economy Statement. [Policy SI 7]
Bath & NE Somerset Local Plan Consultation, Regulation 18, January 2021⁵⁴	Net-zero carbon construction (minimising operational CO ₂ emissions through fabric, renewables, and offsetting). Sets targets of minimum reductions. [Policy CP2]	Major development is required to achieve a 10% reduction in carbon emissions from renewable energy sources. Development should contribute to achieving the minimum level of 110 Mwe renewable electricity and 165 MWth heat generation. [Policy CP3]	All new development will be required to install active/passive EV charging infrastructure proportionate to the size of development. [New Policy ref DM8] Promote sustainable travel.	New development should make a positive contribution to the GI network. [Policy CP7]	Require provision of multi-functional SuDS also acting as GI. [Policy SU1]	
Babergh and Mid Suffolk Joint Local Plan Regulation 19, November 2020⁵⁵	Development that incorporates a high level of building materials with low embodied carbon is encouraged.	All new residential development is required to implement on-site renewable and other low		Where BNG 10% can not be obtained, the Councils will support 'biodiversity offsetting' to deliver a net	Development proposals will need to demonstrate that they protect and enhance groundwater and surface water features and must not	All major developments are required to submit a Sustainability Design and Construction Statement that demonstrates how the principles in Policy

⁵⁴ [Options Document FINAL.pdf \(bathnes.gov.uk\)](#)

⁵⁵ [a01-part-1-objective-and-strategic-policies-part-2-local-policies \(babergh.gov.uk\)](#)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
	All new residential development is required to minimise the energy demand of the building through maximising natural sunlight and ventilation. [Policy LP25]	carbon energy generation. [Policy LP25]		gain of biodiversity off site. [Policy LP18]	lead to deterioration of environment quality. [Policy LP17] All residential developments encouraged to achieve 100 l/person/day. [Policy LP25]	LP25 will be incorporated into the design of the development. [Policy LP25]
South Downs National Park Adopted Local Plan, July 2019⁵⁶	Residential energy efficiency must show a 19% CO₂ reduction improvement against Part L 2013. [Policy SD48]	N/A – National Park	Minimise the need to travel and promote the use of sustainable modes of transport. [Policy SD19]	Conserve and Enhance Biodiversity features [Policy SD9].	Developments must deliver all opportunities to: Sustainably manage water environments. Conserve water resources and improve water quality. [Policy SD2] All new homes in the National Park will be required to achieve total mains water consumption of no more than 110 l/person/day. [Policy SD48]	

⁵⁶ [South Downs Local Plan - South Downs National Park Authority](#)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
Birmingham City Council Adopted Development Plan, January 2017⁵⁷		For residential developments of over 200 units, and non-residential developments over 1000m ² , first consideration should be given to the inclusion of Combined Heat and Power (CHP) generation. [Policy TP4]	In some cases, the re-allocation of existing road space to more sustainable transport modes may be required. [Policy TP38]		Sustainable Drainage Assessment required for all major developments. To minimise flood risk, improve water quality and enhance biodiversity, all development proposals will be required to manage surface water through Sustainable Drainage Systems (SuDS). [Policy TP6]	
Cornwall Adopted Local Plan Strategic Policies, November 2016⁵⁸			Maximise sustainable transport by prioritising safe access by walking, cycling and public transport. [Policy 27]	Design Guide – expects GI to be incorporated as fundamental to promote resident wellbeing and improved quality of life. Expects that buildings will be designed to be flood resilient and incorporate natural ventilation to prevent overheating. [Policy 13]	Flood Risk Management Plan. Proposals of 10+ dwellings or >0.5ha should provide a long-term water management plan. [Policy 26]	Improving Energy Efficiency In Historic Cornish Buildings Guide – how to improve energy efficiency of historic buildings while retaining its character.

⁵⁷ [Adopted Birmingham Development Plan 2031 | Birmingham City Council](#)

⁵⁸ [Cornwall Local Plan](#)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
Brighton & Hove City Council Adopted Development Plan, March 2016⁵⁹	Residential Development required to achieve 19% carbon reduction improvement against Part L 2013 and water efficiency standard as in Approved Doc G (2015). Non-Residential BREEAM: Non-major - Very Good. Major and Greenfield - Excellent. [Policy CP8] Energy Hierarchy: Demand reduction, Energy efficiency measures, renewable energy technologies; will be applied to all areas of energy consumption. [Sustainability Action Plan]⁶⁰	All development proposals must demonstrate how they facilitate on-site low or zero carbon technologies, specifically renewable energy technologies. [Policy CP8]	Promote and provide for the use of sustainable transport and active travel by prioritising walking, cycling and public transport in the city. [Policy CP9]	Conserve, restore and enhance biodiversity and promote improved access through partnerships with neighbouring local authorities, and criteria for development proposals. [Policy CP10]	Manage and reduce flood risk in accordance with SFRA. Surface Water Management Plan. [Policy CP11]	Public benefit of development will be assessed against potential harm to the heritage asset. [Policy CP15]
Surrey Heath Borough Council, Adopted Local Plan, February 2012⁶¹	Local Character: New buildings shall use a consistent architectural style, with individual elements creating a cohesive whole. [Policy D2]	Require development to include installed capacity for decentralised renewable and low carbon energy. [Policy CP2]	Reduce the need to travel. All new development should be appropriately located in relation to public transport. Policy [CP11]	Development must protect trees and other vegetation where appropriate. [Policy DM9] Development will be required to contribute to	Development is required to be climate change resilient, in particular reducing the risk from all types of flooding and improving water quality. [Policy CP2]	

⁵⁹ [Contents \(brighton-hove.gov.uk\)](https://www.brighton-hove.gov.uk/contents)

⁶⁰ [City Sustainability Action Plan 2015-17.pdf \(brighton-hove.gov.uk\)](https://www.brighton-hove.gov.uk/city-sustainability-action-plan-2015-17.pdf)

⁶¹ [Adopted Core Strategy \(2011-2028\).pdf \(surreyheath.gov.uk\)](https://www.surreyheath.gov.uk/adopted-core-strategy-2011-2028.pdf)

Council	Building Standards Requirements	Renewable Energy	Transport	Biodiversity and Green Infrastructure	Water & Flooding	Other
				the protection, management, and enhancement of biodiversity, including habitats and species listed in the Surrey Biodiversity Action Plan. [Policy CP14A]		

Table 2: Review of Local Plan Policies

3 Scope and Limitation

3.1 Character and Constraints

Demographics and Character

The Borough of Tonbridge and Malling lies in Kent and is bounded by other Kent Authorities, including Gravesham, Medway, Maidstone, Tunbridge Wells and Sevenoaks. The area currently consists of approximately 42,200 households⁶² and is comprised of predominantly rural settlements, including villages such as Aylesford and West Malling, as well as the towns of Tonbridge and Snodland.

Tonbridge and Malling has a large number of heritage assets with approximately 1,400 listed buildings and structures⁶³ and 4 registered parks and gardens of special historic interest. Additionally, there are 60 conservation areas, which possess a strong and unique character. The historic environment is a key feature of the borough contributing to its strong and distinct character.

The borough also has a high-quality natural landscape with two Areas of Outstanding Natural Beauty (AONBs), multiple Sites of Special Scientific Interest (SSSIs), swathes of Ancient Woodland, Historic Parks and Gardens and Special Areas of Conservation (SACs). The proximity to London means that a significant proportion of the borough lies within the metropolitan Green Belt and there are also high-risk flood zones, particularly along the South boundary, through which the River Medway flows. These combine to make Tonbridge and Malling a highly constrained borough with the associated planning challenges.

Transport and Air Quality

Given the rural nature of the borough, it is unsurprising that there is a strong reliance on the private car to access services and facilities, with over 85% of households owning at least 1 car or van⁶⁴.

With regards to more sustainable transport methods, Tonbridge and Malling has a total of 1,979 Registered Electric Vehicles (EVs) as of December 2022⁶⁵, a high number of registered EVs compared to the rest of Kent, only second to neighbouring Maidstone and Sevenoaks. However, although the number of EVs is high compared to the other boroughs in the County, the borough only has a total of 38 publicly available EV charging devices across all speeds⁶⁶. Alongside this, approximately 33% of households within the Tonbridge and Malling Borough do not have access to off-street parking, and only 3.5% of these have access to a public charger within a 5-minute walk⁶⁷. Therefore, the EV charging infrastructure is not optimal, and needs improvement.

The Transport Baseline Assessment⁶⁸ identifies the key transport challenges and opportunities for the borough that may inform future decisions. Highways are heavily relied upon in the borough, particularly the congested A20 London Road. Residents find it difficult to access services due to the lack of transport options available – the congestion has been caused by the reliance placed on the private car, alongside population and job growth in the wider area. Public Transport was only used by 14% of Tonbridge and Malling's commuters, according to the 2011 Census. The borough's bus network is focused on serving Tonbridge Town Centre, and the outer suburban and rural communities do not have access to a convenient or reliable bus service. With regards to walking and cycling, there is poor provision to enable people to walk/cycle. Hinderances include roads with high traffic volumes, limited lighting and surveillance, limited pavements in rural areas and very few bicycle stands across the borough.

Air Quality in Tonbridge and Malling is directly impacted by the climate change pollutants emitted from transportation. *'Working to reduce the reliance upon personal travel and vehicle trips has two-fold benefits in reducing both local air pollutants and climate pollutants'*, as described by the Air Quality Action Plan. The Action Plan sets out the measures needed to achieve an improvement in air quality, especially within the Air Quality

⁶² Tonbridge and Malling (theeig.co.uk)

⁶³ Protected trees, listed buildings and conservation areas – TMBC (tmbc.gov.uk)

⁶⁴ 2021 Census Profile for areas in England and Wales - Nomis (nomisweb.co.uk)

⁶⁵ veh0132.ods (live.com)

⁶⁶ Map of electric charging points for electric cars UK: Zapmap (zap-map.com)

⁶⁷ <https://onstreetcharging.acceleratedinsightplatform.com/>

⁶⁸ <https://www.tmbc.gov.uk/downloads/file/2201/transport-initial-baseline-assessment>

Management Areas (AQMA), although due to changes in technology there has been an overall significant decline in concentrations, air quality remains an issue within the borough.

Pollutants in the air can negative impact on health and wellbeing and can also be toxic to sensitive plants and trees, while pollutants in rainfall damage habitats depositing acid or excess nutrients



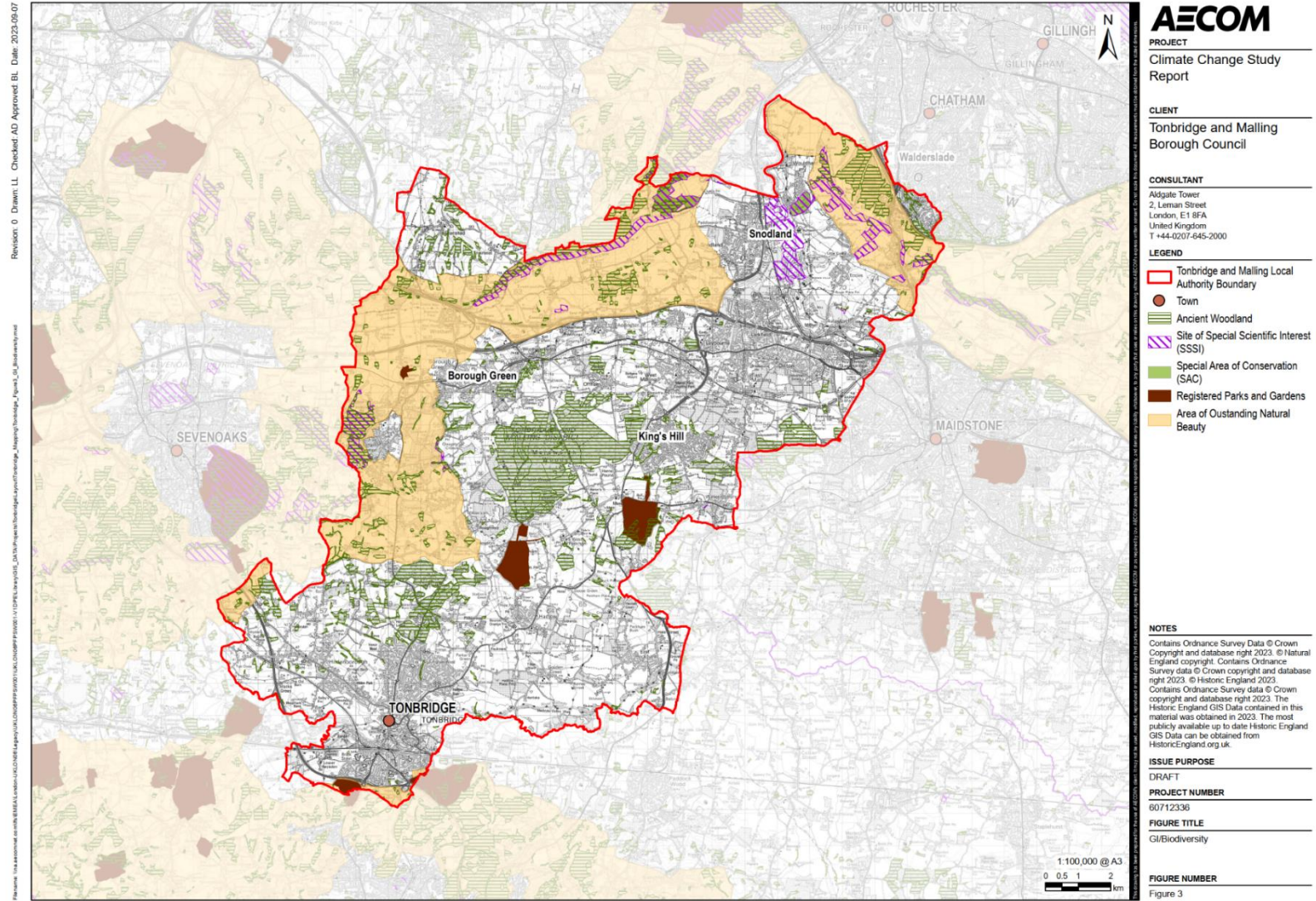


Figure 6: Contextual map showing the key Green Infrastructure features within the Tonbridge and Malling Local Authority

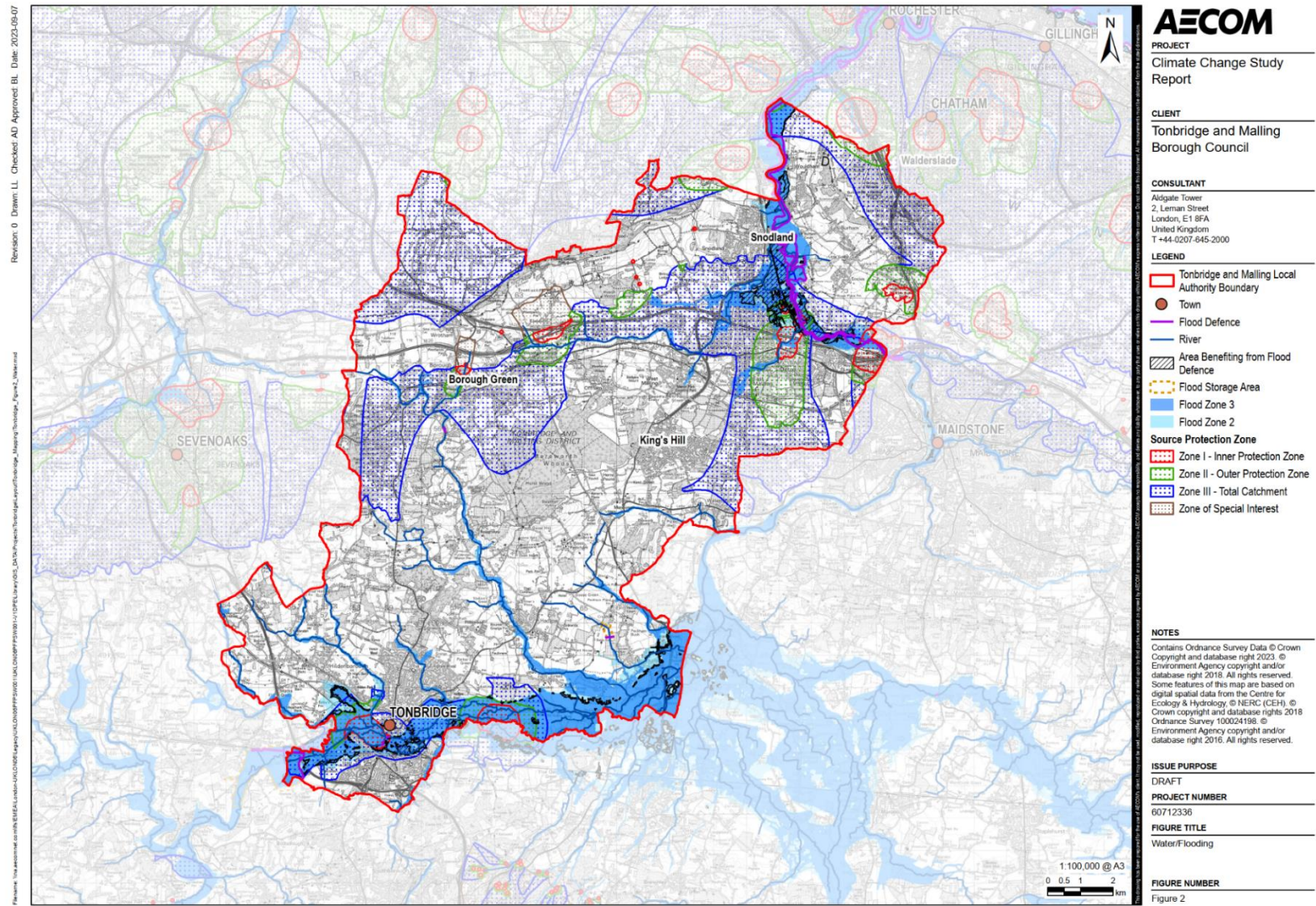


Figure 7: Contextual map showing the key Water features and Flood Zones within the Tonbridge and Malling Local Authority

Scale and Type of Forecasted Growth

The standard methodology currently calculates a housing need for the Local Plan Area of 839 dwellings per annum. Over an 18 year period to 2041, this results in an additional 15,102 dwellings – an uplift of approximately one-third. Therefore, approximately a quarter of the housing that will be present by 2041 has not yet been built. As the Local Plan has the greatest influence on the design of new development, this presents an opportunity to meaningfully decarbonise a significant proportion of the future housing stock.

The TMBC Housing Needs Assessment concludes that there are notable existing affordability pressures in some areas of the borough, including Tonbridge, Snodland and Medway Gap. Housing affordability in Tonbridge and Malling has, and continues to be, worse than the position at the county, regional, and national level. It is expected that the Local Plan will include policies that seek to increase the level of affordable housing in the borough.

The current Economic Development Needs Study⁶⁹ details forecasted employment growth in Tonbridge and Malling. Total workforce jobs are expected to increase by 18% within the Plan period, resulting in an additional 12,400 workforce jobs in the borough. Office jobs are expected to grow the most and this will result in new commercial development to be delivered through the Local Plan and opportunities to include climate change mitigation and adaptation measures.

⁶⁹ [Economic Development Needs Study](#)

3.2 Local Plan Influence

The impact and influence of the Local Plan is limited to the powers associated with planning policy. There are things that fall under the direct control of planning policy, things that can be influenced by planning policy and other things that planning policy will have no impact on and which will need to be delivered by other policy and programmes at the national or local level or delivered privately by individuals and organisations.

To illustrate this, regarding climate mitigation, Figure 8 provides a summary of the broad areas of intervention and the relative impact and level of influence that a Local Plan has on four discreet areas of potential intervention. New buildings are the area of greatest influence given the powers within the Local Plan to determine the scale, type and location of development as well as the standards to which it is built but this represents a very small proportion of the overall borough emissions. At the other end of the scale, existing buildings and infrastructure are responsible for much of the existing emissions but planning policy has very limited powers to influence these.

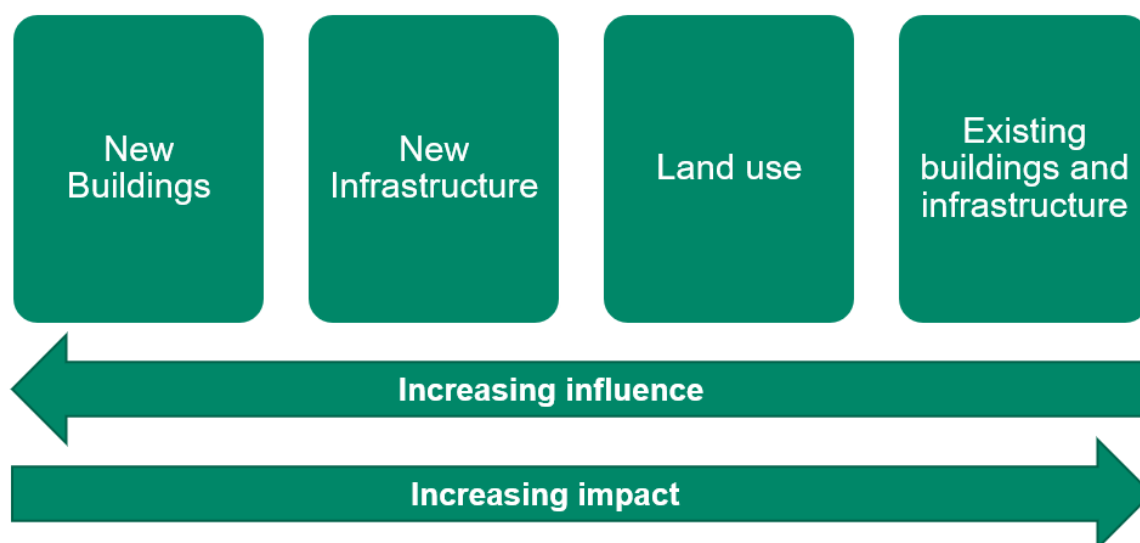


Figure 8: Relationship between influence and impact of a Local Plan on climate mitigation in four key areas

The Local Plan also has competing priorities and climate change is not the only consideration. TMBC is required to balance the needs of the borough including delivering much needed affordable housing and housing for the aging population. The high quality built and natural environment, much of which has historic significance, will need to be conserved and enhanced alongside making space for new development and important infrastructure. A comprehensive consideration of land use for renewable energy, carbon sequestration and biodiversity will need to be balanced against the need for new housing and commercial development.

4 Baseline

This chapter sets out the baseline position for Tonbridge and Malling, in relation to both climate change mitigation and adaptation. For climate change mitigation, the baseline position for Tonbridge and Malling is the current emissions of carbon (CO₂e) from the borough, and for climate adaptation, it is the level of risk to the borough from the anticipated impacts of climate change.

4.1 Climate Change Mitigation

4.1.1 Carbon Emissions

This baseline was developed in 2023 and was based on the latest Government subnational dataset available at the time, which was for 2021. The following graphs show the annual carbon emissions for Tonbridge and Malling split by key sectors and fuel type. Throughout the report, 'carbon emissions' refers to all greenhouse gas emissions, unless explicitly stated otherwise.

Figure 9 shows the predominant emissions in Tonbridge and Malling in 2021. The main source of emissions arises from the transport sector, with notable emissions from the domestic and industry sectors. The domestic and commercial sector emissions are likely to be dominated by emissions from buildings related to their energy use, primarily from heating and electricity use.

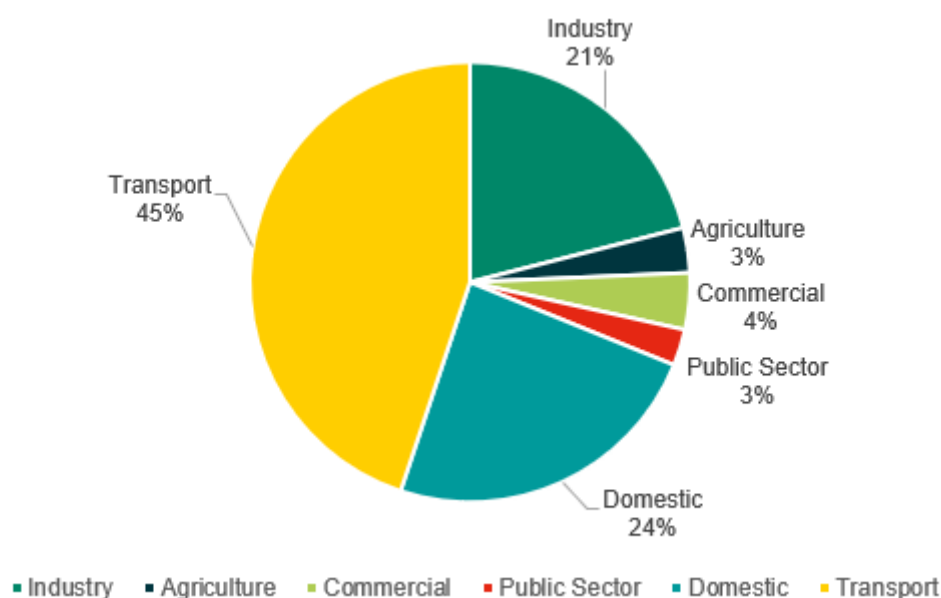


Figure 9: Baseline Annual Carbon Emissions (DESNZ subnational emissions data 2021⁷⁰)

In terms of energy consumption, the distribution by sector and fuel type is shown in Figure 10. Again, this shows that the transport, non-domestic (agriculture, industry and commercial) and domestic building sectors are, by far, the most significant component of the overall emissions from the borough.

⁷⁰ [UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics-2005-to-2021)

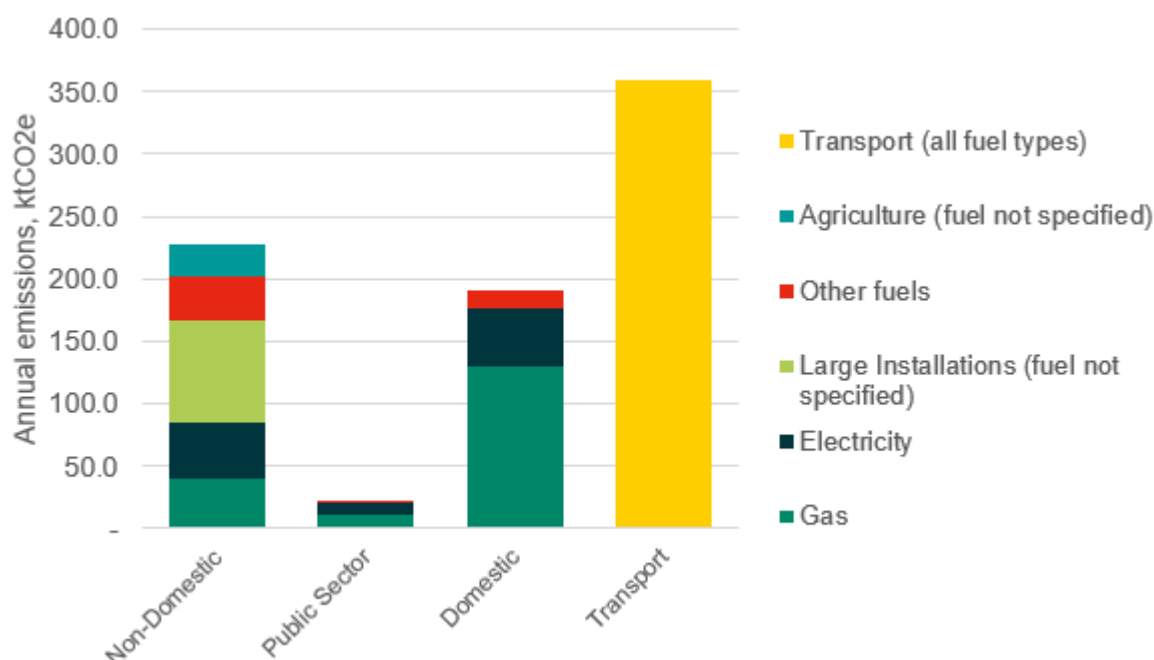


Figure 10: Annual Carbon Emissions for Tonbridge and Malling associated with different sectors and fuel types (DESNZ subnational emissions data 2021⁷¹)

Figure 11 illustrates the trend of emissions over time by sector. A decrease in emissions can be seen in all sectors since 2005, with industry emissions showing the most significant drop. This is due to closure of industry in the borough (such as Aylesford Newsprint), rather than carbon emissions reductions measures. The transport sector emissions remained steady then significantly reduced around 2020, which was likely the result of the COVID restrictions preventing travel. The data for 2021, for which only the first half of the year involved travel restrictions, shows a clear increase in emissions for transport as COVID restrictions began to be lifted.

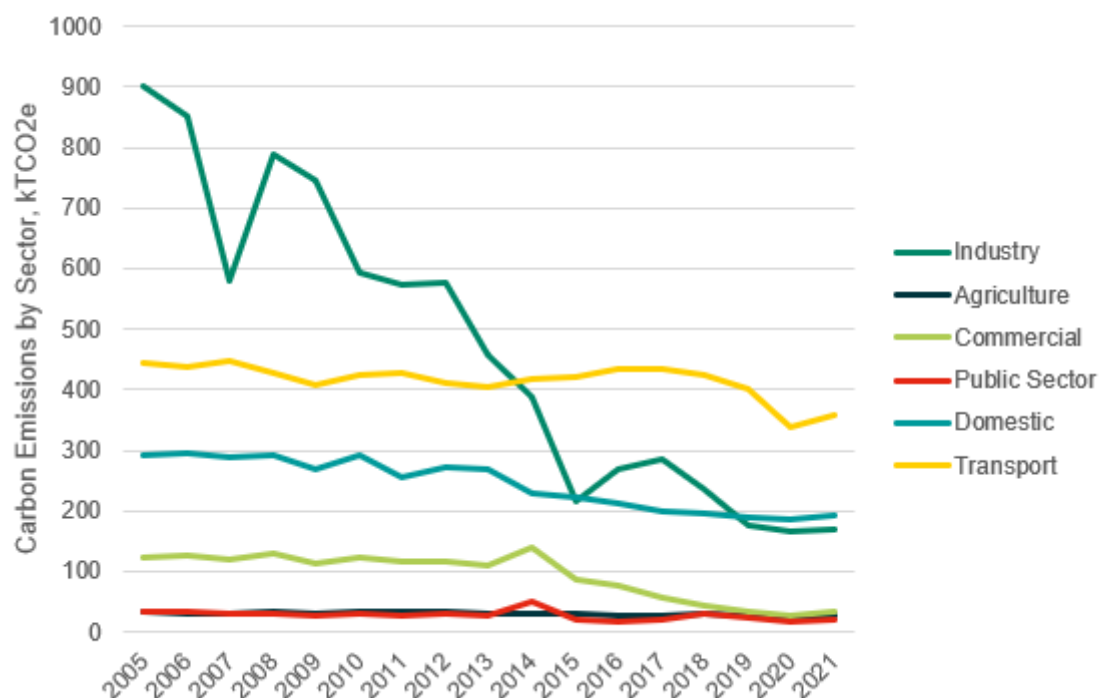


Figure 11: Annual Trend of Carbon Emissions for Tonbridge and Malling associated with different sectors (DESNZ subnational emissions data 2021⁷²)

⁷¹ [UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics-2005-to-2021)

⁷² [UK local authority and regional greenhouse gas emissions national statistics, 2005 to 2021 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics-2005-to-2021)

4.1.2 Additional Emissions

The Tonbridge and Malling Housing Land Supply Position⁷³ as of 31st March 2022 gives a locally derived housing requirement of 839 dwellings per year for the borough and this has been used to project future housing supply up to the end of the plan period. Based on previous dwelling completions data since 2011, we have assumed an approximate ratio of houses to flats of 65% and 35% respectively. The proportion of housing and flats is important as the interventions and opportunities to reduce carbon emissions varies between development types. For example, for Solar PV, houses are typically more able to benefit from a single system to serve just that property, whereas flats will be required to share a proportion of a larger array, which is likely to result in a lower level of energy generation per household.

For the new non-domestic land supply, we have used the economic land requirement stated in the Tonbridge and Malling Economic Development Needs Study published in August 2022⁷⁴. We have applied the labour demand scenario which states a need for 296,260 sq.m (69.8ha) across the Plan period and have phased this evenly up to 2041.

To estimate the carbon emissions associated with the new housing development we have applied assumptions based on the predicted energy demands and carbon emissions associated with compliance with Building Regulations. These 'carbon emissions' refer to all greenhouse gas emissions, unless explicitly stated otherwise. Three "business as usual" scenarios have been modelled and are shown in Figure 12.

- **BAU1** – This scenario assumes development meets the current Part L 2021 building regulations standards with no future changes to building regulations and no further grid decarbonisation.
- **BAU2** – This scenario assumes development meets the current Part L 2021 building regulation standards with no further changes but takes account of expected future grid decarbonation.
- **BAU3** – This scenario assumes development meets the current Part L 2021 building regulations standards until 2026 when it has been assumed that development will meet the Future Homes Standard or Future Buildings Standard (assuming 12-month transition in line with previous changes in regulations). This scenario also takes account of future grid decarbonisation.

Modelling assumptions are set out in Appendix B.

Figure 12 shows the annual domestic and commercial carbon emissions associated with new development during the plan period, these are the emissions over which the Local Plan has the greatest influence. This is shown as the additional emissions starting from the Local Plan adoption that are directly related to the new domestic and commercial buildings and does not take account of other sources of emissions. It has been assumed that the new Local Plan would be in place from 2026 so this has been taken as the start year for the modelling.

⁷³ [housing-land-supply-position-2022 \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/housing-land-supply-position-2022)

⁷⁴ [Economic Development Needs Study part 1 \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/economic-development-needs-study-part-1)

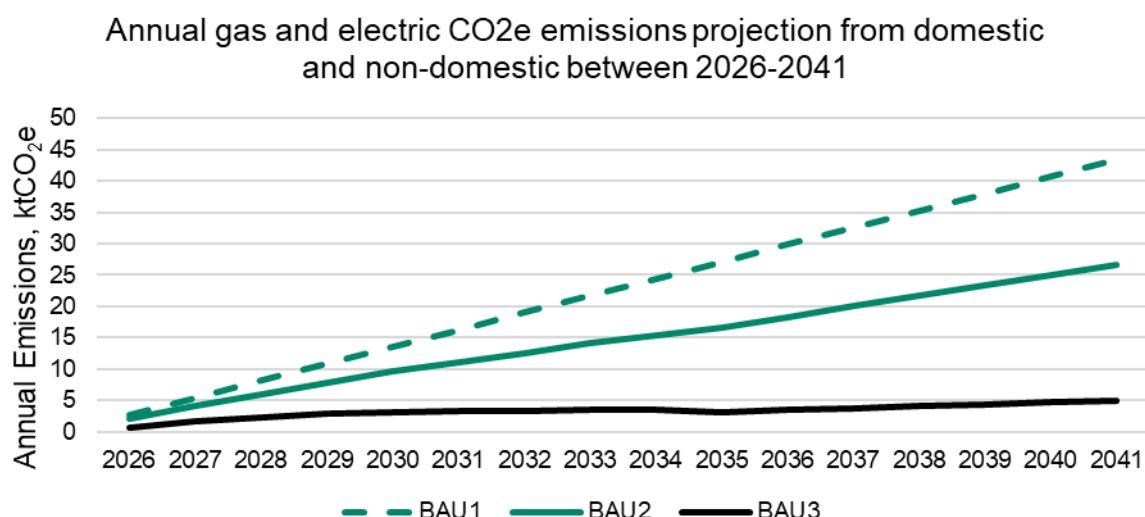


Figure 12: Annual Trend of Gas and Electric Carbon Emissions for the domestic and commercial sector for Tonbridge and Malling associated with new development cumulatively from 2026-2041

The modelling shows that in 2041 the annual domestic and commercial emissions associated with the planned new development built since 2026 could be around 43.3 ktCO₂e per year, if there is no additional grid decarbonisation or changes to building regulation as per BAU1.

For information, Figure 13 shows the baseline scenarios expressed cumulatively as the total domestic and commercial carbon emissions expected during the plan period as a result of new development built since 2026. This shows the total emissions generated from new development since 2026.

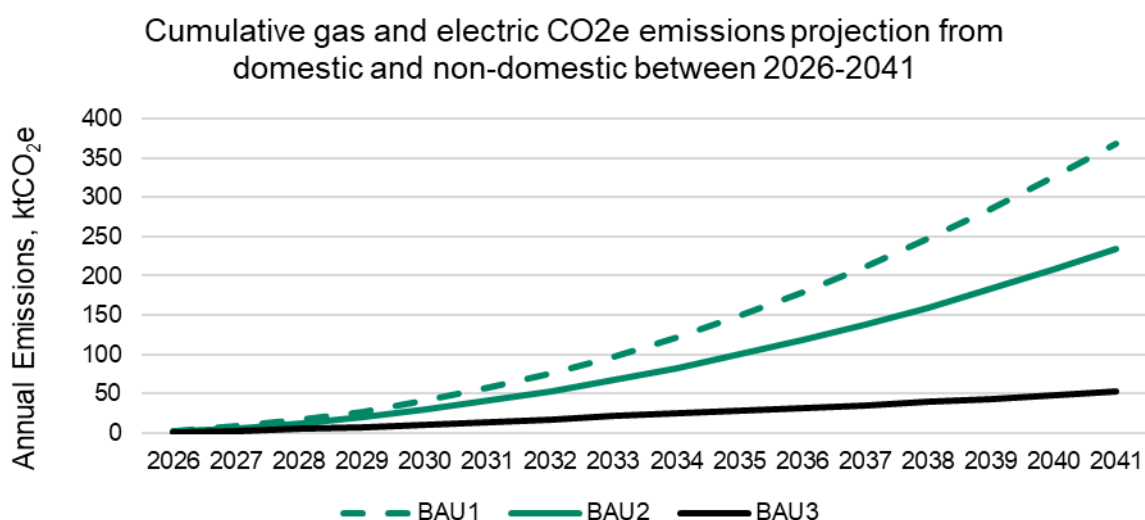


Figure 13 Cumulative Trend of Gas and Electric Carbon Emissions for Tonbridge and Malling for the domestic and commercial sector associated with new buildings between 2026-2041

Figure 14 shows the annual business-as-usual scenarios in the context of the wider borough emissions related to the domestic and commercial sectors. For the BAU1 scenario, the emissions represent only 10% of the total borough domestic and commercial emissions of 434 ktCO₂ per year by 2041. Demonstrating the limited impact new development has on the wider emissions.

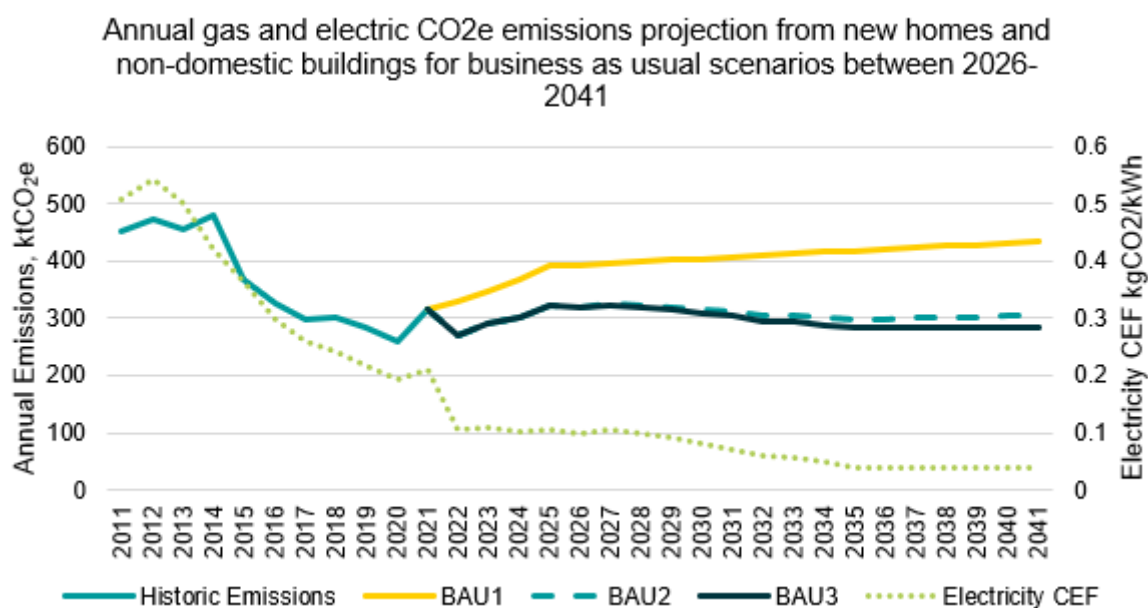


Figure 14 Annual Trend of Gas and Electric Carbon Emissions for Tonbridge and Malling associated with domestic and non-domestic buildings under different business as usual scenarios between 2026-2041

For the BAU3 scenario, the annual emissions could be reduced to approximately 4.9 ktCO₂e, when compared to the domestic and commercial borough emissions, this represents only around 1.7% of these emissions, and only 0.6% when compared with the total borough emissions. One reading of Figure 12 and Figure 14, is that it may be possible to rely on Building Regulations, including the proposed Future Homes Standard, to decarbonise future development and not set any additional standards beyond this. However, it should be noted that there are two key risks associated with this position:

1. **Future Building Regulations does not come forward as anticipated** – If the Future Homes Standard and Future Buildings Standard do not go as far as anticipated, or take effect later than 2025, then emissions from new development would be significantly higher.
2. **Grid decarbonisation does not happen as anticipated** – If electricity from the grid is not decarbonised, or this process happens at a slower rate than anticipated, then the emissions from new development would be significantly higher.

Furthermore, if both scenarios happened together then the effects would be even greater.

In addition, due to grid decarbonisation, carbon emissions are likely to become a less useful metric for determining the relative performance of new buildings in the near future. The focus is already turning to overall energy consumption as a better metric for this to account for the impacts on the following:

- **Operational costs** – Buildings with lower energy demands and systems to generate, store and manage energy will cost users significantly less to run.
- **Future retrofit costs** – It will be significantly more challenging and expensive for homeowners to install fabric, energy efficiency and equipment than for it to be installed upon construction.
- **Local grid resilience** – Reduced energy demands from new development will have lower impact on the capacity of the local power network thereby allowing capacity for wider decarbonisation (for existing buildings and vehicles) and reducing the extent and cost of upgrade work.
- **Building resilience** – Homes designed with low demands, generation, storage and demand management systems will be much more resilient to supply issues as well as energy price fluctuations.

For these reasons the policy options considered in this study should be considered not just through a lens of carbon emissions reduction but also in regard to the benefits that would be delivered by reducing overall energy consumption.

4.1.3 Mitigation Baseline Summary

The key outcomes of the baselining exercise have been summarised below:

- Transport is the primary emitter of carbon, producing 45% of Tonbridge and Malling's emissions.
- The domestic and commercial sectors produce 28% of the borough's carbon emissions and these are dominated by building heating and energy use.
- New residential development is expected to meet a demand of 839 dwellings per annum. The scale of the estimated emissions produced by new development over the plan period (2026-2041), relative to the borough total, suggests that it may be possible to rely on Building Regulations, including the proposed Future Homes Standard, to decarbonise future development and not set any additional standards beyond this. This, however, imposes risks – as the FHS/updated Building Regulations may not emerge as anticipated, and grid decarbonisation may progress slower than expected.
- New development delivered by the Local Plan will have a limited impact on the overall emissions of the borough.

Carbon sequestration can be implemented as a climate mitigation measure, to reduce carbon emissions from transport and buildings. The NPPF also supports a proactive approach to low carbon and renewable energy and heat which can also reduce carbon emissions in the borough.

4.2 Climate Change Adaptation

4.2.1 Climate Risks

For the purposes of this study, the baseline for climate change adaptation will be taken as the existing exposure of Tonbridge and Malling Borough Council to the risks posed by climate change. This has been informed by the climate change risks identified by the UK Climate Change Risk Assessment 2022.

The Intergovernmental Panel on Climate Change's (IPCC) definition of climate risks is based on the following three components as shown in the diagram below:

- The hazard (e.g. flooding or extreme heat),
- The level of exposure of a population, infrastructure or asset to the hazard (e.g. a population living in an urban area with extreme heat), and
- The level of vulnerability to the hazard (e.g. an elderly population more susceptible to extreme temperatures).

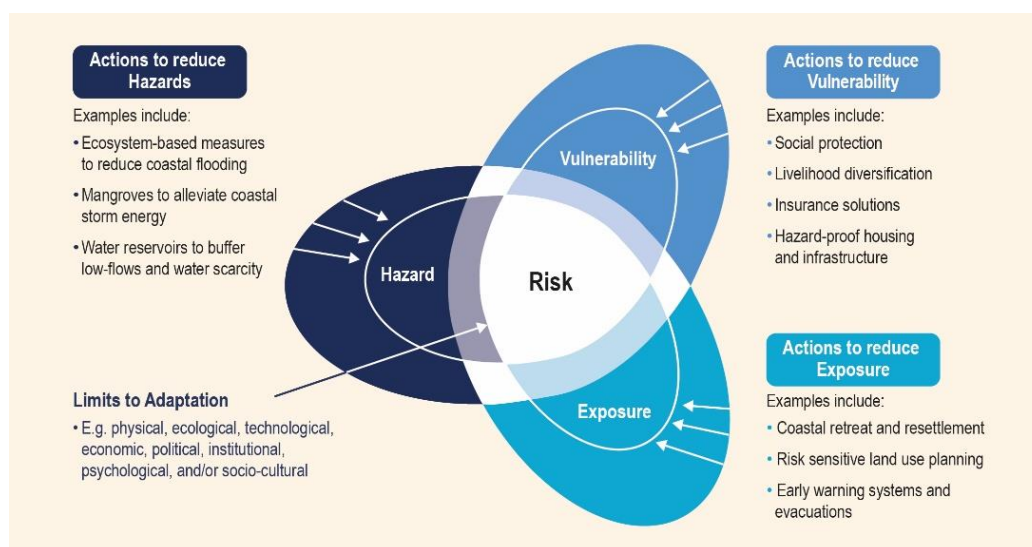


Figure 15: IPCC Definition of Risk⁷⁵

For this study, climate risk has been assessed through an evaluation of the historic and projected climate trends, with some spatial exploration of challenges within Tonbridge and Malling Borough. According to the UKCP18 Guidance: Representative Concentration Pathways, Representative Concentration Pathways (RCPs) are a method for capturing those assumptions within a set of scenarios. The conditions of each scenario are used in the process of modelling possible future climate evolution. The climate projections shown later in this report, are aligned with the RCP 6.0 scenario, using the UK Met Office UKCP18⁷⁶ data. Projections for temperature according to RCP 6.0 include continuous global warming through 2100 where CO₂ levels rise to 670ppm by 2100 and therefore likely to increase global temperatures by approximately 3-4°C by 2100.

The following assessment of hazards covers:

- Flood risk and rainfall intensity projections,
- Drought risk and rainfall total projections,
- Extreme heat risk and maximum temperature projections,
- Extreme cold and minimum temperature projections,
- Air quality and high wind projections; and,
- Subsidence and erosion risk projections.

⁷⁵ Source IPCC. 2019

⁷⁶ The UK Climate Projections (UKCP) is a set of tools and data that shows you how the UK climate may change in the future. The UK Climate Projections 2018 (UKCP18) builds on the 2009 predictions, providing updated data for assessing exposure to climate risk.

4.2.2 Flood risk

Flooding can occur through several means, firstly riverine flooding (fluvial flood risk), which occurs when water levels rise beyond bank levels and spill into adjacent land. Flooding from surface water can occur during periods of intense rainfall, usually within a short duration, which cannot quickly infiltrate into the ground or enter the drainage system.

The primary river system in Tonbridge and Malling Borough is the River Medway, with a large catchment area of 2,409 km² and is fed by several notable rivers and minor rivers. Other sources of fluvial flood risk include, but are not limited to, the River Bourne and Hawden Stream, both of which are also designated Main Rivers.

Kent County Council is the Lead Local Flood Authority, responsible for managing local flood risk. Within Tonbridge and Malling, this includes developing a Local Flood Risk Management Strategy and investigate flooding. The Environment Agency has responsibility for strategic reduction of flood risk from Main Rivers. The Leigh flood storage area (FSA)⁷⁷ was built to reduce the risk of flooding to approximately 1,200 homes and businesses in Hildenborough and Tonbridge. It works by storing the peak of a flood upstream and releasing it in a controlled manner once the peak has passed. The Leigh FSA lies within Sevenoaks District and the water is held back between the villages of Leigh and Penshurst. As the risk of flooding increases due to climate change the EA is working on a scheme to increase the capacity of the Leigh FSA.

For Tonbridge and Malling Borough Council, the Environment Agency assign flood risk from surface water as 'medium' (chance of flooding is between 1 and 3.3% annually) flood risk from rivers as 'high' (chance of flooding is greater than 3.3% annually).⁷⁸

For Tonbridge and Malling flood risk is a product of the rainfall intensity. In the following figures, the 100-year return period (1% Annual Exceedance Probability (AEP)) for Summer and Winter is presented with 1-day and 5-day maximum precipitation.

- The 1-day max figures (Figure 16 and Figure 18) give an indication of the flood risk resulting from small catchments and urban settings, known as the pluvial flood risk.
- In the longer 5-day maximum precipitation (Figure 17 and Figure 19), these indicate the likelihood of fluvial flooding, resulting from larger catchment areas, such as the River Medway, which could cause flooding as a result of exposure to the longer hydrological response time in a larger catchment.

Using UKCP18 data, Figure 16 and Figure 17 present the historic and projected precipitation (in mm) for a 1% AEP event during the winter season for a 25km grid sample covering part of the borough, and are laid out for a 1-day and 5-day event respectively (pluvial and fluvial flood risk). These figures illustrate the slight increase in rainfall intensity for the borough since 1965, it is likely this trend will steepen in the future with climate change, which would result in a higher likelihood of a 1% event occurring.

Currently, the 100-year return period 1-day and 5-day maximum rainfall for the Winter season is estimated to be around 45mm and 72mm, respectively. By 2100, maximum 1 day rainfall is projected to increase to 51mm (13% increase), while maximum 5-day rainfall is projected to increase to 81mm (13% increase).

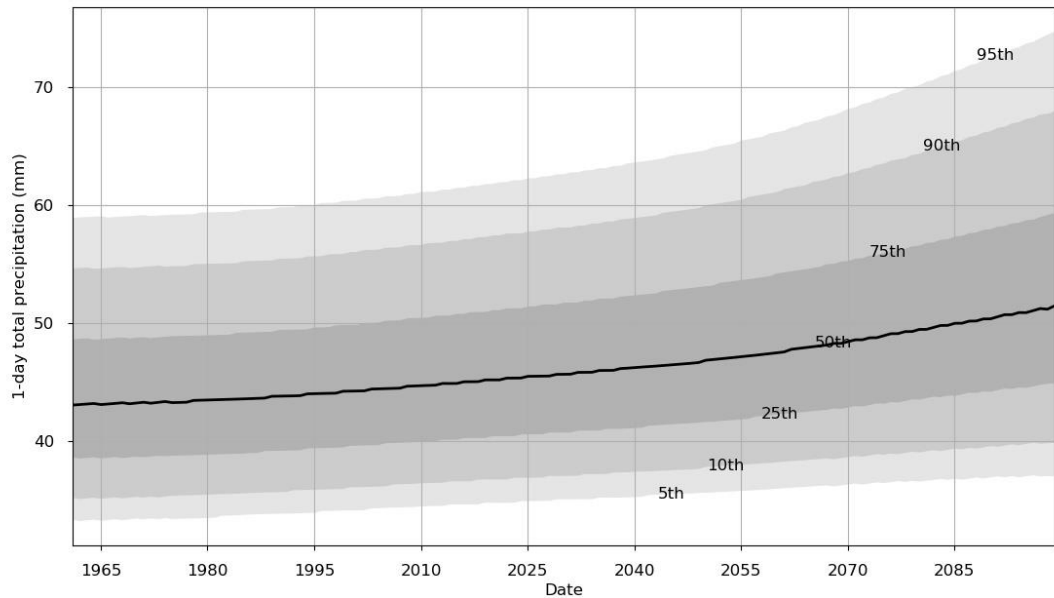
Figure 18 and Figure 19 show projections for summer 1-day and 5-day rainfall events, which are anticipated to remain at current levels, so this increase in flood risk is predominantly seasonal – i.e. according to the projections, flood risk in Winter will increase and flood risk in summer will, with some levels of uncertainty, remain the same.

⁷⁷ <https://www.gov.uk/government/publications/leigh-expansion-and-hildenborough-embankments-scheme/leigh-expansion-and-hildenborough-embankments-scheme>

⁷⁸ Gov.uk. Learn more about this area's flood risk. Available: [Learn more about this area's flood risk - GOV.UK \(check-long-term-flood-risk.service.gov.uk\)](#). [Accessed 05 September 2023].



1-day total precipitation (mm) for December January February in years 1961 up to and including 2099, for a return period of rp100, for grid square 562500, 137500, using baseline 1981-2000, and scenario RCP 6.0, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles

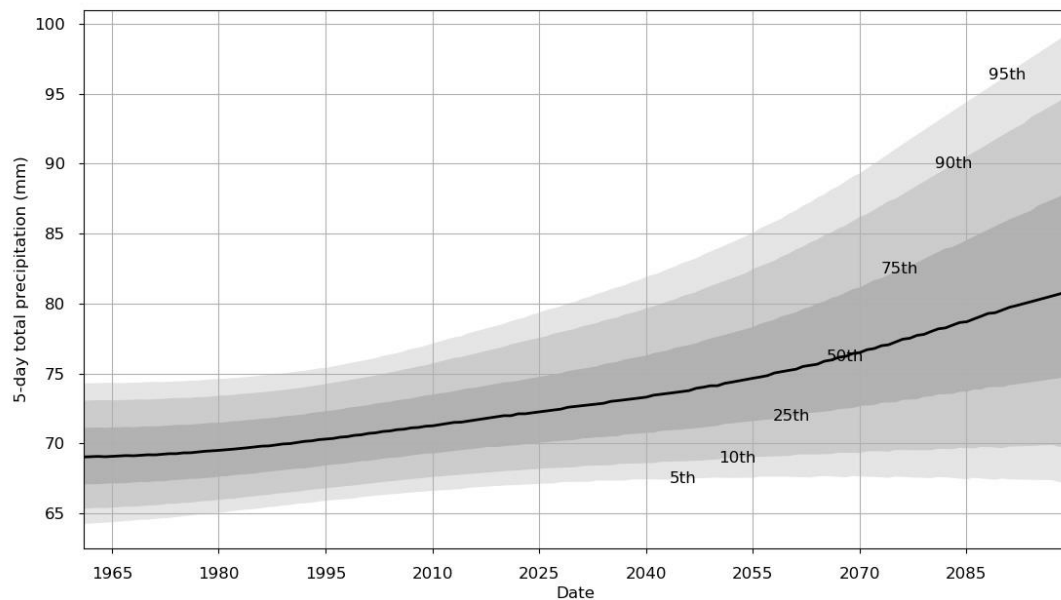


Funded by BEIS and Defra

Figure 16: Tonbridge and Malling Winter 1 day precipitation, historic and predicted future change (100rp event) (mm)



5-day total precipitation (mm) for December January February in years 1961 up to and including 2099, for a return period of rp100, for grid square 562500, 137500, using baseline 1981-2000, and scenario RCP 6.0, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



Funded by BEIS and Defra

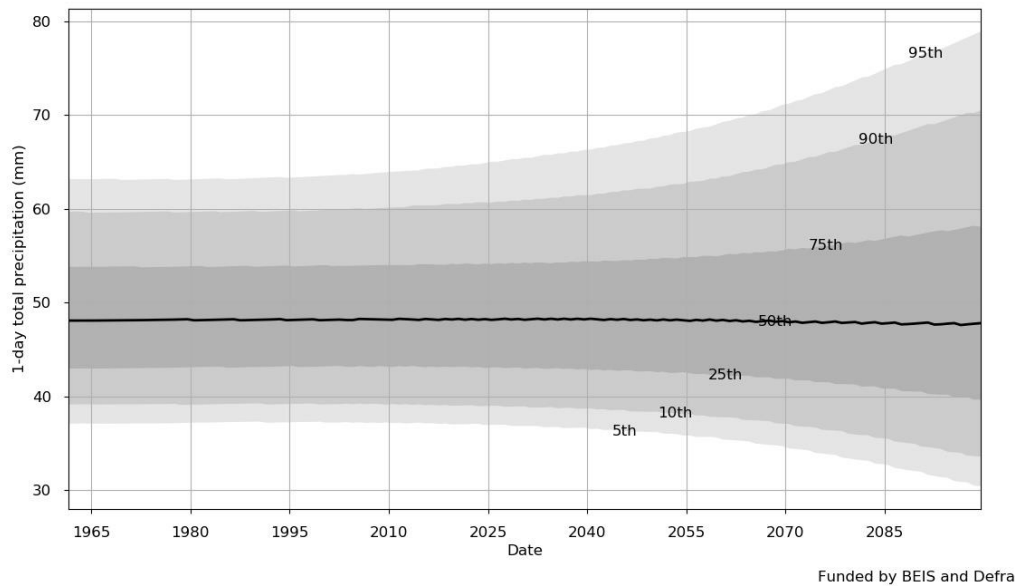
Source: Met Office UKCP18

Source: Met Office UKCP18

Figure 17: Tonbridge and Malling Winter 5-day precipitation, historic and predicted future change (100rp event) (mm)



1-day total precipitation (mm) for June July August in years 1961 up to and including 2099, for a return period of rp100, for grid square 562500, 137500, using baseline 1981-2000, and scenario RCP 6.0, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles

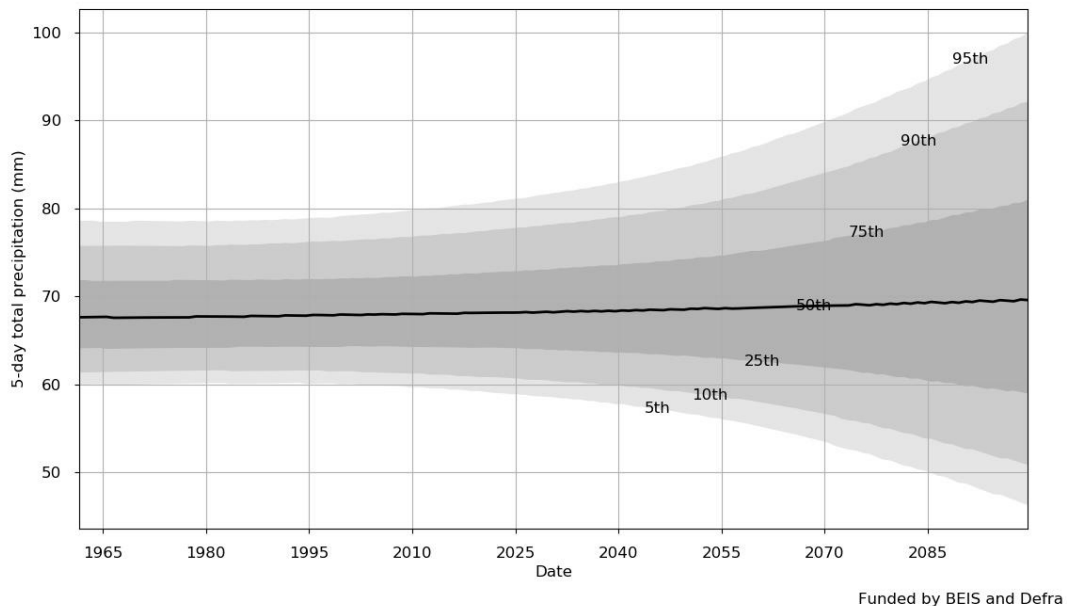


Source: Met Office UKCP18

Figure 18: Tonbridge and Malling Summer 1 day precipitation, historic and predicted future change (100rp event) (mm)



5-day total precipitation (mm) for June July August in years 1961 up to and including 2099, for a return period of rp100, for grid square 562500, 137500, using baseline 1981-2000, and scenario RCP 6.0, showing the 5th, 10th, 25th, 50th, 75th, 90th and 95th percentiles



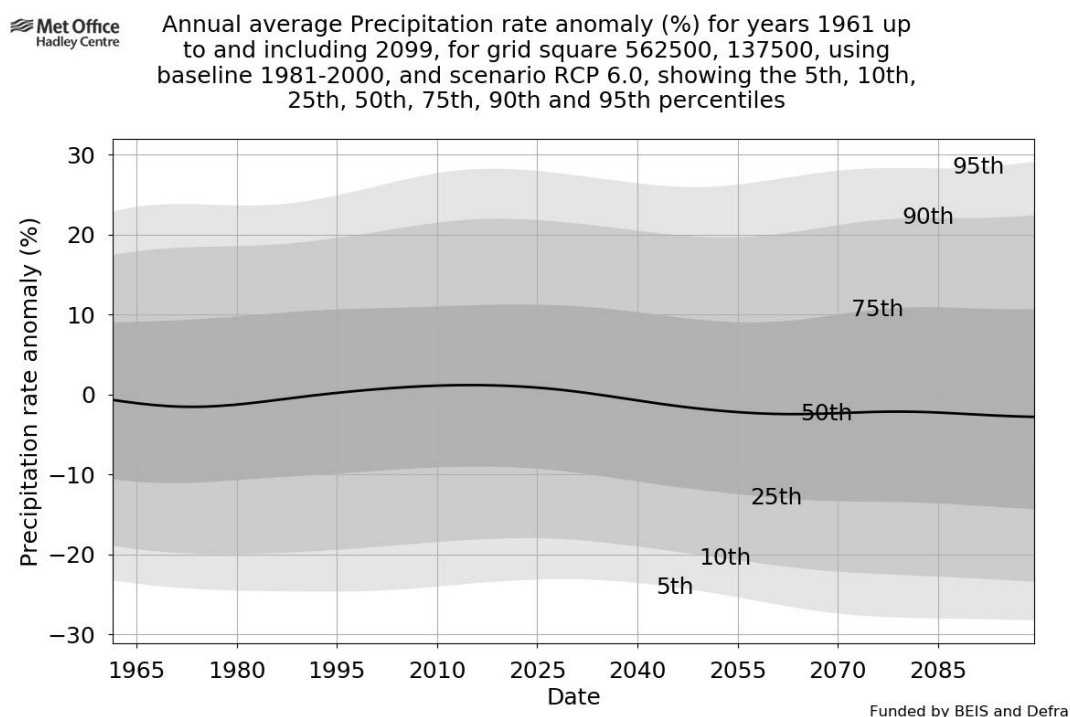
Source: Met Office UKCP18

Figure 19: Tonbridge and Malling Summer 5-day precipitation, historic and predicted future change (100rp event) (mm)

4.2.3 Water resources and water quality

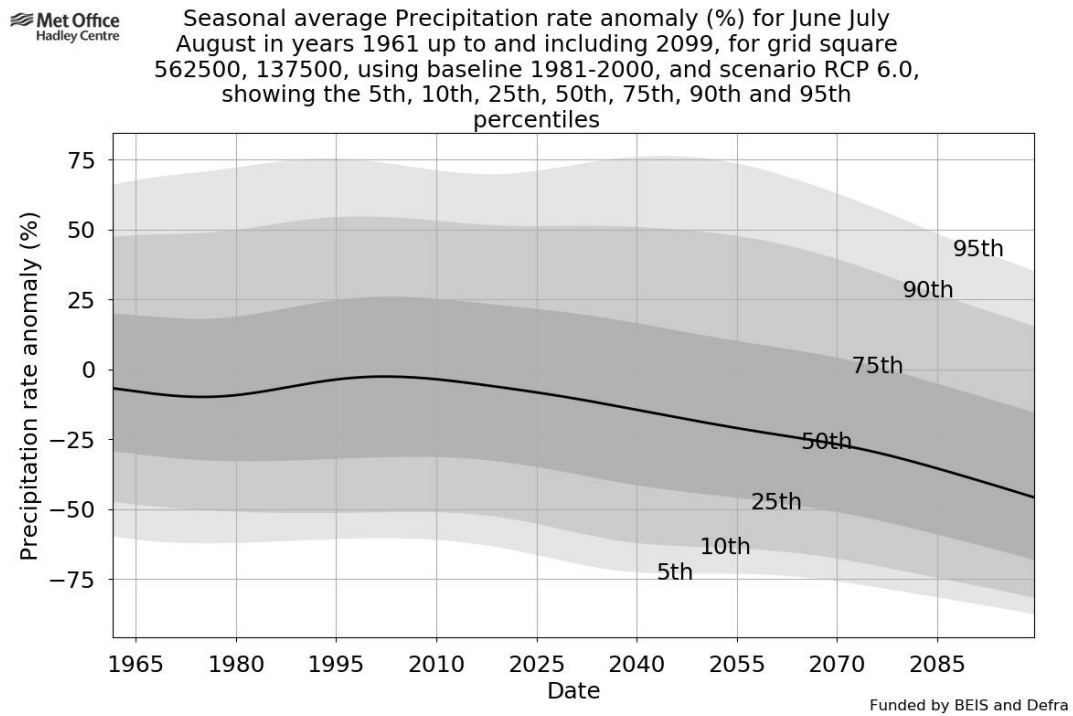
To determine future drought risk, we evaluated UKCP18 projections in future rainfall. While we can see from Figure 20 average annual rainfall is not projected to change significantly, when we consider seasonal expected rainfall patterns, we can see that average winter rainfall (Dec-Jan-Feb), which is expected to increase with an anomaly of approximately 20% by 2100 (Figure 22). This is contrary to summer rainfall (Jun-Jul-Aug) which is expected to decline with an anomaly of almost 50% by 2100 (Figure 21).

The projected trend of increasing winter rainfall in the Tonbridge and Malling Borough can be seen as a positive aspect in terms of mitigating drought risk where this water can be harvested, stored and available where needed during the summer. Higher winter rainfall is essential for replenishing aquifers, which are crucial for maintaining groundwater levels and ensuring a stable water supply. However, the reduced summer rainfall can lead to lower soil moisture levels, increased evaporation rates, and potentially more frequent and severe drought conditions during the warmer months.



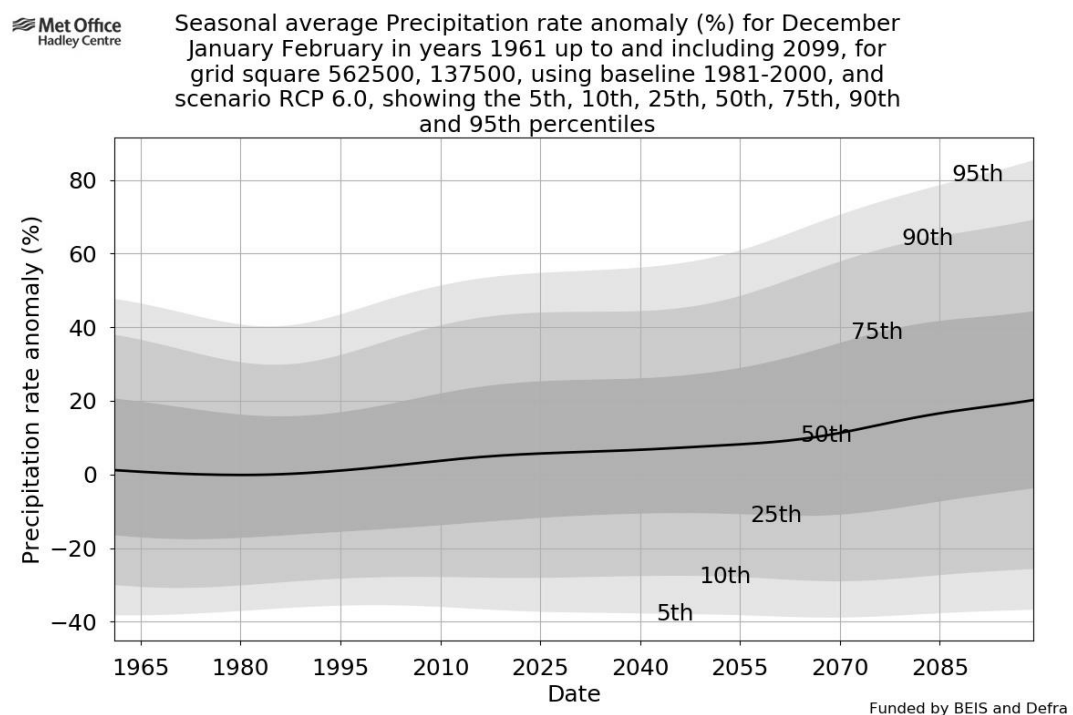
Source: Met Office UKCP18

Figure 20: Tonbridge and Malling Historic and projected annual average precipitation anomaly rate (%)



Source: Met Office UKCP18

Figure 21: Tonbridge and Malling Historic and projected summer average precipitation anomaly rate (%)

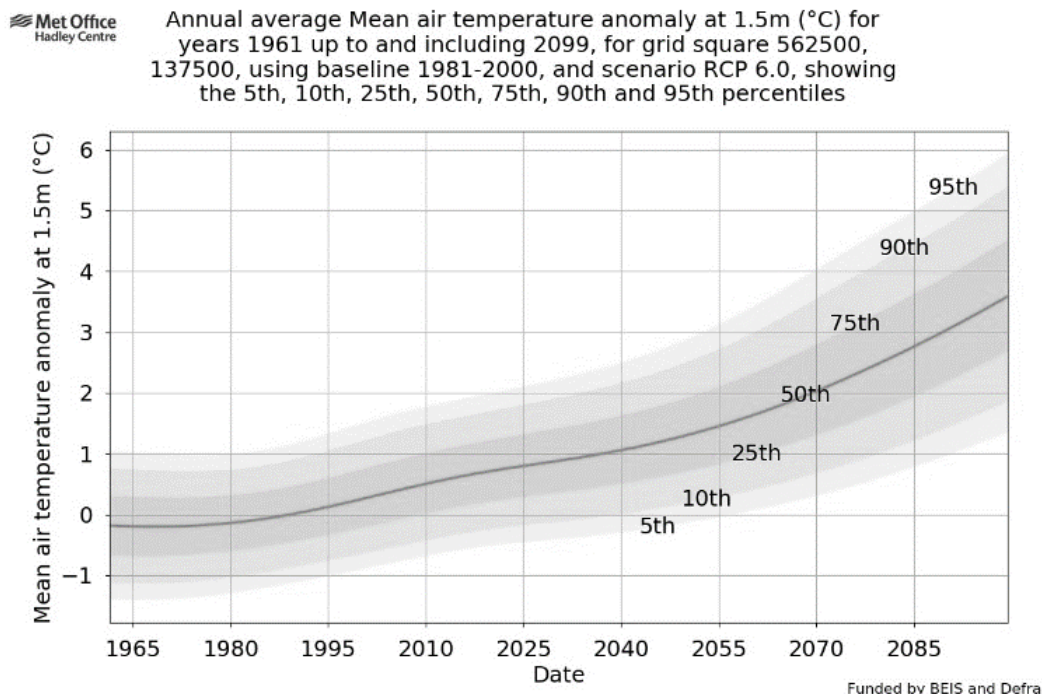


Source: Met Office UKCP18

Figure 22: Tonbridge and Malling Historic and projected winter average precipitation anomaly rate (%)

4.2.4 Extreme heat

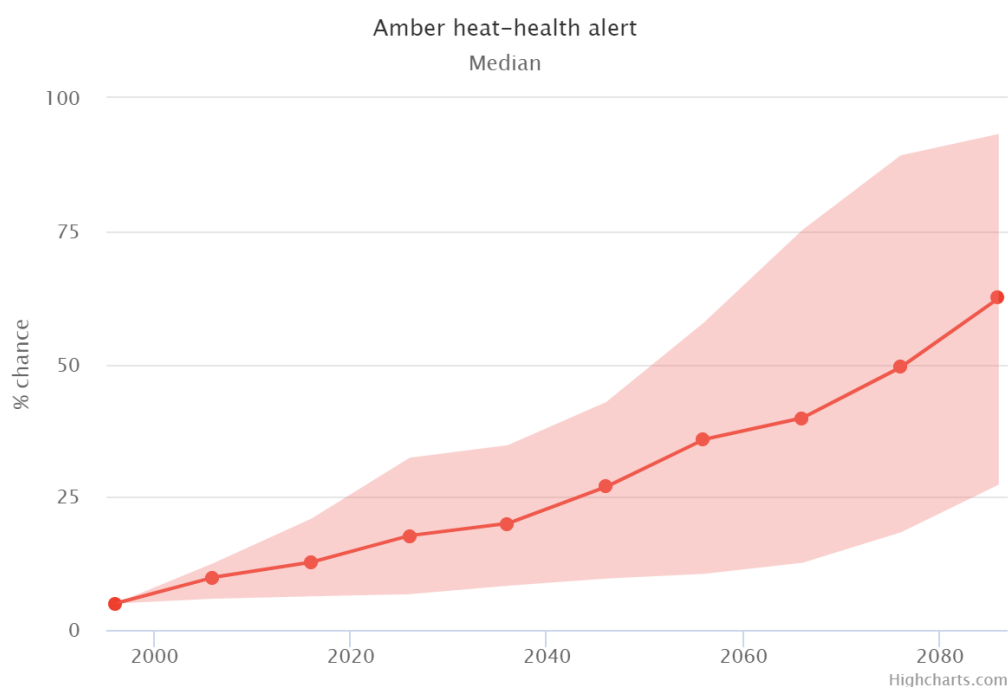
Mean annual temperature (Figure 23) has been projected to rise by approximately 3°C by 2100. Higher mean annual temperature will have implications for businesses and communities. For agriculture, higher mean annual temperatures will generally have positive outcomes, including longer growing seasons, higher yields and options for new crop varieties but could also have detrimental impacts on water availability and soil quality.



Source: Met Office UKCP18

Figure 23: Tonbridge and Malling Historic and projected annual average mean temperature difference compared to a 1981-2000 baseline.

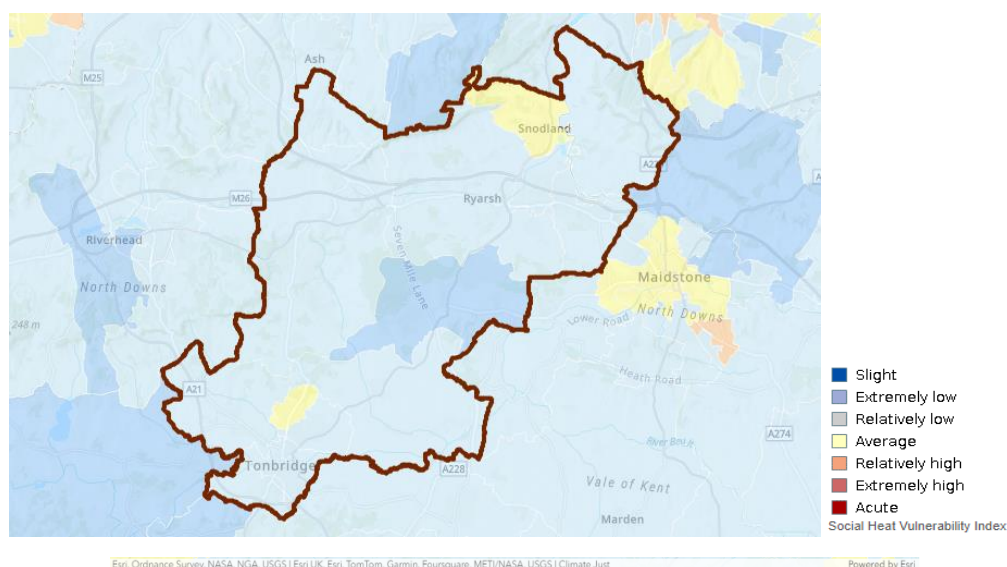
Figure 24 shows the projection of the likelihood of an amber related heat-health alert (as defined by the Met Office) occurring in Kent throughout the decades. The Public Health Service responds to heatwaves based on the Amber Heat Health alerts issued by the Met Office, the threshold for which is 30°C. In the figure below, it is apparent that the occurrence of heat waves will increase with climate change and the frequency and severity of heatwaves will increase.



Source: UK Climate Risk Indicators. Accessed September 2023.⁷⁹

Figure 24: Annual probability of an amber heat-health alert projection

Heat socio-spatial vulnerability mapping displays how social vulnerability in the UK intersects with potential exposure to heat related events, which can disproportionately affect vulnerable communities (these may include marginalised or at-risk communities like the elderly, children and low-income communities). Generally, the risk across the borough is relatively low or average (Figure 25). This may be a result of several factors. Firstly, the borough has a diverse age structure, with approximately 60% of the residents being between 18-64 years old⁸⁰ as of 2021, which is likely to result in a lower proportion of heat sensitivity in the borough - therefore vulnerability is reduced. Additionally, the borough's existing green spaces and canopy coverage aid in cooling the local environment, reducing the risk of heat socio-spatial vulnerability. Finally, the borough lies in the South East of England, which generally sees lower temperatures in comparison to other parts of the UK, and is likely to contribute to its lower heat vulnerability.



Esri, Ordnance Survey, NASA, NOAA, USGS | Esri UK, Esri, TomTom, Garmin, Foursquare, METI/NASA, USGS | Climate Just

Powered by Esri

Figure 25: Heat socio-spatial vulnerability for Tonbridge and Malling

Source: ArcGIS Online, Climate Just. Accessed 2024.⁸¹

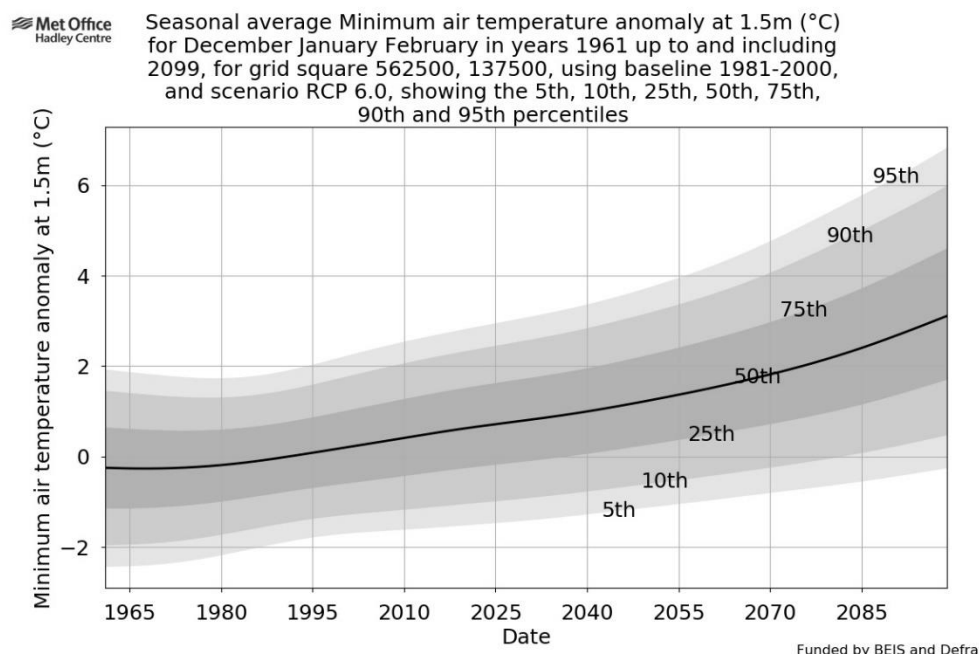
⁷⁹ UK Climate Risk Indicators. Available: <https://uk-cri.org/>

⁸⁰ Tonbridge and Malling (District, Kent, United Kingdom) - Population Statistics, Charts, Map and Location (citypopulation.de)

⁸¹ ArcGIS Online. Available: <https://www.arcgis.com/apps/mapviewer/index.html?layers=d2cbad5fca3e456e9de1bfab65d5e3f2>

4.2.5 Extreme cold

Extreme cold occurs during a period of icing days, when daily temperatures remain below 0°C. Associated hazards with extreme cold include frost, ice and snow, which impacts transport, infrastructure, and public health, including mortality (and other services, assets and communities). It is expected that the number of extreme cold events will reduce further to a negligible risk as a result of rising temperatures. UKCP18 projections illustrate an expected increase in Winter minimum temperature (Figure 26) and the likelihood of extreme cold will continue to reduce, to become a less likely risk.



Source: Met Office UKCP18

Figure 26: Tonbridge and Malling Historic and projected winter average minimum temperature anomaly (%)

4.2.6 Air quality

Air pollution is associated with several adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions.

Air quality and climate change are fundamentally interrelated. Many common air pollutants are 'climate active', and reducing emissions will lessen the warming effect on our climate. A warming climate also threatens to make air quality worse, with the prevalence of harmful photochemical smog likely to increase throughout longer, hotter summers. The processes of managing emissions of air pollutants and greenhouse gases are also interconnected. Both sets of emissions largely arise from the same combustion processes – vehicle engines, power generation, homes and industry. If impacts of both sets of emissions are not considered in policy decisions the results can be unintentional trade-offs, with one set of emissions falling at the expense of an increase in emissions of the other.⁸²

Data gathered around the 6 Air Quality Management Areas (AQMA) for TMBC shows that the main pollutant of concern is NO₂. The 2023 results are surprisingly similar to that monitored in 2021. Wateringbury AQMA still remains above the 40 µg/m³ limit with 44.8 µg/m³ at triplicate TN42, 76 & 77 on Tonbridge Road opposite the garage and 36.8 µg/m³ close by at TN33 while all other areas are below 35 µg/m³. 7 locations are 30 µg/m³ or above with TN50 on London Road in Larkfield AQMA being the next highest at 33.3 µg/m³.⁸³

⁸² Environmental Protection UK (2011). Air Quality and Climate Change: Integrating Policy in Local Authorities

⁸³ Tonbridge and Malling Borough Council, 2023 Air Quality Annual Status Report (ASR) (2023)

4.2.7 High winds

High winds present a hazard to transport, infrastructure, buildings, agriculture, and people. Nationally, there has been no trend in maximum gust speeds recorded.

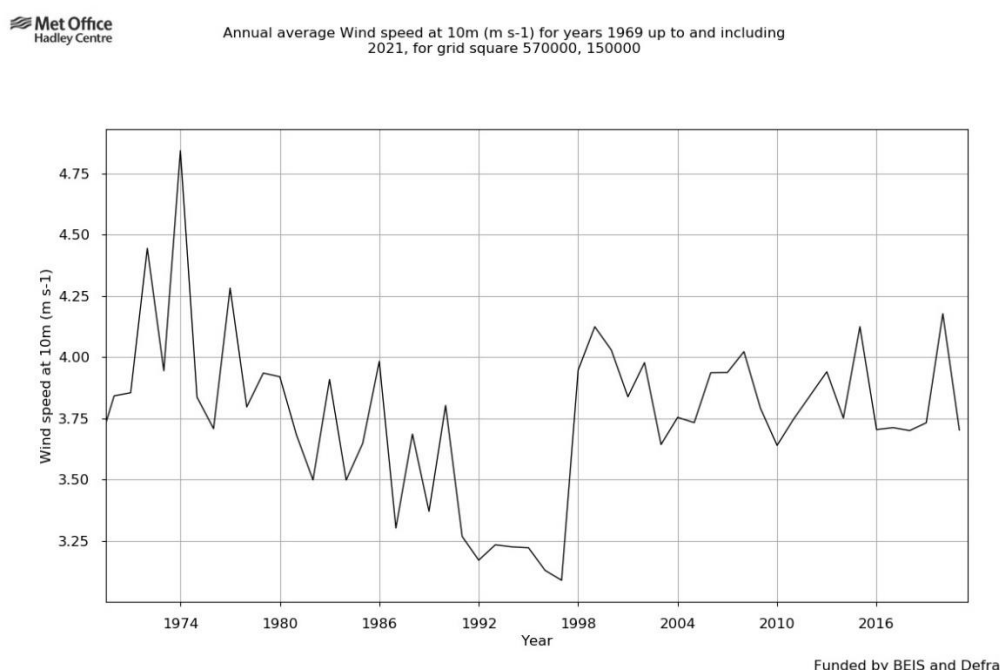
A recent study from Krueger et al. (2019),⁸⁴ confirmed that trends in storm activity are entirely dependent on the period of time of the analysis. When viewed over a longer period of time, storms often emerge as part of a longer term natural climate variability such as the North Atlantic Oscillation which is the primary determinant of storms in the UK.⁸⁵ The North Atlantic Oscillation varies greatly between years and decades.

Notable storm events in the area include:

2013: The stormiest winter in the last 143 years occurred in the winter of 2013/14 in the UK, based on cyclone frequency and intensity. It resulted in widespread fluvial flooding, although less severe than other flood events.⁸⁶

2022: In February 2022, Tonbridge and Malling Borough was affected by two storms: Storm Eunice and Storm Franklin. The former was the strongest storm in the UK since 1987. Kent was under a yellow warning due to the strong winds and heavy rainfall that was expected, and realised, under both storms. Similar events, to lesser extents, have occurred during winter months in most years in Kent. Source: Met Office UKCP18

Figure 27 shows the registered annual average wind speed at 10m in Tonbridge and Malling Borough up to 2021. These data illustrate no significant trend in 'windiness' from 1992 to 2022, which corresponds with the findings of the UK National Climate Change risk assessment, which concludes that there is no clear evidence for increased storminess in the UK based on analysis of long-term data sets.⁸⁷



Source: Met Office UKCP18

Figure 27: Tonbridge and Malling Annual average wind speed at 10m (m s-1)

⁸⁴ Krueger, O., Feser, F. and Weisse, R. 2019. Northeast Atlantic Storm Activity and Its Uncertainty from the Late Nineteenth to the Twenty-First Century. J. Climate, 32, 1919-1931.

⁸⁵ Betts, R.A. and Brown, K.. 2021. Introduction. In: The Third UK Climate Change Risk Assessment Technical Report [Betts, R.A., Haward, A.B. and Pearson, K.V. (eds.)]. Prepared for the Climate Change Committee, London.

⁸⁶ Muchan, et al. 2015. The winter storms of 2013/2014 in the UK: hydrological responses and impacts.

⁸⁷ Slingo, J. 2021. Latest scientific evidence for observed and projected climate change. In: The third UK Climate Change Risk Assessment Technical Report [Betts, R.A., Haward, A.B. and Pearson, K.V. (eds.)] Prepared for the Climate Change Committee, London.

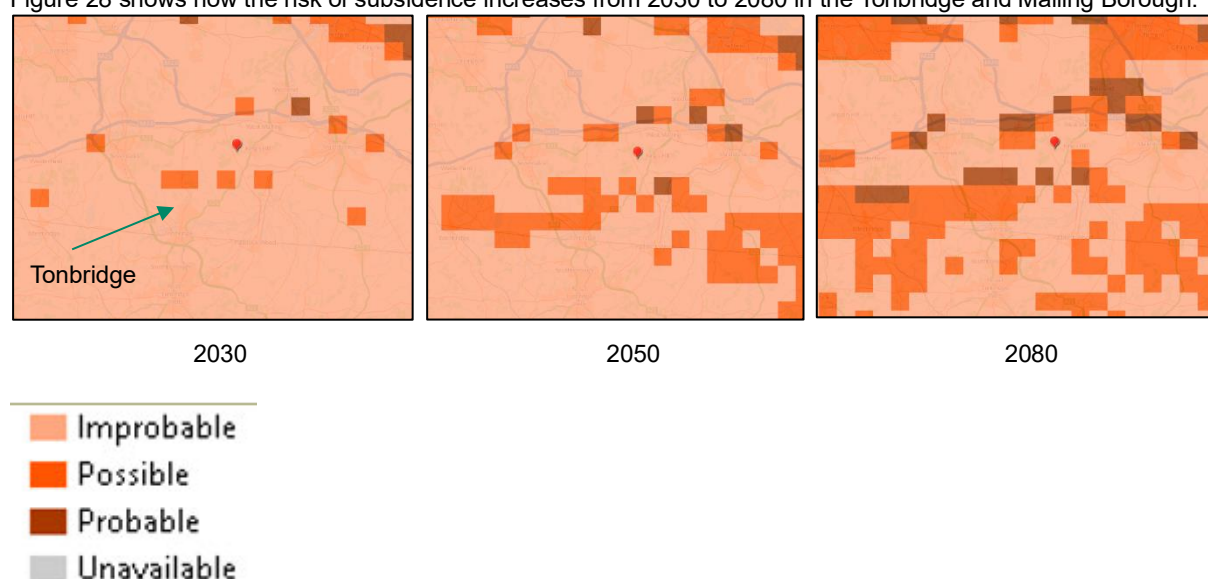
4.2.8 Subsidence

Subsidence is the process by which land or buildings sink to a lower level. This can have a significant impact on infrastructure and buildings. It can affect building foundations, resulting in structural damage, as well as damage to transport infrastructure.

The British Geological Survey GeoClimate: shrink–swell national datasets show potential change in subsidence due to changes in climate. They have been developed by combining long-term UK Climate Projection (UKCP) scenarios for rainfall and temperature changes with the geotechnical properties of the ground, to identify areas projected to experience the largest increases in susceptibility to subsidence over the next century⁸⁸.

According to the British Geological Survey *‘Dry weather and high temperatures are a major factor in the emergence of subsidence in clay soils. Every summer can be completely different to the last; summer 2018 had the hottest, driest June for years whereas summer 2019 had one of the wettest Junes on record. Warmer, drier summers and increases in annual temperature and rainfall variability are predicted, which will cause more shrink–swell activity.’*

Figure 28 shows how the risk of subsidence increases from 2030 to 2080 in the Tonbridge and Malling Borough.



Source: BGS GeoClimate. Accessed 2023.⁸⁹

Figure 28: Tonbridge and Malling Subsidence risk projection

4.2.9 Climate risk assessment results

The UK Committee on Climate Change’s Adaptation Sub-committee’s Climate Change Risk Assessment sets out the UK understanding of climate risk. The assessment includes 51 potential climate change risk and opportunity areas across 5 areas. Certain risks within this assessment are relevant to the TMBC Local Plan, with the exclusion of the international dimensions which were deemed not appropriate to consider in a Local Plan. The high priority risks that are deemed relevant to the Local Plan are listed in Table 3 and the full assessment can be found in Appendix A.

⁸⁸ British Geological Survey. Available: <https://www.bgs.ac.uk/>

⁸⁹ British Geological Survey. Available: <https://www.bgs.ac.uk/>

Key climate change risks for Tonbridge and Malling identified in the Climate Change Risk Assessment

Risks to infrastructure networks (water, energy, transport, ICT) from cascading failures.

Risks to infrastructure services from river, surface water and groundwater flooding.

Risks to public water supplies from reduced water availability.

Risks to transport from high and low temperatures, high winds, lightning.

Risks to health and wellbeing from high temperatures.

Risks to people, communities and buildings from river and surface flooding.

Risks and opportunities from summer household energy demand.

Risks to business sites from flooding.

Risks to business locations and infrastructure from flooding and extreme weather events.

Source: AECOM. 2023.

Table 3: Summary table of high priority climate risks deemed relevant to the Tonbridge and Malling Local Plan (not in priority order)

5 Policy Options

5.1 Scoping Potential Options

This section outlines the potential options for the emerging Tonbridge and Malling Local Plan. We have used the process described in Figure 29 to scope out the potential options to assess as part of this study taking account of the research and baseline analysis.

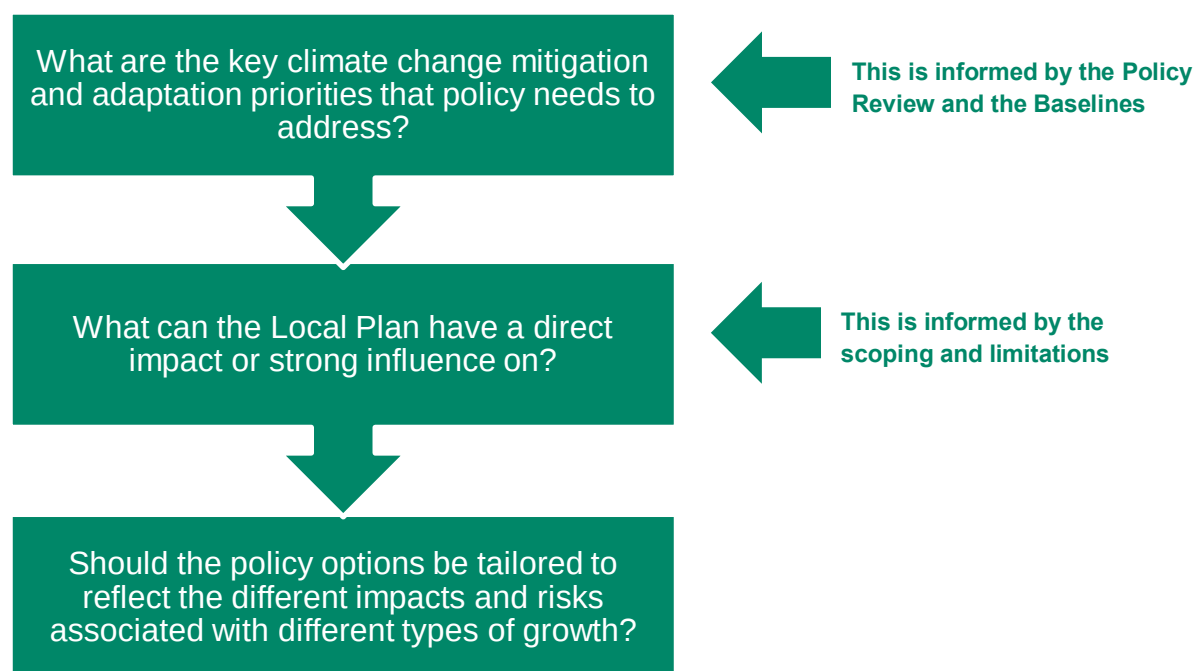


Figure 29: Process used to scope potential options

We have considered options for the Local Plan based on:

- **Business as Usual** – what would be in place if no policies were included on this topic in the Local Plan. We have set out the key national requirements that apply to the relevant theme.
- **Higher Standard** – policy options which could be included in the local plan that would have a positive impact in addressing climate change and which are unlikely to have any serious viability implications. It is likely that these standards can apply in all areas of the borough and on all types of sites.
- **Advanced Standard** – policy options that are likely to have a greater impact in addressing climate change. These are likely to be more challenging and could have viability implications and therefore may only be suitable in certain situations or for particular sites. Where and when these could apply can be informed by other evidence base studies such as the transport assessment, active travel study, green infrastructure strategy or viability study. Further testing may also be required.

5.2 Local Plan Growth Strategy

National Policy places emphasis on the reuse of previously developed land (also known as brownfield land) and land in sustainable locations where there is supporting infrastructure in place. The majority of the sites in the Tonbridge and Malling Brownfield land register⁹⁰ are within the main settlement of Tonbridge. This settlement has the widest range of services and facilities within the borough and is therefore broadly considered the most sustainable location within the Local Plan. However, other settlements within the borough have good connections to services and facilities such as Medway Gap⁹¹, Kings Hill and Snodland, as set out in the existing Settlement Hierarchy which can be found in the Local Plan Regulation 18 Consultation⁹²

⁹⁰ Tonbridge and Malling Brownfield Land Register

⁹¹ Villages Aylesford, East Malling, Larkfield and Leybourne

⁹² [Regulation 18 local plan \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/regulation-18-local-plan)

The Council have not yet set out their final growth strategy for the Local Plan, however it has been assumed that the strategy would encourage the reuse of previously developed land and seek to provide new homes close to new or existing services and facilities. We also recognise that new development will be delivered in a range of different ways including small, medium, and larger sites and sites with varying densities. Some new development is also likely to be provided in rural locations and in the rural-urban fringe.

Development on previously developed land can often be less viable than greenfield development due to the potential costs of site remediation and redevelopment. Such sites can also have less flexibility in terms of layout, design and orientation, making it potentially more difficult and costly to create low carbon developments. However, reuse and retrofit of appropriate existing buildings can help to keep the overall whole lifecycle carbon emissions of the redevelopment at a lower level compared to demolition.

Greenfield land is generally considered easier to develop and can provide an excellent opportunity to build low carbon development. Although, infrastructure and services would need to be brought in, the layout and design and level of such services can be planned in advanced to support low carbon development and make the most of opportunities such as renewable energy, active travel and green infrastructure. The design and layout of buildings and streetscape is also more flexible, allowing for different building types, shapes and orientation to minimise energy consumption and maximise roof solar energy generation.

These considerations have been incorporated into the policy options and recommendations and should be taken into account as the growth strategy develops.

This study does not consider the climate impact of the TMBC growth strategy although we have developed methodology to do so for other Local Authorities to help guide site and growth scenario selection. The growth strategy that is included in the TMBC Local Plan, whether additional testing for climate impact is carried out or not, will need to be tested within the whole plan viability study.

The policy options cover both climate change mitigation and adaptation and have been grouped under the following headings:

- Strategic Priorities
- Buildings
- Transport
- Infrastructure and Land Use
- Green Infrastructure and Biodiversity
- Water Resources and Flooding
- Design and Circular Economy

5.3 Strategic Priorities

The Local Plan has been identified by TMBC as key to the delivery of the Council's carbon neutral ambitions however, it does have limited scope. The Plan is just one way to help bring forward the transition to a lower carbon future and it works in partnership with other strategies, legislation, organisations, and the local community.

The Plan can have a positive impact on the borough through enabling positive development, creating opportunities, joint working and helping to remove barriers to sustainable development. The long-term focus of the Plan, looking forward to 2041 and even beyond, allows the Council to put in place long term strategies, and influence the development and delivery of partner strategies including those of infrastructure providers and the County Council.

The Local Plan has the greatest influence on new development, particularly larger scale development. For new development the plan can influence:

- Location
- Design including density, layout and orientation
- Building design and materials
- Green infrastructure and biodiversity
- Delivery of new onsite infrastructure
- Connections to existing infrastructure
- Onsite movement and travel

For existing buildings, the influence lessens significantly but there are still positive impacts the plan can make, such as improving building standards through retrofit and improvements to the surrounding environment and infrastructure.

Taking account of the baseline analysis, local context and scoping exercise, we have identified the priorities in Table 4 to be addressed by the Local Plan with regards to climate change.

The priorities are intended to address the full scope of climate change mitigation and adaptation measures available to the Local Plan. These priorities can be used to formulate the strategic policy for tackling climate change within the Local Plan.

Table 4 summarises the key baseline and context issues for Tonbridge and Malling alongside the climate change priorities for the local plan and sets out where in the policy options these have been addressed.

Tonbridge and Malling Baseline	Scoping and Context	Climate Change Priorities	Policy Option Theme
New development will increase carbon emissions in business as usual scenarios even taking into account the Future Homes Standard.	Greater development requirements including higher levels of housing,	A growth strategy that reduces carbon emissions and addresses climate change risks.	Growth Strategy and Strategic Policy
In Tonbridge and Malling, 28% of carbon emissions are produced by the domestic and commercial sectors. For TMBC to achieve their target to be carbon neutral by 2030 - new development will need to be designed to support climate change mitigation.	Tonbridge and Malling has approximately 1,400 listed buildings and structures, illustrating the significance of heritage to the borough.	Ensure new development is sustainable, energy efficient, low carbon and supports a circular economy. Encourage the retrofit of existing buildings to reduce carbon emissions.	Buildings Design and Circular Economy
Risks to health and wellbeing from high temperatures.	Vulnerable residents and ageing population more at risk of overheating.	Ensure new development is designed to address the risks associated with climate change.	Buildings (overheating)
Transport emissions are the largest emitter of carbon in the borough	In Tonbridge and Malling, there is a strong reliance on the use of private car/van, with 85% of households owning at least one vehicle. Additionally, there is poor provision of EV charging infrastructure, with only 3.5% of households having access to a public EV charger within a 5-minute walk.	Reducing the reliance on private transport and the emissions associated with transport.	Transport
Existing and new development are significant contributors of carbon emissions.	TMBC's Climate Change Action Plan supports the implementation of renewable energy measures, and claims responsibility to promote suitable funding schemes, and advise residents.	Support suitable opportunities for low carbon energy generation and storage to serve the borough. Improve infrastructure to support sustainable development and help existing residents to reduce emissions.	Infrastructure and Land Use
Risk to habitats and species due to a changing climate.	Tonbridge and Malling consists of high quality landscape, with two AONBs, several SSSIs alongside swathes of Ancient Woodland and SACs. Additionally, a significant portion of the borough lies within the metropolitan Green Belt.	Work with the natural environment to help reduce emissions and risks associated with a changing climate. Conserve and enhance habitats to support biodiversity and wildlife resilience Explore opportunities to promote carbon sequestration in the natural environment.	Green Infrastructure and Biodiversity Infrastructure and Land Use (carbon sequestration)
Flood risks from fluvial and surface water.	High risk flood zones in the borough, particularly fluvial flooding, along the South boundary, through which the River Medway runs.	Reduce the impact of flooding, support natural flood management, and ensure developments include sustainable draining systems.	Water Resources and Flooding
Risks to public water supplies from reduced water availability.	Tonbridge and Malling lies within an area of serious water stress.	Reduce water use and increase water harvesting within new development.	Water Resources and Flooding

Table 4: Suggested Local Plan priorities for TMBC.

5.4 Buildings

5.4.1 New Buildings

The following diagram provides a summary of the different ways to potentially set higher standards for new buildings, to reduce carbon emissions. These are organised under the following four headings:

- Focus – The requirement's focus
- Type – The type of requirement used
- Scope – What the requirement applies to
- Implementation – What support and processes are needed to accompany the requirements

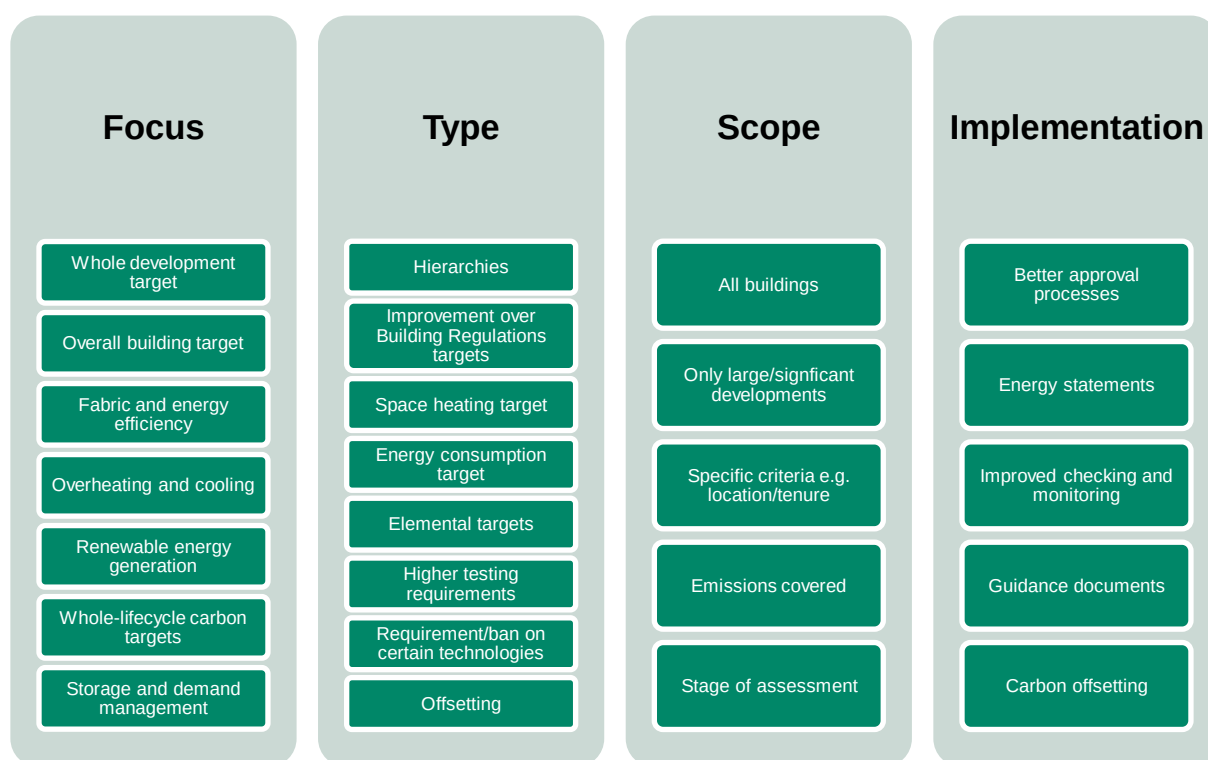


Figure 30: Range of methods to set requirements for improved standards around Building Energy Performance

Based on research and discussions with TMBC, we have focused on investigating the following options for new buildings:

- Overall building targets;
- Fabric and demand reduction requirements;
- Overheating and cooling requirements;
- Heating systems requirements;
- Renewable energy requirements;
- Energy storage and management;
- Whole lifecycle carbon requirements;
- Carbon offsetting; and
- Improved processes.

Overall Building Targets

A common approach to setting higher performance standards is to focus on the overall performance of the whole building. This is the approach that is taken by the Target Emission Rate (TER) requirement within Part L of the Building Regulations, which assesses each individual building or dwelling and generates targets based on a carbon emission rate using a set of standard values. This approach provides a level of flexibility in how the target is achieved because it enables improvements to be made in different aspects of the specification and as preferred by the builder.

One option would be to require developments to go beyond the Part L TER by setting a percentage improvement target on that value. The advantage to this is that developers can use the standard calculation software to do this, which is checked by a 3rd party. The Greater London Authority (GLA) adopt this approach in the London Plan. A downside to this approach is that it would be difficult to prove the viability, especially at the current time when Part L has changed and with further changes planned but not yet confirmed.

Targets linked to Part L are also rather abstract in that they relate to comparisons with a notional building rather than absolute carbon emissions. An alternative approach could be to set a target for overall carbon emissions, in some cases this has been set at zero for the regulated emissions, however challenges associated with this have tended to mean that an offset scheme is required to enable the target to be achieved in most cases.

Another alternative option is to look at the overall energy consumption and set targets for the Energy Use Intensity (EUI) of each dwelling or building, which would assess the overall energy use of the building in kWh per square meter. This makes increasing sense as buildings become fully electrified and there are no complications of multiple fuel types. As the national grid is decarbonised it makes carbon a less useful measure of determining building performance when the differences would become very small or, in the case of zero carbon grid electricity, non-existent. The Passivhaus scheme has targets related to overall energy consumption and targets have also been proposed by groups like Low Energy Transformation Initiative (LETI) however this is likely to require alternative calculations and additional resources both for developers to run the calculations plus Planning and Building Control departments to check the applications.

There are also wider sustainability assessments which assess energy alongside a range of other sustainable development indicators to determine the relative performance of whole buildings, such as BREEAM and the Home Quality Mark (HQM). Both include energy, looking at the overall performance of the building as well as specific measures, with targets linked to improvements beyond Part L. However, the nature of these assessments is that there is flexibility in the overall score, with minimum performance standards in some areas, so a target for a specific overall rating wouldn't guarantee the performance in the energy section of the assessment.

Table 5 provides a comparison of some of these options.

Table 5: Comparison of some whole building energy assessment schemes and standards

	BREEAM 'Outstanding'	Home Quality Mark (HQM)	Energiesprong	Passivhaus	Passivhaus Plus
Description	BREEAM 'Outstanding' requires a 40% reduction in regulated CO ₂ emissions, compared with Part L 2013 standards. Additional credits can be achieved for a 100% reduction (i.e. Net Zero) regulated emissions.	HQM was developed by the BRE as a rating system that can signal to householders how well the building performs based on various sustainability indicators, including energy use and CO ₂ emissions.	Originally developed by the Dutch government to promote energy efficient retrofitting, this is a performance standard for new build and refurbishment	Originally developed in Germany, this is a performance standard that aims to meet annual heating requirements with very low energy input.	Similar to the Passivhaus Standard, this scheme also requires renewable energy generation on-site or nearby, resulting in Net Zero emissions.
Relevant building types	Non-domestic only [separate standards for domestic refurbishment]	Domestic only	Domestic only	Domestic and non-domestic	Domestic and non-domestic

Scope	Core requirements relate to regulated energy use, but additional credits can be achieved for reducing or offsetting unregulated energy use. There is consideration of lifecycle CO ₂ emissions from certain materials, but no set target.	As for BREEAM	Regulated and unregulated energy use	Regulated and unregulated energy use	Regulated and unregulated energy use
Target values	A bespoke metric is used which accounts for operational energy demand, primary energy consumption and regulated CO ₂ emissions An 'Outstanding' rating requires at least 40% improvement on Part L 2013	As for BREEAM	Space heating demand <30 kWh/m ² /yr Net Zero delivered energy over the course of the year	Space heating demand <15 kWh/m ² /yr Primary energy demand <60 kWh/m ² /yr	Space heating demand <15 kWh/m ² /yr Primary [renewable] energy demand <45 kWh/m ² /yr
Fabric energy efficiency standard	None	None	Minimum performance standards for building elements and fixed services	Space heating demand <15 kWh/m ² /yr	Space heating demand <15 kWh/m ² /yr
Renewable energy requirement?	No	No	No	No, but this would typically be required to meet the targets	Yes, renewable energy generation >60 kWh/m ² /yr of building footprint

Fabric Performance and Demand Reduction

An alternative or additional policy option would be to set a requirement to address purely the fabric performance of buildings to be addressed through both passive and active design measures. For new homes fabric performance is something that is covered in Part L as part of the Fabric Energy Efficiency (FEE) target but there is the potential to develop a more challenging target in this area.

The case for doing so is that this would address the costs associated with space heating and the component of the energy demand that is arguably where the developer has greatest influence, since it is determined by the specification and quality of construction and would be extremely difficult and expensive for the home-owner to address in the future. Reducing energy demand will have a direct benefit for the eventual homeowner in regard to their energy costs and also deliver greater energy security and insulation from the impacts of any future price rises.

Another important case for targeting space heating is that in the future, as more heating is electrified, it is likely to represent one of the most significant contributions to the overall peak power demands across the electricity network, particularly in towns and cities due to the scale of demand and the coincidence of use. Increasing demands and higher peaks will require much greater grid reinforcement which will have both direct cost implications and implications for capacity, which may restrict or delay the roll out of heat pumps and Electric Vehicles (EVs).

Table 6: Performance metrics of the notional dwelling for Part L 2021 and the proposed values for the Future Homes Standard anticipated in the 2025 (FHS) revision

	Part L 2021 Notional	Indicative 2025 (FHS consultation) ⁹³
Floor U-value (W/m2.K)	0.13	0.11
External wall U-value (W/m2.K)	0.18	0.15
Roof U-value (W/m2.K)	0.11	0.11
Window U-value (W/m2.K)	1.2	0.8
Door U-value (W/m2.K)	1.0	1.0
Air permeability (m3/h.m2)	5.0	5.0
Heating appliance	Gas boiler	Low carbon (electric heat pump)
Heating system	Low temperature	Low temperature
Ventilation System type	Natural	Natural
Photovoltaics	Yes	No
Waste-water heat recovery	Yes	No
Thermal bridging (y-value)	SAP Table R	0.05-0.09

The space heating demands associated with construction to the Part L 2021 standard are likely to be approximately 40-50 kWh/sqm/yr and this could drop to 30-40 kWh/sqm/yr with the proposed 2025 revision based on the indicative specifications that have been published. The Committee on Climate Change, in their report "UK housing: Fit for the future"⁹⁴ recommended achieving space heating demands of 15-20 kWh/sqm/yr in new dwellings while the Passivhaus standard requires less than 15 kWh/sqm/yr.

There are costs associated with these improvements and diminishing returns mean that the costs can rise significantly as for achieving higher savings, for example the impact on wall build-ups and overall thicknesses to achieve the very low wall U-values. The relatively small upfront capital cost⁹⁵ can yield huge energy demand and carbon savings, and so would be outweighed by the cost savings over the lifetime of a building. This is why Passivhaus is popular with self-builders who stand to benefit from the investment; where these benefits are split, in the usual case of commercial developers, the incentives don't align so regulation or other means for sharing the benefit is needed. If setting a requirement for space heating then a maximum value between 15-30 kWh/sqm/yr, subject to viability, is likely to represent a balanced approach.

In the Tonbridge and Malling context, a fabric-first approach to new development will have a substantial impact on space heating demand, particularly in Winter, when internal temperatures drop below a comfortable level. By implementing passive design measures such as maximising levels of insulation, minimising thermal bridging and optimising solar gains new development will be more energy efficient (lose less heat), and thus will have lower space heating demand, reducing carbon emissions, and creating a house that is more affordable to heat.

Overheating and Cooling

Overheating is recognised as a key risk in the built environment in the future as a result of climate change and the impact of increasing temperatures and frequency of heat waves. Relative to other parts of the UK this is an issue that is likely to be more important in a place like Tonbridge and Malling given both its location and demographic. High temperatures have been linked to mortality and wellbeing impacts. The UK Climate Change Risk Assessment 2017 projects that UK heat-related deaths could more than double by the 2050s from the 2,000-death per year baseline if there is no adaptation⁹⁶. This would be a substantial human cost, and DEFRA predictions from 2012 estimate that the economic cost associated with heat-related deaths would rise by £15-100 million per year.

⁹³ At time of writing this is under review and the specification may change

⁹⁴ <https://www.theccc.org.uk/publication/uk-housing-fit-for-the-future/>

⁹⁵ <https://aecom.com/without-limits/article/debunking-the-myth-that-passivhaus-is-costly-to-achieve/>

⁹⁶ Climate Change Committee, 'UK Climate Change Risk Assessment' (2017). Available at: <https://www.theccc.org.uk/wp-content/uploads/2016/07/UK-CCRA-2017-Synthesis-Report-Committee-on-Climate-Change.pdf>

There is a link between the energy performance of a building and the overheating risks. Increasing the fabric performance can lead to increasing overheating risks however this can be mitigated through design. Some of the mitigation measures like orientation can be simple if they are addressed from the outset of a project through the masterplan and building layouts, others can be achieved through the specification of glazing and ventilation strategies but again need to be considered in the early stages of design to be effective. The latest revision of Building Regulations includes more stringent requirements in the new Approved Document Part O to assess overheating in new residential buildings.

A potential policy option would be to include a requirement to complete an early risk assessment and submit this with the planning application showing that the overheating risks have been identified and how these have been addressed in the plans. The Good Homes Alliance have published a risk tool (see Figure 31) to assist new homes developers in understanding the level of overheating risk and promoting the consideration of mitigation measures. Requiring developers to complete this at the pre-planning stage will give developers and design teams the information to inform those early decisions.

EARLY STAGE OVERHEATING RISK TOOL Version 1.0, July 2019

This tool provides guidance on how to assess overheating risk in residential schemes at the early stages of design. It is specifically a pre-detail design assessment intended to help identify factors that could contribute to or mitigate the likelihood of overheating. The questions can be answered for an overall scheme or for individual units. Score zero wherever the question does not apply. Additional information is provided in the accompanying guidance, with examples of scoring and advice on next steps. Find out more information and download accompanying guidance at goodhomes.org.uk/overheating-in-new-homes.

KEY FACTORS INCREASING THE LIKELIHOOD OF OVERHEATING | **KEY FACTORS REDUCING THE LIKELIHOOD OF OVERHEATING**

Geographical and local context

#1 Where is the scheme in the UK? See guidance for map	South east	4
	Northern England, Scotland & NI	0
	Rest of England and Wales	2
#2 Is the site likely to see an Urban Heat Island effect? See guidance for details	Central London (see guidance)	3
	Gtr London, Manchester, Bham	2
	Other cities, towns & dense sub-urban areas	1

Site characteristics

#3 Does the site have barriers to windows opening? - Noise/acoustic risks - Poor air quality/smells e.g. near factory or car park or very busy road - Security risks/crime - Adjacent to heat rejection plant	Day - reasons to keep all windows closed	8
	Day - barriers some of the time, or for some windows e.g. on quiet side	4
	Night - reasons to keep all windows closed	8
	Night - bedroom windows OK to open, but other windows are likely to stay closed	4
#9 Are immediate surrounding surfaces in majority pale in colour, or blue/green? Lighter surfaces reflect more heat and absorb less so their temperatures remain lower; consider horizontal and vertical surfaces within 10m of the scheme		1
#10 Does the site have existing tall trees or buildings that will shade solar-exposed glazed areas? Shading onto east, south and west facing areas can reduce solar gains, but may also reduce daylight levels		1

Scheme characteristics and dwelling design

#4 Are the dwellings flats? Flats often combine a number of factors contributing to overheating risk e.g. dwelling size, heat gains from surrounding areas; other dense and enclosed dwellings may be similarly affected - see guidance for examples		3
#5 Does the scheme have community heating? i.e. with hot pipework operating during summer, especially in internal areas, leading to heat gains and higher temperatures		3
#11 Do dwellings have high exposed thermal mass AND a means for secure and quiet night ventilation? Thermal mass can help slow down temperature rises, but it can also cause properties to be slower to cool, so needs to be used with care - see guidance		1
#12 Do floor-to-ceiling heights allow ceiling fans, now or in the future? Higher ceilings increase stratification and air movement, and offer the potential for ceiling fans	>2.8m and fan installed	2
	> 2.8m	1

Solar heat gains and ventilation

#6 What is the estimated average glazing ratio for the dwellings? (as a proportion of the facade on solar-exposed areas i.e. orientations facing east, south, west, and anything in between). Higher proportions of glazing allow higher heat gains into the space	>85%	12
	>50%	7
	>35%	4
#7 Are the dwellings single aspect? Single aspect dwellings have all openings on the same facade. This reduces the potential for ventilation	Single-aspect	3
	Dual aspect	0
#13 Is there useful external shading? Shading should apply to solar exposed (E/S/W) glazing. It may include shading devices, balconies above, facade articulation etc. See guidance on "full" and "part". Scoring depends on glazing proportions as per #6	Full Part	
	>65%	6 3
	>50%	4 2
	>35%	2 1
#14 Do windows & openings support effective ventilation? Larger, effective and secure openings will help dissipate heat - see guidance	Openings compared to Part F purpose rates	
	= Part F	+50% +100%
	Single-aspect minimum required	3 4
	Dual aspect	2 3

Figure 31: Good Homes Alliance Overheating Risk Tool

Another option would be to require developers to undertake additional modelling beyond what is required for Part O. This could be a requirement to undertake dynamic simulation modelling in line with the guidance and data sets in CIBSE TM59⁹⁷ as well as additional weather data sets to reflect extreme overheating events. Such modelling would have additional costs associated both with running these models and any mitigation requirements that follow over and above set by Part O. This may be difficult to apply to all development sites but could be an extra requirement for significant developments or those with higher risks.

In the Tonbridge and Malling context, overheating is a key risk due to the borough's demographic, aging population and location within the UK. The climate risk assessment identified that there is a risk to health and wellbeing from high temperatures. Managing overheating risk is a necessary prerequisite for the borough alongside considering operational energy demand management.

⁹⁷ <https://www.cibse.org/knowledge-research/knowledge-portal/technical-memorandum-59-design-methodology-for-the-assessment-of-overheating-risk-in-homes>

Heating Systems

Assuming that new development utilises a fabric-first approach, to improve energy efficiency, and addresses the risk of overheating, the choice of heating and hot water system will have the most significant impact on the operational carbon emissions of the building. The decarbonisation of electricity with plans for supply from the national grid to be net zero by 2035 means that heating from systems that use electricity, which will principally be heat pumps, will not only be lower carbon now but will continue to reduce over the lifespan of the building and become net zero once the grid is fully decarbonised. In contrast the carbon emissions associated with the combustion of gas will likely remain unchanged and any buildings that are designed with gas boilers now are likely to retain those for at least the expected lifespan of that product which in most cases will be about 15 years.

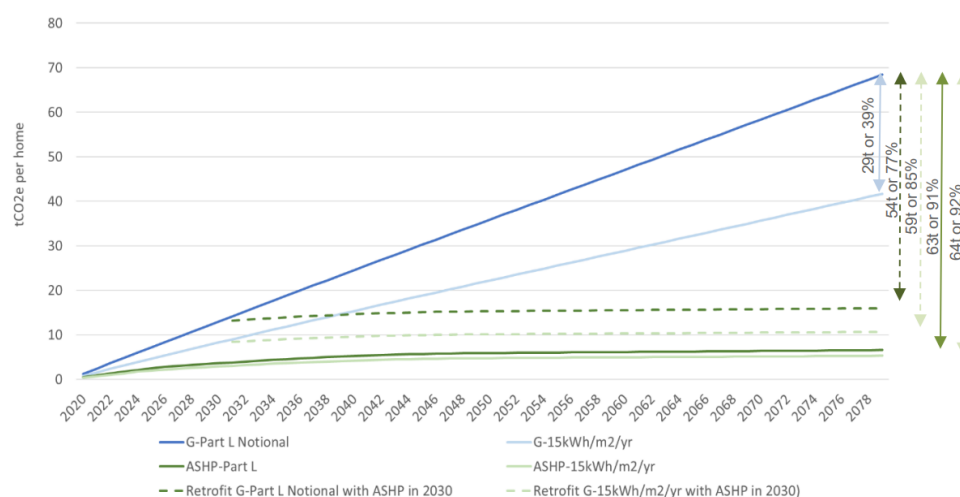


Figure 32: Graph showing the cumulative carbon emissions from a semi-detached house built to different space heating standards (Part L 2021 notional or Passivhaus) with either a gas boiler (G), an ASHP or a gas boiler retrofitted to an ASHP after 10 years.

Figure 32, from a study undertaken by Currie & Brown and AECOM for the Committee on Climate Change (CCC)⁹⁸, shows the cumulative carbon emissions of a house with a gas boiler compared to one with an electric Air Source Heat Pump (ASHP) and also the scenario in which a gas boiler is installed first and replaced with an ASHP after 10 years. This shows a significant difference in the cumulative emissions between the gas boiler and the ASHP. This is because the ASHP uses electricity from the grid which is expected to be negligible/zero carbon within the next 10-15 years. It also shows that in the replacement case the lifetime emissions for the building are potentially three times higher due to the initial use of a gas boiler.

The Future Homes Standard scheduled for 2025 proposed a ban on new gas boilers and includes an electric Air Source Heat Pump (ASHP) as the reference heating system. The Future Building Standard proposes similar changes to the reference heating system however it has an assumption on the use of direct electric systems for some building types where point-source heating is more appropriate. The new Regulations will therefore enforce the switch from gas boilers to electric heat pumps and deliver this change. Though the reference system is ASHP, the developer has the option to use other electric heat pump or low carbon technologies such as connection to low carbon heat networks.

The Future Homes Standard is still under development and could be changed or delayed. If it is delivered as planned and on schedule there may be transitional arrangements that mean that the policy doesn't take effect until 2026 or later. As such, there may be a gap between the publication of the Local Plan and the enforcement of the Future Homes and Future Buildings Standards which means that gas boilers are still being installed in new developments in Tonbridge and Malling, leading to significantly higher carbon emissions as described above.

A further consideration is that the costs for replacing the gas boiler in the future will be passed onto the homeowner. The Government has signalled that it will seek to replace existing gas boilers, with an aim of phasing out the installation of new gas boilers after 2035. Homes that are delivered with gas boilers today will therefore need to replace these with electric heat pumps in the near future, the cost of which will be borne by the

⁹⁸ <https://www.theccc.org.uk/wp-content/uploads/2019/07/The-costs-and-benefits-of-tighter-standards-for-new-buildings-Currie-Brown-and-AECOM.pdf>

homeowner. These costs, and additional costs of retrofitting fabric improvements, can be significant as shown in Figure 33.

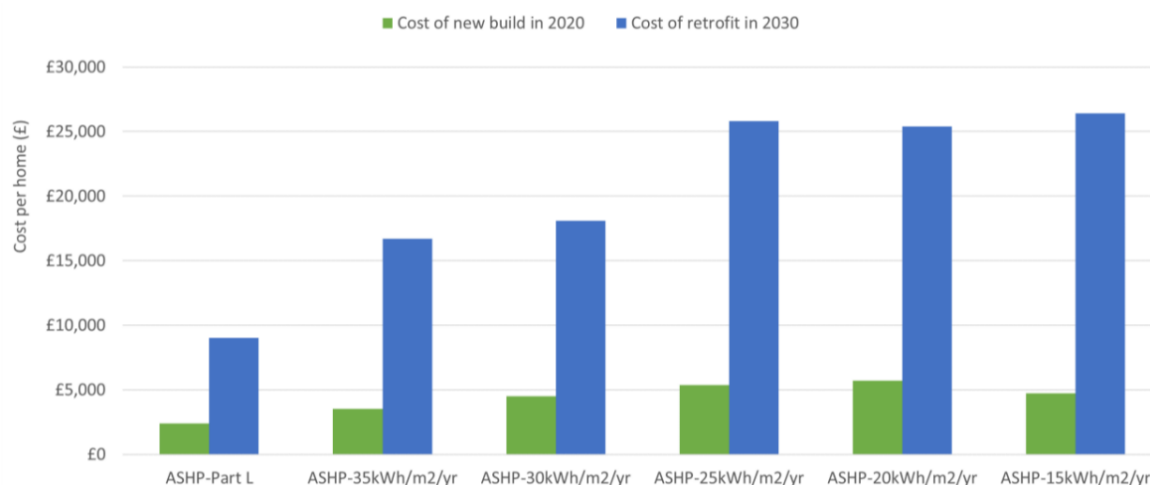


Figure 33: Graph showing the additional costs of installing ASHP and meeting space heating standards in a new semi-detached house compared to retrofitting these after construction

In regard to direct electric heating, the indication is that the Future Homes Standard will seek to make this challenging to comply unless heating demands are extremely low because, while this would be relatively low cost to install, it would have much higher running costs given the efficiency of the heat pump would be 2.5 to 3 times leading to much lower energy consumption and therefore lower costs and lower impact on network capacity. As previously noted, some non-domestic buildings with localised and very small heat demands might be more appropriately served by point-source rather than centralised heating and therefore direct electric systems would be expected.

The other key option for decarbonising heat is with heat networks. There are no existing or planned work on strategic heat networks in Tonbridge and Malling so there is less of an evidence base to support a policy requiring connection to heat networks when the infrastructure is not there to connect to. However, the Government is current developing a Heat Network Zoning Policy⁹⁹ which would provide local authorities with the power to designate areas as heat network zones if it can be demonstrated that a heat network would offer the best route to decarbonisation, that being the lowest cost and lowest carbon option. Given that this policy might be enacted in late 2024 it would be prudent to reference heat networks within the Local Plan so that there is a link for future work that might be undertaken to define and designate a zone.

Policy options to address heating systems would include the use of a heat hierarchy to prioritise the most appropriate solution and place the burden of responsibility on the developer to prove that this is not technically feasible or financially viable. A blunter approach would be to effectively ban the use of new gas boilers and direct electric systems for residential developments. In regard to heat networks, more specific policy requirements are likely to require some further evidence from detailed studies with defined project opportunities or modelling to identify and support the designation of a heat network zone.

Although the Local Plan growth strategy and development supply information is not yet available, given the character of the borough, and considering previous types of development, it is likely that much of the development allocated in the Local Plan will be relatively smaller in scale compared to other more urban areas of the country. Smaller scale developments alone are unlikely to be sufficient to support a heat network, however the Local Plan is in a position to consider development cumulatively and therefore it could be a potential option once the level and location of new development is known. However, this is not considered as a priority for the Local Plan at this time.

⁹⁹ <https://www.gov.uk/government/consultations/proposals-for-heat-network-zoning>

Renewable Energy Generation

Aside from the electric heat pump, which is considered a renewable energy technology, there is also a strong case to promote other renewable energy generation. The most relevant technologies for application at the building-scale would be solar photovoltaics (PV) and solar thermal systems. PV should be applicable for almost all buildings whereas solar thermal would be applicable for residential buildings and non-residential buildings with significant hot water demand. Tonbridge and Malling has some of the highest irradiance across the whole of the UK, so properties here stand to gain the most from the use of solar technologies.

In the future, as the decarbonisation of electricity and the electrification of heat progresses, PV and solar thermal systems may have less of an impact on carbon emissions. However, these technologies will remain vital for reducing energy costs and providing energy security, for individual buildings and wider local power networks. Currently, onsite solar PV is a proven technology that produces zero emissions at the point of energy generation, increases grid capacity, consequently reducing the demand on the grid, and lowers overall costs. Onsite generation is particularly effective when paired with heat pumps and other forms of electric heating and given that it is readily available, installations will have the immediate effect of decarbonising energy use in developments.

While the notional building used in Part L 2021 includes PV in the reference specification, the indicative specification for the planned Future Homes Standard notional building doesn't. The interpretation is that it would be possible to comply through a combination of good fabric and energy efficiency specification and the use of an electric heat pump. As such, given that the developer must factor in the up-front costs of the PV and doesn't realise the longer-term benefits, they might decide not to include PV (or solar thermal) if there is no need to do so to comply with Building Regulations. As previously described for the fabric performance and heat pumps, the costs of installing PV or Solar Thermal systems during construction are significantly lower than retrofitting these so there is a case for the Local Plan to include requirements for these technologies.

One option for a policy on renewable energy generation would be to focus on PV and have a requirement or presumption for all developments to incorporate PV or go slightly further and have a presumption to maximise the amount of PV installed. This would put the onus on the developer to either comply with this or do the work to justify why they haven't, on either technical or financial grounds, both of which are likely to be challenging given the ease and low costs of installing at least some PV. An alternative option would be to set minimum targets, which could either be measures by % improvements on Part L targets (as per the old Merton Rule) or minimum sqm/capacity (kWp) or yield (kWh) from PV relative to building footprint (as per Passivhaus plus). The benefit of setting a planning target based on the building footprint is that it will likely encourage building design to optimise solar PV generation before the design is fixed through planning approval.

Solar thermal is a little more complicated and, while this would offer some advantages, the decision to incorporate it will be more nuanced and therefore it would be harder to set a requirement other than to assess the opportunity for solar thermal in the energy strategy.

In the Tonbridge and Malling context, on-site PV electricity generation on new developments is likely to create a significant reduction in energy demand, due to the borough's high irradiance levels, in comparison to the rest of the UK. This, combined with PV as a tried and tested technology, makes requiring onsite PV a priority option for the Local Plan.

Energy Storage and Demand Management

Although they would not contribute directly to carbon reduction or reducing overall energy demands, the use of energy storage systems, both batteries and thermal storage, and demand management systems like smart meters and controllers can have a significant impact on building running costs and the impact on wider energy systems.

Both thermal stores, hot water cylinders and batteries can help to maximise the benefits of solar generation from solar thermal and PV systems respectively as well as enabling load shifting which will be increasingly important with the use of electric heat pumps. Coupled with dynamic pricing of power, which is now moving into the residential market, through the use of smart metering, they have the potential to make significant impacts on occupants overall running costs.

One of the key benefits of smart meters is improving transparency and user access to their own energy data, making it easier to identify areas of waste. Although it is not clear to what extent this affects user behaviour in the long term, the improved data collection could also facilitate the introduction of demand side response, and on a broader scale, help to balance energy demand and supply, which is particularly important at peak times. In

principle, therefore, these have the potential to reduce energy consumption. Initial studies on the success of smart meters in domestic properties indicate average savings of around 4% for customers fitted with smart meters compared to those without. It was seen in some cases that these savings could increase to 11% for homes installed with real-time display smart meters. The impact may be small, but smart metering can still offer wider benefits both to energy consumers and power companies, by providing a more detailed understanding of the quantity and timing of energy demands. This would be particularly beneficial for low income households and those in fuel poverty.

It would be difficult to mandate the use of specific systems but a viable policy option here would be to require developers to show that they have assessed the options for storage and demand management and the justification for the approach taken.

In the Tonbridge and Malling context, the implementation of energy storage would be beneficial to reduce the number of fuel poverty households. As of 2022, the total annual net affordable housing need in Tonbridge and Malling is calculated to be 283 houses per year¹⁰⁰ – which is approximately 34% of the total housing requirement of 839dpa for TMBC. Additionally, around 8.1% of households in Tonbridge and Malling live in fuel poverty¹⁰¹. The implementation of energy storage infrastructure and demand management systems could have a significant impact on reducing operational building costs, which would benefit the occupants in Tonbridge and Malling.

Embodied Carbon and Lifecycle Carbon

The manufacture and construction of buildings results in a significant amount of energy use, CO₂ emissions and other greenhouse gas emissions. Further CO₂ emissions will be produced from these buildings due to the materials and equipment required for maintenance, renovations and demolition. This assessment has not considered the Whole Life-Cycle (WLC) carbon emissions of the building stock in Tonbridge and Malling, which is outside the scope of this report. We can however demonstrate the significance of embodied carbon through housing averages. Embodied carbon can represent 30-70% of the total CO₂ emissions, as illustrated in Figure 34, which is adapted from the UK Green Building Council report.¹⁰² To reach Net Zero across the whole of the UK, it will be necessary to implement policies that address a broader range of emissions that occur over the building's lifecycle, at all stages of the supply chain.

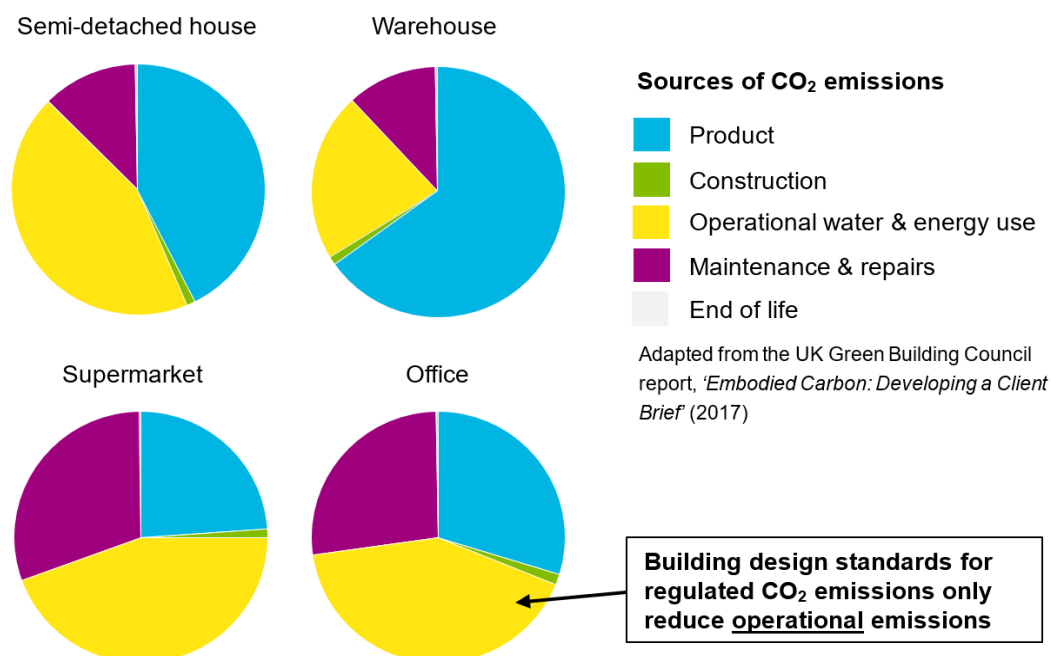


Figure 34: Illustration showing the relative proportion of CO₂ emissions from operational carbon (in yellow) compared with embodied carbon (other colours) over a 30-year period. Source: UK-GBC (2017)

Although not the focus of this study and currently not covered by Building Regulations, it is clear that embodied carbon already represents a significant component of the whole-life cycle carbon emissions of a building. This will only increase over time as the grid decarbonises and heating is electrified meaning that operational emissions

¹⁰⁰ [Housing Needs Assessment 2022 \(tmbc.gov.uk\)](https://www.tmbc.gov.uk/housing-needs-assessment-2022)

¹⁰¹ [Tonbridge and Malling - National Energy Action \(NEA\)](#)

¹⁰² UK Green Building Council, 'Embodied Carbon: Developing a Client Brief' (2017).

will reduce further. Though the embodied carbon supply chain is also expected to decarbonise it is less clear when and how quickly this can be achieved in practice. Further emphasising the importance of considering the fabric and building materials wherever possible.

The subject of embodied carbon is complicated and there is a much smaller existing evidence base and precedents for setting standards in this area. The GLA has recently introduced some requirements on whole-lifecycle carbon for major developments, but these are limited to assessing and reporting whole-lifecycle emissions, presumably with the intention of gathering data that could inform a stronger policy and targets in the future.

For TMBC, without substantial further work, opportunities to address embodied carbon within the Local Plan are probably limited to encouraging developers, potentially focusing on the most significant developments or those in which the Council has some involvement, to carry out an assessment of whole life-cycle carbon emissions as part of the energy strategy and show how they have considered and taken measures to minimise these.

It is important to consider embodied carbon in the retrofit, refurbishment, and conversion of older housing stock – as this is a significant source of carbon emissions that is largely overlooked. Historic England published a document regarding the importance of embodied carbon in retrofitting old homes¹⁰³, as the *'construction of a new home of the same size [as an existing older home] produces up to 13 times more embodied carbon than refurbishment.'* Also, the report emphasises the importance of developing robust carbon accounting methods and data, as these have a significant impact on the actions we take – for example, *'the embodied carbon burden of installing triple glazing rather than double glazing can be greater than the operational carbon emissions'*, but data would be required to determine the better option on an approximate case-by-case basis. As Tonbridge and Malling is home to a large number of historic assets, a proportional focus on embodied carbon in retrofit may be beneficial, where feasible.

Offsetting

In the context of building performance standards for new developments, carbon offsetting schemes have been developed by local authorities to provide an alternative route for developers to meet higher carbon reduction targets. In some cases this is used as a mechanism to deliver 'net-zero' development that would be very challenging to do through on-site measures. Some offsetting schemes, like the scheme currently operating in Milton Keynes, have been around for some time so there is a strong precedent. In addition to enabling a route to higher targets the schemes are used to generate funds that can be spent on other carbon reduction projects, particularly those that are challenging to fund like retrofitting existing buildings.

The principal critique of offsetting schemes is that they are effectively an accounting trick and might allow developers to avoid doing more on their developments if it is simpler and cheaper to pay into the offset. To ensure this is not practiced, it is required for other policies to set minimum on-site targets. A further challenge is that the funds generated may be used for projects that should happen anyway as part of wider decarbonisation schemes, which then require tests for additionality to address to avoid double counting.

There are a number of challenges around the creation and operation of these offsetting schemes. Firstly, they require a strong evidence base to support the price of carbon and justify this against the impact on the viability of the project. Another issue is the resource implications associated with running the offset fund, both in terms of assessing and collecting the payments from developers and spending the money to deliver the emissions reduction that are being offset. It can be very challenging to deliver a 1:1 ratio of carbon savings due to the high admin and delivery costs associated with the types of projects that such a scheme would need to fund given that these would need to ensure additionality i.e. not be projects that would happen anyway.

A further factor is that as carbon emissions associated with operational energy drop with the increase of renewable generation, the use of electric heat pumps and decarbonisation of electricity then the residual carbon emissions will be very small and could be zero after 2035 if the grid is fully decarbonised. As such the case for a scheme could disappear and the value of the funds collected might not represent good value for the effort involved, even if the price of carbon was increased.

Given the complexities around setting up an offsetting scheme and the uncertainties around the value of such a scheme given future changes to Building Regulations and the implications for residual carbon emissions we would suggest not progressing this as a policy option for the Local Plan.

¹⁰³ [Re-use and Recycle to Reduce Carbon \(historicengland.org.uk\)](https://historicengland.org.uk)

5.4.2 Existing Buildings

Existing buildings account for a significant amount of CO₂ emissions in Tonbridge and Malling, and therefore represent a key challenge when it comes to reaching the decarbonisation target. As set out in Section 3.249 the Local Plan will inherently have less influence over existing buildings than new buildings, but can include policies to encourage retrofit, and ensure that it does not act as a barrier. The Local Plan and associated guidance should emphasise the importance of carrying out energy efficiency upgrades and incorporating low and Zero Carbon technologies wherever possible, and make it explicitly clear that TMBC considers this to be a priority. TMBC should also ensure that any relevant guidance documents and evidence are kept up-to-date to reflect current policies and best practices. This could be incorporated into the Council's wider Climate Change Strategy work outside of the Local Plan.

Technical opportunities for installing energy efficiency measures in existing buildings will depend on the construction and existing fabric. Generally, it is not considered practical for existing buildings to improve insulation levels to match performance of new build standards due to spatial limitations (e.g. insufficient gap in a cavity wall), and practical considerations (e.g. cost or disruption to occupants). There is also a risk that poorly implemented retrofitting measures have unintended consequences, e.g. causing condensation and moisture issues in cases where no consideration has been given to breathability or ventilation, which suggests that standards need to be followed and the suitability of different types of retrofit considered with respect to the specific property. Nonetheless, it is always possible to improve the performance of the building to some extent, even if this simply means adopting low-cost, no-regret measures such as double or triple glazing, draughtproofing and loft insulation.

There are existing standards and approaches set out (e.g. BREEAM Domestic Refurbishment, Passivhaus / EnerPHit, or Energiesprong) that are applicable to existing buildings and could therefore be encouraged through planning policy or associated guidance. Although those generally represent best practice, they are often cost-prohibitive for individual property owners, and are unlikely to be widely adopted without significant Government incentives. However, TMBC could consider requiring these for major refurbishment schemes where planning permission is required.

More broadly, while it may be difficult for the Council to actively promote uptake through its role as a Local Planning Authority, it can passively promote uptake by loosening restrictions on certain energy and CO₂ reduction measures where appropriate. One option would be to adopt a presumption in favour of certain measures such as roof-mounted PV, air source heat pumps and external wall insulation, which could be done e.g. by issuing a Local Development Order (LDO) or otherwise extending permitted development rights, or implementing a 'fast track' that reduces the burden on applicants of submitting a full planning application.

However, it may be that the Local Plan is not best placed to address the existing building stock because this is mostly reliant on policies, programmes and funding from central Government. In the meantime, areas outside planning that TMBC could focus on include:

- Enforcing the Minimum Energy Efficiency Standards;
- Continuing to actively work to identify and secure funding for retrofitting measures; and
- Lobbying the Government to promote further improvements in this area.

The UK Green Building Council (UKGBC) has developed 'The Retrofit Playbook' for Local Authorities to advise on different methods for supporting residents in increasing the energy performance of their homes.¹⁰⁴ TMBC can refer to the Retrofit Playbook for further information.

¹⁰⁴ UK Green Building Council, 'The Retrofit Playbook' (2020). Available at: <https://www.ukgbc.org/ukgbc-work/driving-retrofit-of-existing-homes/>

5.4.3 Historic Environment

The historic environment and heritage assets are an important part of the character of the Tonbridge and Malling Borough, with approximately 1,400 listed buildings and structures¹⁰⁵ and 61 conservation areas, which all possess a strong and unique character. Retrofitting the historic environment is an important part of tackling climate change in the borough however the Local Plan has limited influence on retrofit.

Historic England has produced a large volume of guidance with regards to retrofitting historic buildings and heritage assets to comply with the UK's goal of becoming net-zero by 2050. Within the Historic England Climate Change Strategy¹⁰⁶, they state the following, which could be utilised by TMBC and incorporated into the Local Plan :

- By 2025, they will *'develop a toolkit that equips those who care for heritage to plan for and manage decisions where some loss or transformative change to heritage assets is unavoidable'*. This may be utilised by Local Plan Authorities that see the protection of heritage assets as a priority, as Tonbridge and Malling do.
- They will *'contribute to the third National Adaptation Programme (NAP) and gather evidence on how heritage can help society adapt to future climate conditions.'*
- *'Will identify, document and share solutions to common problems with climate change responses.'*

Additionally, Bath & North East Somerset Council have produced several Supplementary Planning Documents (SPDs) with regards to the historic environment. One of which is titled 'The Climate Emergency and the Historic Environment'¹⁰⁷, which aims to *'balance the need to save energy with the potential danger of damaging the structure or heritage value of the historic building'*, whilst advising *'a sensitive approach, maximising the use of strategies which don't harm the building's heritage value'*. For example, by implementing shutters and draft exclusion. This SPD advice is carried forward from Historic England guidance, similar advice could be used by TMBC to encourage best practice.

The Local Plan will have the greatest influence on new development as set out in Section 3.2 and therefore can only have limited impact on requiring retrofit to historic properties. However, as stated in the Historic England document "There's No Place Like Old Homes":

*'It is always assumed that new homes are only provided by new buildings. This is in fact not the case. There are more pre-1919 homes today than there were eight years ago. [...] On first glance this evidence appears counterintuitive, however it is through the conversion of existing historic homes into multiple dwellings and through the conversion of non-domestic historic assets into homes that our historic buildings continue to give.'*¹⁰⁸

The historic environment presents specific challenges and opportunities when promoting sustainability and this applies to Tonbridge and Malling. Every opportunity to reduce emissions and improve resilience should be sought when redeveloping historic buildings to provide new dwellings or commercial space.

TMBC produced a Heritage Strategy which states that heritage can be used as a tool to promote sustainability, and is important in promoting sustainable development policy, benefitting biodiversity and responding to new pressures introduced by climate change. One recommendation within the strategy is to ensure that the Local Plan policy regarding the Historic Environment is reflective of NPPF to enable sustainable development whilst ensuring the conservation and enhancement of heritage assets.

Historic buildings and built areas have an important role to play in reducing emissions, which is a key aim of Tonbridge and Malling's Climate Change Strategy. Climate change has the potential to affect the care and management of the historic environment, but by pursuing the Climate Change Strategy, heritage management regimes can aid in climate change goals, such as protection of historic green spaces and reuse of historic buildings. Flood defences and sensitively improving existing buildings may limit extreme weather damage and prolong desirable use of historic buildings.

¹⁰⁵ Protected trees, listed buildings and conservation areas – TMBC (tmhc.gov.uk)

¹⁰⁶ [Our Climate Change Strategy | Historic England](#)

¹⁰⁷ [The climate emergency and the historic environment.pdf \(bathnes.gov.uk\)](#)

¹⁰⁸ [There's No Place Like Old Homes: Re-use and Recycle to Reduce Carbon | Historic England](#)

5.4.4 Building Policy Options Summary

Application	Business as Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
Fabric Standards	Current fabric standards to 2026 (assuming transition period for Part L 2025) then Part L improved standards from 2026 onwards.	Stronger processes and requirement to specify fabric standards within the Energy and Climate Change Statement Standard methodology to quantify performance, more checking through the planning process. Improved checking through Planning and Building Control including requirement for an Energy and Climate Change Statement with standardised methodology. Support for developers and homeowners to make improvements to existing buildings through guidance and information.	As minimum but with specific target Space heating target less than 30 kWh/m2/yr for residential. Potential to go further and require Passivhaus standard on specific sites or self build plots
Heat source	Current building regulation standards to 2026 (assuming transition period for Part L 2025) then Part L improved standards from 2026 onwards.	Requirement to follow a heat hierarchy to prioritise heat pumps and require developers to provide evidence if choosing an alternative system Enforce hierarchy through the approval of energy strategies with some flexibility to assess on a site-by-site basis.	Low carbon heat requirement Requirement for all new developments to include low carbon heating, effectively banning gas boilers in advance of the Future Homes Standard.
Overheating	Overheating Assessment – Approved Document O	Require completion of the Green Homes Alliance Checklist or similar	Require additional modelling to be undertaken to assess the overheating risk
Onsite Low carbon generation	No requirement	Presumption of PV on all developments	Targets for minimum PV Requirement for developers to include PV and seek to maximise this on all sites (within technical and financial constraints) or to present a clear case where PV is

Application	Business as Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
			not installed. This could include setting specific targets for the minimum amount of PV to be installed, linked to the roof area or building footprint.
Demand management	No requirement	Encourage inclusion of demand management features in new development	Requirement to report on consideration of thermal storage, batteries and smart systems as part of Energy and Climate Change Statement. Support for developers on potential options through guidance and information Unlikely to be sufficient evidence to require hard targets
Whole-Lifecycle carbon	No requirement	Encourage whole life-cycle carbon assessments	Requirement to calculate and report on Whole-lifecycle carbon for larger schemes. Potential to use energy strategy process and guidance to support developers to look at options to reduce. Unlikely to be sufficient evidence base at the current time to require hard targets

Table 7: Summary of building climate change policy options

5.4.5 Policy Option Testing

For several of the policy options described above we have been able to model the potential impact on carbon emissions and energy demands to provide a comparative assessment. The outputs can be used to help inform the reasonable alternatives policy options appraisal within the sustainability appraisal as appropriate. We have used the same model described in Section 4 and the results are shown in Figure 35.

The model uses the locally derived housing requirement of 839 dwellings per year for the borough and the total commercial land need for 296,260 sq.m (69.8ha) across the plan period as set out in Section 4. Each scenario has been modelled separately, assuming the BAU3 scenario will also take place, which assumes that the grid will decarbonise as expected as that the Future Homes Standard and Future Buildings Standard will come into force from 2026.

For Tonbridge and Malling, a fabric-first approach is preferable. The Local Plan can require reductions in the space heating and energy demand from new development and to maximise energy efficiency. This may be achieved through the Future Homes and Future Buildings Standards or through other specific levels or standards such as Passivhaus.

Achieving the Passivhaus fabric standards and requirements for space heating and energy use would represent an overall better level of performance than the BAU3 scenario and therefore likely result in lower carbon emissions. For comparison, the model shows the impact of 100% of new developments meeting the Passivhaus standard and also, recognising potential viability issues, the impact of 10% of new development meeting the Passivhaus standard.

Due to the borough's high irradiance levels compared to the rest of the UK and recognising that it is a proven technology and policy requirement in other adopted Local Plans, the policy option of mandating onsite PV has been tested. It has been assumed that every house has installed a 3kWp system¹⁰⁹, each flat has a 1.5kWp system (as a share of a larger system) and 0.03kWp for commercial buildings. These are the average systems

Finally, the option for new development to install ASHPs irrespective of the Future Homes Standard has been modelled.

Table 8 sets out each of the separate scenarios modelled, Further information on the modelling assumptions can be found in Appendix B.

Scenario Ref	Details
BAU 3	Business as usual assuming all new developments meet Part L 2025 (FHS) from 2026 (allowing for a transition period) with the Electricity CEF varying in line with the BEIS trajectory throughout the local plan period (2026-2041).
ASHP	All new developments in BAU3 scenario install Air Source Heat Pumps from 2026 ¹¹⁰ throughout the local plan period.
On-site PV	All new developments are required to install onsite PV
PH10%	10% of new developments meet the Passivhaus standard
PH100%	100% of new developments meet the Passivhaus standard

Table 8: Building policy option scenarios defined for testing

Each scenario has been tested independently assuming the BAU3 scenario will also take place and the annual carbon emissions are shown in Figure 35. The graph also shows the expected decarbonisation of the electricity grid shown as the carbon factor relating to the generation of electricity CEF¹¹¹ on the right-hand axis.

¹⁰⁹ Roughly the equivalent to the electricity consumption of a large two-bedroom or small three-bedroom home

¹¹⁰ In practice this would include all electric heat pump solutions, however, for illustration the performance specification for ASHPs only has been modelled.

¹¹¹ [Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/green-book-supplementary-guidance-valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal), Data tables 1 to 19: supporting the toolkit and the guidance, Table 1

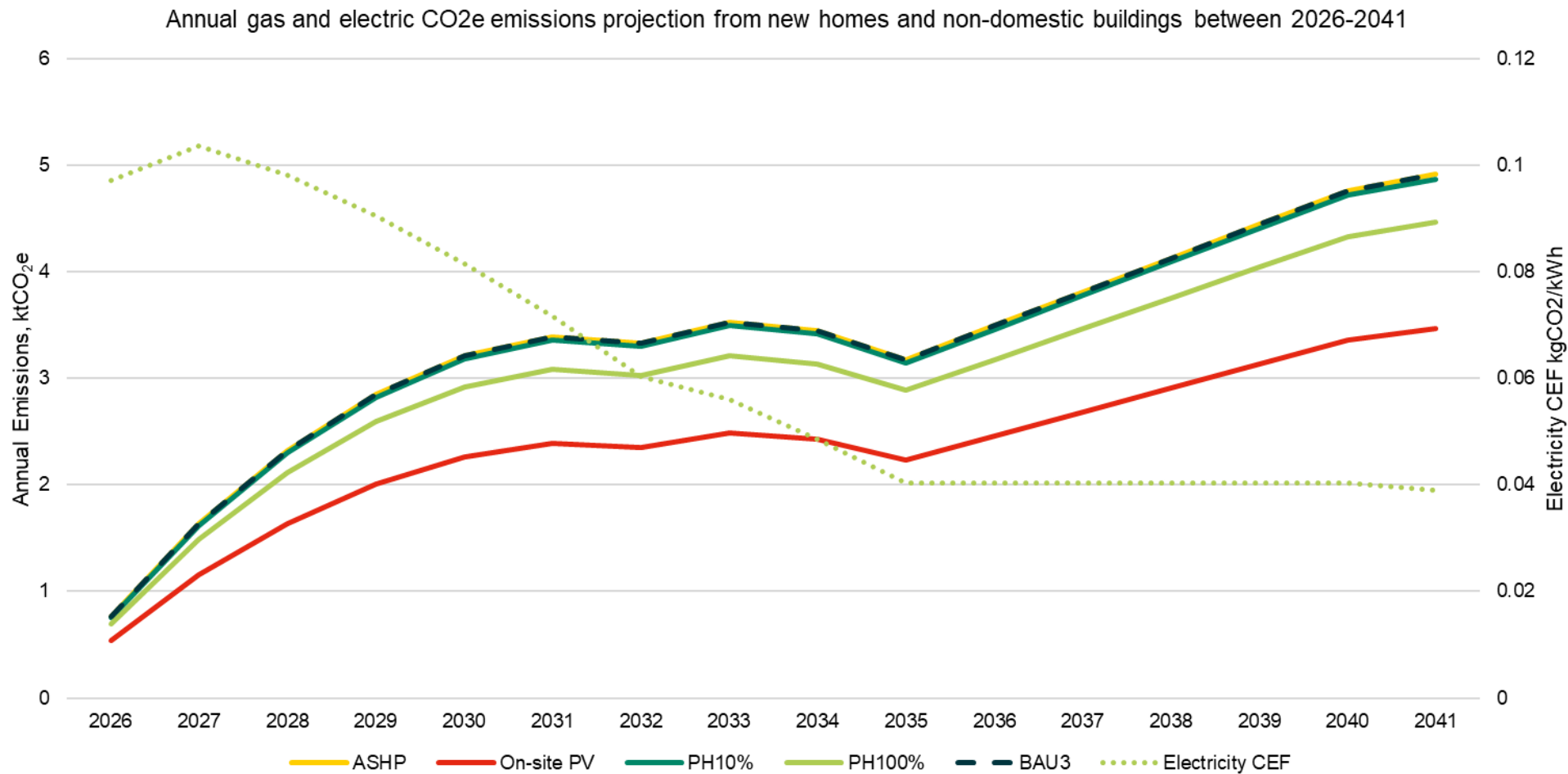


Figure 35: Annual carbon emissions associated with the new development anticipated during the Local Plan period under different policy options

Figure 35 shows that all the policy options tested will result in lower or similar carbon emissions compared to the BAU3 scenario.

The ASHP scenario will have a similar impact to the BAU3. This is because BAU3 assumes that the Future Homes Standard and Future Buildings Standard will come into force as the Local Plan is adopted in 2026. It could be argued, therefore, that a policy requirement for heat pumps to be installed in all new development is defunct and would be repeating national policy, and this could be the case. However, as stated previously, the rollout of the Future Homes Standard is not certain, it could be delayed or delivered differently from how it is currently planned. Requiring a new development to install heat pumps through the Local Plan would ensure that the borough will benefit from the carbon emission impacts of installing heat pumps throughout the plan period irrespective of changes in building regulations.

The two Passivhaus scenarios both show a decrease in carbon emissions compared with the business-as-usual scenario. This is because the space heating and energy use standards in the Passivhaus Standard are more stringent than those within the Future Homes Standard leading to a lower level of carbon emissions. The Passivhaus 10% scenario is more similar to the BAU3 as, although the standards are lower, this will only apply to 10% of the new development, as expected the Passivhaus 100% scenario results in a lower level of emissions.

The requirement for onsite PV to be installed in all new developments (Average 3kWp for houses, 1.5kWp for flats and 0.03kWp for commercial) has the greatest impact on carbon emissions compared to BAU3. It should be noted that all the scenarios tested assume that the Future Homes and Future Building Standards will also be in place. Therefore, in the PV scenario, space heating and energy use requirements will already be lower than currently in place, but the electricity used will be from a mix of the onsite PV and the grid (assuming decarbonisation) resulting in lower carbon emissions overall. This model also assumes that the majority of the new housing built in Tonbridge and Malling will be houses rather than flats, resulting in lower density and greater roof space. It has also been assumed that PV will be installed on commercial developments which will have a positive impact.

Figure 36 shows the impact of the policy options cumulatively over the plan period.

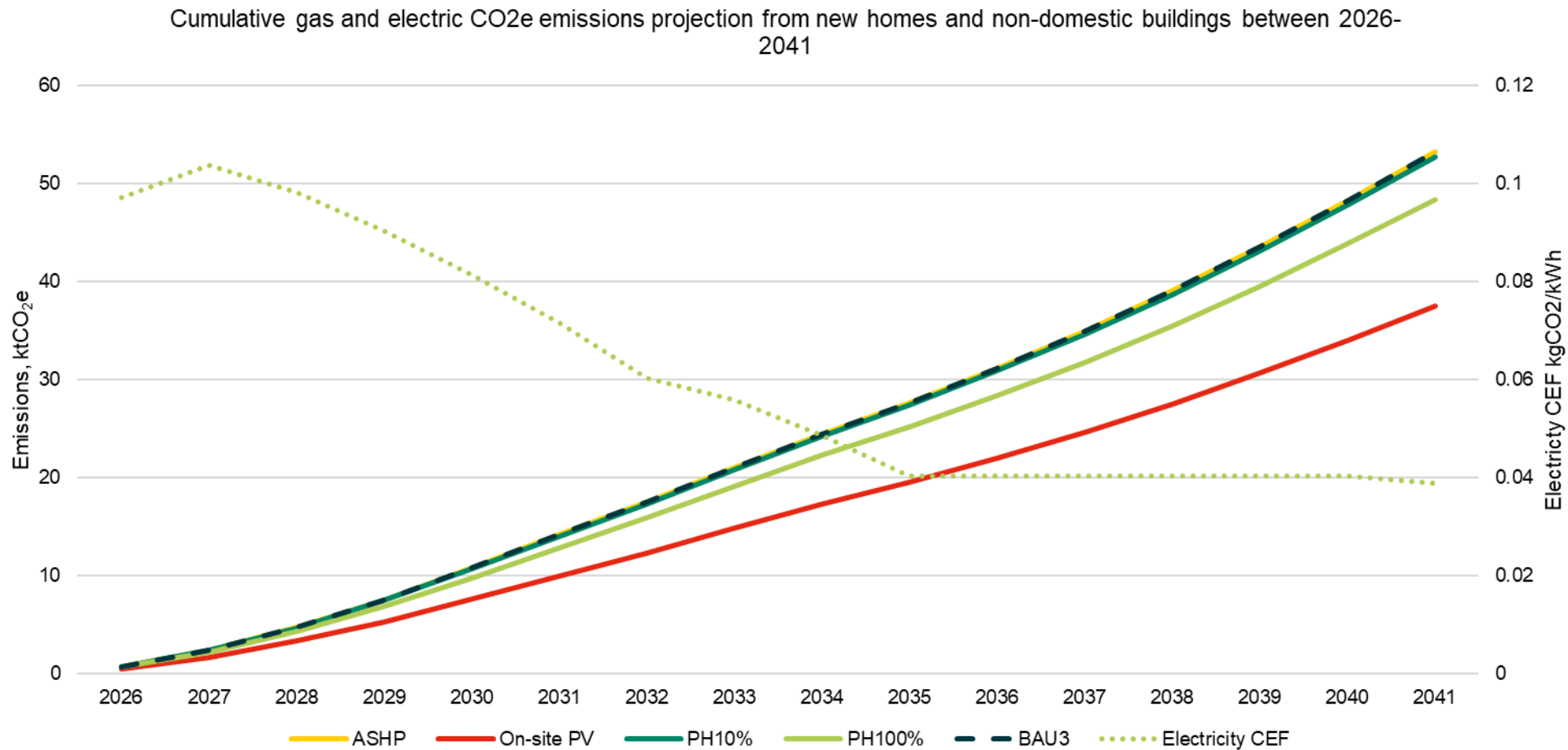


Figure 36 Cumulative carbon emissions associated with the new development anticipated during the Local Plan period under different policy options

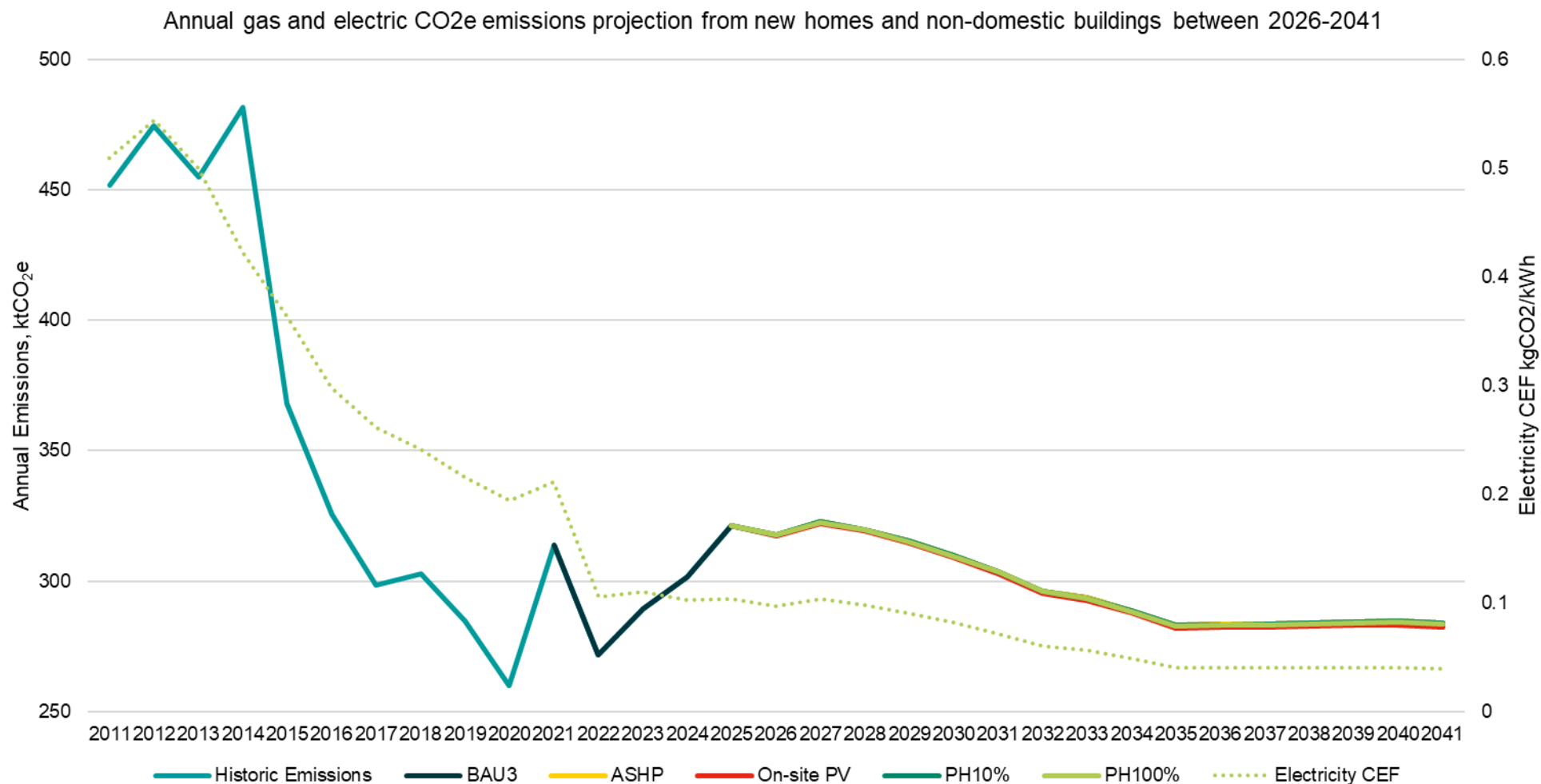


Figure 37 Borough-wide annual domestic and commercial carbon emissions associated with the new development anticipated during the Local Plan period under different policy options

Figure 37 shows the impact of the different policy options on the wider borough domestic and commercial emissions annually. The graph shows the limited impact the different Local Plan policies will have on the borough domestic and commercial emissions. At the borough scale each scenario provides a similar level of emissions reduction again showing the limited impact that new development delivered in the local plan can have on the wider borough emissions.

The graphs above demonstrate that the key measure is the adoption of heat pumps. Although this is assumed to be part of the requirements of FHS as this is still to be confirmed. There is some potential risk around the final set of requirements and when this would come into force and be implemented, given the likelihood of some transition period. As such a policy to require heat pumps would provide some insurance against these risks.

The next most significant measure is the requirement to install PV. Currently the indicative FHS/FBS specification suggests that PV may not be required as part of compliance with these standards. As shown in the policy option testing above, PV would have the most significant impact on carbon emissions compared to all other options. Passivhaus standards also deliver other benefits in terms of both better internal comfort and greater confidence in real world performance, but further work might be required to determine how best to apply these to manage impact on viability alongside other requirements.

Each of the scenarios have been modelled separately to allow comparison, however, the Local Plan could require a combination of policy options, such as a proportion of Passivhaus, or setting a low energy use and space heating standard in combination with onsite PV generation. Combination options could result in lower emissions overall, but multiple requirements will need to be balanced against viability and other Local Plan priorities.

An area-wide standard could be adopted if the viability allows or a higher standard could be set where there are greater influence or higher viability such as larger schemes, those on greenfield site or particular areas of the borough as identified through a viability study.

5.5 Transport

5.5.1 Active Travel

Transport is responsible for the largest share of carbon emissions within the Tonbridge and Malling Borough. The location of new development directly contributes to carbon emissions from transport. To address this, the location and overall layout of a development should ensure that a mix of amenities are within easy walking or cycling distance of peoples' homes, to minimise the amount of travel required and to increase the potential for low carbon travel options. In addition, wherever possible, developments should provide access to a range of public transport options such as bus and rail services. This should be reflected in the Local Plan spatial strategy.

Transport emissions can also be reduced through careful design and by encouraging a switch to active travel modes. The design and layout of developments should provide safe and attractive pedestrian and cycle routes that link destinations both within, and between, neighbourhoods or developments. This should include making the most of existing connections and incorporating infrastructure to enable active travel to be a genuine alternative. Routes should be well designed and incorporate green infrastructure to encourage their use and promote health and wellbeing.

TMBC is preparing an Active Travel Strategy, in accordance with Government technical guidance. It identifies priority routes to make cycling and walking easier and safer. New developments should help to deliver and connect to these routes either through onsite infrastructure if appropriate or through financial contribution.

The Local Plan should promote Active Travel through the design of new development and both the development of new and upgraded transport infrastructure. Development within existing urban locations that have access to good public transport, cycling and walking infrastructure and essential amenities is likely to lead to lower emissions associated with private vehicles. Larger new settlements may be able to support more public transport and local amenities than smaller more sporadic development in rural areas. As well as reducing vehicle movements and associated carbon emissions, active travel measures will also improve air quality, public health and enable people to save money. In practice this means ensuring good walking and cycling connectivity to schools and amenities. As of 1st June 2023, Active Travel England is officially a statutory consultee on all planning applications for developments equal to or exceeding 150 housing units, 7,500 m² of floorspace or an area of 5 hectares¹¹².

5.5.2 Low Emission Vehicles

Although, cycling and walking will be the preferred method of travel with regards to reducing emissions, it is recognised that vehicle transport will still be necessary especially in a rural borough such as Tonbridge and Malling with limited public transport or active travel options, therefore it is important to encourage the transition to ultra-low emission vehicles (ULEVs) wherever possible.

Electric vehicles will play an important role in the transition away from combustion engines, Tonbridge and Malling is a relatively affluent borough¹¹³ with currently the highest number of electric vehicle ownership in Kent and an increasing level of ownership each year¹¹⁴, indicating both the means and appetite to switch to ULEVs. However, the shift to electric vehicles will rely on a significant increase in the availability of charging infrastructure and will put additional pressure on electrical power networks. One of the key constraints to adoption of ULEVs, particularly plug-in electric vehicles, is the availability of suitable charging infrastructure. Although the Council cannot directly require consumers to purchase ULEVs, they can help to support uptake through ensuring charging facilities are installed in new developments and in Council-owned parking spaces. The recent changes to Building Regulations now ensure that new developments have EV charging points installed. Part S – Infrastructure for charging electric vehicles requires the installation of charging points in the following circumstances:

- **New residential homes** - each home with onsite parking must have its own charging point.

¹¹² <https://www.gov.uk/government/news/active-travel-england-to-be-consulted-on-all-large-planning-applications>

¹¹³

<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/datasets/placeofresidencebylocalauthorityashetable8>

¹¹⁴ VEH0132 <https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables>

- **New residential buildings with parking in a covered car park** – each dwelling with a parking space must have a charging point.
- **Buildings converted for residential use and which have a car park** – each dwelling with a parking space must have a charging point.
- **Residential buildings undergoing major renovation work which will have more than 10 parking spaces** – each dwelling must have one charging point and all other parking spaces cable routes.
- **New non-residential buildings with more than 10 parking spaces** – must have a minimum of 1 charging point and cable routes for at least 20% of the remaining spaces.
- **Mixed-use buildings** - the requirements for residential buildings above and non-residential buildings above apply. Calculations are required based on the number of parking spaces designated for use by the respective classes of occupant.

Local authorities could still impose a greater provision, and type, of charging points from a range of different developments and can also facilitate public charging facilities to serve existing communities. These could vary by location, for example developments with more limited access to sustainable forms of transport may benefit from additional charging points above the minimum in order to maximise the potential for users to swap to electric cars from traditional combustion engines. The Local Plan could ensure that all car parking spaces must have access to charging infrastructure and increase the provision for non-residential buildings either by lowering the threshold from 10 or by increasing the minimum number of points. Installing electric vehicle charging will increase the electricity consumption from new development (compared to no household EV charging). The installation of Solar PV could help to generate electricity which can be used for electric vehicle charging.

This study considers how the Local Plan can help to address climate change and does not consider technical transport related information or modelling. Additional evidence could be carried out to ascertain in more detail the quantity, type and location of charging points to best serve the borough. This could also be incorporated into the Council's transport evidence base work.

5.5.3 Vehicle Parking Standards

Another method to reduce car use is to use car parking standards as a way of reducing car use in highly sustainable locations where there is a wide range of amenities and good public transport connections and therefore where there is less requirement for private vehicles. Given the nature of Tonbridge and Malling Borough this might be limited to specific developments within the main settlements and would need to make provisions for people with reduced mobility.

5.5.4 Air Quality

Air Quality issues within Tonbridge and Malling Borough mainly arise from transport emissions and there are opportunities for co-benefits. For example, where a development may have air quality implications due to combustion vehicle movements there is an opportunity to integrate additional active travel principles as a mitigation measure which will help to reduce pollutants and also carbon emissions. This should be reflected in the Air Quality Action Plan.

However, there are other potential air quality issues arising from PM2.5 emissions especially in a rural area where biomass burning systems are likely to be in use. Air Quality assessments should be required where appropriate to identify any potential issues and potential avoidance and mitigation measures. The findings should be incorporated into the design of the scheme, either through layout changes or through including the necessary mitigation measures.

5.5.5 Transport Policy Options Summary

Application	Business As Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
Electric Vehicle charging Infrastructure	Building Regulations require some provision of EV charging infrastructure in new development and redevelopment of car parking	Higher EV Charging Infrastructure requirements for both private and public charging on new development sites Better monitoring and checking of compliance	Allocate land for EV public charging hubs including publicly owned land, existing sites and new sites. Require rapid charging (min 50kW) to be installed in all public car parks and fuelling stations. All new and renovated car parking spaces for residential and non-residential development to have EV charging facilities, also applies when any electrical work is undertaken on an existing car park or associated building.
Active Travel – cycling and walking	Active Travel and infrastructure for cycling and ULEV is generally supported in national policy	Require new developments to demonstrate that active travel has been fully incorporated into the design including, delivery of and connections to, routes identified in the Active Travel Strategy.	Higher standards for cycling and walking including all roads to have cycle lanes and adequate pavements. All new development to include adequate secure cycle storage in line with BREEAM standards. New and refurbished commercial development to include secure cycle storage and showering facilities. Identify potential strategic cycling infrastructure improvements within the Local Plan. Prioritise cycling and walking infrastructure projects in the Infrastructure Funding Schedule.
Parking standards	No additional standards	No additional standards	Reduce car parking provision and require new public transport provision. Maximum parking standards for restricted provision to encourage cycling and walking and public transport. Best implemented in conjunction with active travel and in locations close to public transport hubs. No car parking provision in the most sustainable locations close to public transport hubs
Transport Carbon Emission Assessment	No requirement	Demonstrate sustainable travel principles. Require new development and change of use to demonstrate how sustainable travel principles have been incorporated into the design	Requirement to calculate and report on transport carbon emissions for larger schemes. Support for developers on potential options to reduce emissions.
Public Transport and shared transport clubs	No additional standards	Improved public and shared transport provision where possible	New public and shared transport provision for new developments as appropriate Developments should make provision for mobility hubs for shared bike/car use either to be delivered immediately or to meet future needs. Include public transport provision in new development and consider ways to encourage use such as vouchers and tokens for residents. All major developments should incorporate a car and/or bike/e-bike club. Could be applied to sites outside of existing settlements on basis of greater opportunity and need to offset higher embodied carbon emissions.
Air Quality	Environment Act 2021 targets to reduce particulate matter, national policy promotes the improvement of air quality.	Local policy requirement to undertake an air quality impact assessment for developments not already covered by national policy but considered locally significant as advised by the environmental health team.	Incorporate measures to avoid and mitigate air quality issues and ensure these align with reducing carbon emissions. Consider restricting the use of biomass burning systems unless it can be demonstrated that they will not have an impact on air quality

Table 9: Summary of Transport Policy Options

5.6 Infrastructure and Land Use

5.6.1 Infrastructure

A transition to a low carbon borough will involve a change in the way existing infrastructure is used and may require new infrastructure. The Local Plan must be accompanied by an Infrastructure Delivery Plan setting out the infrastructure needed to deliver the policies, objectives, and vision of the Plan. For climate change mitigation this could include:

- Potential electrical infrastructure upgrades to move away from fossil fuel transport and heating systems to electrical alternatives
- Renewable energy generation and storage infrastructure
- Low carbon heat networks
- Public transport infrastructure
- Cycling and walking infrastructure

This infrastructure will not only support new low carbon development but also help existing communities to transition to lower carbon alternatives such as heat pumps and electric vehicles.

Large development allocations should incorporate infrastructure which will help the development to be low carbon, this includes local renewable energy generation, heat network potential, active travel, and electric vehicle charging. The Local Plan can also allocate land for new infrastructure, identify areas suitable for renewable energy generation and storage or electric vehicle charging. TMBC can identify these types of infrastructure as a priority through the Infrastructure Delivery Plan and the Infrastructure Funding Statement.

Land allocation will also be a significant issue given a likely increase in competing demands on land to support measures to address carbon mitigation and adaptation including:

- Land for large scale renewable energy generation including solar farms and wind turbines
- Land for supporting energy infrastructure including power transmission, distribution and storage systems
- Land for ecological enhancement to deliver multiple objectives including carbon sequestration
- Land for dealing with climate adaptation risks such as river catchments
- Land for agriculture and food

Future national planning policy and requirements are likely to increase the focus on balancing the competing demands for land and identifying and assessing the best use of land for meeting different objectives.

5.6.2 Renewable Energy Generation and Storage

A renewable energy assessment can be used to identify the potential for delivering solar PV and wind turbines across the borough. The outputs of the assessment can be included as policy options for the emerging Local Plan including where sites can be identified and allocated within the Local Plan for renewable energy generation and storage. The evidence can also be used for Development Management to help assess planning applications.

The NPPG for Renewable and Low Carbon Energy promotes the encouragement of community initiatives, as a way of providing positive local benefit from renewable energy development¹¹⁵. Community-led renewable energy developments could be utilised in Tonbridge and Malling, due to the rural nature of the borough – with several small communities spread over a wide area.

¹¹⁵ NPPG Paragraph: 004 Reference ID: 5-004-20140306

5.6.3 Infrastructure and Land Use Policy Options Summary

Application	Business As Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
Renewable generation	National policy supports infrastructure improvements. National Policy generally supports renewable energy generation and storage.	Identification of renewable energy potential Development management policy to support suitable renewable energy projects in appropriate locations.	Specifically allocate land for renewable energy projects during the plan period.
Heat Networks	No requirements	Policy and Active support for developing heat network zones	Safeguarding sites to support heat network zone development

Table 10: Summary of infrastructure and land use policy options

5.7 Green Infrastructure and Biodiversity

The effects of a changing climate impact on species, habitats and ecosystems while, in turn, nature-based solutions contribute to climate change mitigation and adaptation, supporting biodiversity and resilient ecosystems. Green infrastructure (GI) is defined in the NPPF as “A network of multi-functional green and blue spaces and other natural features, urban and rural, which is capable of delivering a wide range of environmental, economic, health and wellbeing benefits for nature, climate, local and wider communities and prosperity”. GI spans the whole of the borough, regardless of land ownership. Well designed and managed GI generates multiple benefits for people and nature and creates greener, healthier places to live that supports a more productive economy.

The importance of GI is embedded in national and local legislation and has become imperative to providing environmentally sustainable development. The NPPF identifies that Local Plans should take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure. Strategic policies can identify the location of existing and proposed green infrastructure networks and set out appropriate policies for their protection and enhancement. Improvements can then be delivered as part of new development, upgrading of existing GI, and retrofitting of new GI in areas where provision is poor.¹¹⁷

5.7.1 Green Infrastructure

A wide range of tools for analysing green infrastructure (as well as ecosystem services and natural capital) have been developed. These can be used by developers to assess the impact of development proposals on green infrastructure.

In February 2023 new best practice guidance, standards and principles for Green Infrastructure were set out in the Natural England Green Infrastructure Framework. This is a commitment in the Government's 25 Year Environment Plan and supports the greening of our towns and cities and connections with the surrounding landscape as part of the Nature Recovery Network. Networks of green and blue spaces and other natural features can bring big benefits for nature and climate, health and prosperity. At present access to green and blue spaces varies considerably across the country, and there are opportunities for these important assets to be better managed for the environment and to deliver a wider range of multifunctional benefits.

The GI Framework can help local planning authorities and developers meet requirements in the National Planning Policy Framework to consider GI in local plans and in new development. It can support better planning for good quality GI and help to target the creation or improvement of GI, particularly where existing provision is poorest.

Local authorities can self-assess their green infrastructure against the Green Infrastructure Standards. There is also guidance available to help local planning authorities develop green and blue infrastructure strategies, delivery plans and policies. It is expected that the forthcoming Green Infrastructure Strategy will provide such localised evidence for Tonbridge and Malling. Similarly, there are also several different accreditation systems that have a role in providing routes for verification and drivers for good quality green infrastructure. These mostly provide voluntary mechanisms to improve the delivery of multifunctional green infrastructure at a variety of scales. Examples include Green Flag Award; Country Park accreditation scheme; Building Research Establishment Environmental Assessment Method (BREEAM); Building for a Healthy Life and Building with Nature Award.

5.7.2 Building with Nature Standards Framework

The Building with Nature (BwN) Standards Framework is the UK's first green infrastructure benchmark, developed as part of a Knowledge Transfer Partnership (KTP) between Gloucestershire Wildlife Trust and the University of the West of England.¹¹⁸ The BwN Framework also includes an assessment and accreditation process that planners and developers can use to verify that high quality green infrastructure is being delivered, whilst Local Planning Authorities can use it as a tool to measure the quality of GI and reduce uncertainty throughout the planning process. All whilst maximising benefits for both people and the natural world.

A BwN Award requires a plan or development to meet twelve Standards. This demands that users take a holistic approach to preparing a high-quality green infrastructure proposal, one that considers the interactions and interdependencies of the themes the Standards convey. The 12 Standards include six Core Standards and three

¹¹⁷ Green Infrastructure Framework, Natural England (2023) Available at:

<https://designatedsites.naturalengland.org.uk/GreenInfrastructure/WhatsGreenInfrastructure.aspx>

¹¹⁸ User Guide for Development (BwN 2.0), Building with Nature (2022)

themes, Wellbeing, Water and Wildlife, containing two Standards each. Collectively the Standards distinguish the green infrastructure approach from a more traditional approach to the design and delivery of open and green space, helping development serve as a positive driver of meaningful and longer-term benefits for people and the environment.

CORE Standards	WELLBEING Standards	WATER Standards	WILDLIFE Standards
Standard 1 - Optimises Multifunctionality and Connectivity Standard 2 - Positively Responds to the Climate Emergency Standard 3 - Maximises Environmental Net Gains Standard 4 - Champions a Context Driven Approach Standard 5 - Creates Distinctive Places Standard 6 - Secures Effective Place-keeping	Standard 7 - Brings Nature Closer to People Standard 8 - Supports Equitable and Inclusive Places	Standard 9 - Delivers Climate Resilient Water Management Standard 10 - Brings Water Closer to People	Standard 11 - Delivers Wildlife Enhancement Standard 12 - Underpins Nature's Recovery

Table 11: Building with Nature Standards Framework

The Standards complement planning policy and are consistent with Natural England's National Green Infrastructure Framework. They can be used to assess and accredit a single development or multi-phase development. Though typically it is applied to green infrastructure projects allied to some form of property-led development in the UK, i.e. residential, commercial, or mixed-use development.

An application for an Award (i.e. Accreditation) can be made at any stage in the development process and the type of Award is determined by the development stage. For example, a scheme that is being submitted for outline planning approval can be supported by a BwN design award, whilst a reserved matters application may be supported by a full award. Applicants are advised however, to work with the Standards as early as possible to maximise the benefits of doing so in the most cost-effective way.

Further details regarding the BwN Framework and the accreditation process can be found here:

www.buildingwithnature.org.uk

Policies requiring the incorporation of the Building with Nature Design standards exist in other Local Plans, such as the Tewkesbury Borough Plan, and the Blackburn with Darwen Local Plan. The Tewkesbury Local Plan require new major development to 'provide a high standard of design for green infrastructure in accordance with established, recognisable standards – including the National Design Guide and Building with Nature Standards' In order to future proof the policy requirement should the BwN standards change we would suggest adopting a similar approach or adding "or similar accreditation" in any policy wording.

5.7.3 Living Roofs and Walls

Green roofs are an essential sustainable design consideration and can take many forms in order to maximise their benefits in a given location. Vegetated roofs, including terraces and gardens, can improve the thermal performance of the building, reduce the urban heat island effect, support sustainable urban drainage by absorbing rainfall to reduce flooding, enhance biodiversity, provide amenity for residents who may not have access to private gardens, provide opportunities to grow food and improve appearance.

All organisations involved in the planning, design and delivery of green infrastructure must collaborate to identify the types of green roofs and walls that would best provide the required functions or benefits. For example, The German Landscape Research, Development and Construction Society (FLL), and the Green Roof Organisation (GRO) Code of Practice 2021, divides green roofs into two major categories: intensive and extensive. These terms refer to the intensity of maintenance required.

Similarly, green walls can be divided into green façades (climbing plants) and living walls (intensive green wall systems that are composed of textiles, modules, pockets, or troughs). Any attachments to external walls, including green walls, should be considered as part of a fire risk assessment and specialist advice on fire risk should be sought.

5.7.4 Biodiversity Net Gain

The GI Framework works alongside mandatory Biodiversity Net Gain (BNG), which has been adopted in England, with it being government policy that *'planning decisions should minimise impacts on and provide net gain for biodiversity'*¹¹⁹. The Environment Act¹²⁰, granted Royal Assent November 2021, includes provisions to make BNG a mandatory requirement within the planning system in England. Amendments to the Town and Country Planning Act 1990, anticipated to occur in early 2024, will require major developments to achieve a minimum 10% net gain in biodiversity units relative to the site's baseline biodiversity value, this assessment being quantitative, making use of a biodiversity metric calculator. These place a duty on public authorities in England to conserve biodiversity, which includes restoring or enhancing species populations or habitat.

5.7.5 Local Nature Recovery Strategies

Local Nature Recovery Strategies (LNRSs) are new locally led, mandatory spatial strategies for nature required by the Environment Act 2021. LNRSs are tools designed to drive more coordinated, practical, and focused action to help nature and establish the Nature Recovery Network. The strategies are intended to work closely alongside other measures in the Act to support delivery of mandatory biodiversity net gain and provide a focus for a strengthened duty on all public authorities to conserve and enhance biodiversity. They will also help to develop partnerships and to integrate nature into our incentives and land management activities.

Kent and Medway will be covered by one LNRS. Kent County Council is the responsible authority, as appointed by the secretary of state. Regulations and guidance for LNRS was published at the end of March 2023 and the Making Space for Nature in Kent and Medway Project that will develop the strategy launched in October 2023.

¹¹⁹ UK Government (2021). [National Planning Policy Framework](#)

¹²⁰ UK Government (2021). [The Environment Act](#)

5.7.6 Carbon Sequestration

Carbon sequestration is the process of capturing and storing atmospheric carbon dioxide. This can occur naturally through natural carbon storage such as forests, grasslands, soil and bodies of water. The Local Plan can include policies to help increase levels of natural sequestration through increasing and targeting onsite green infrastructure, protecting existing carbon sinks and even identifying land specifically for sequestration. Carbon sequestration measures can be combined with green infrastructure and biodiversity net gain.

Tonbridge and Malling has existing tree canopy coverage that is higher than the national average¹²¹, which acts as a natural carbon sink for sequestration, as well as providing biodiversity benefits. It is important that the existing canopy cover is retained, and is unaffected, where possible, by new development. It should be noted that carbon sequestration through natural process is extremely unlikely to fully mitigate the carbon emissions from development. In other areas of the UK, increasing land use for carbon sequestration may have more of an impact, but for Tonbridge and Malling, even having some of the highest canopy coverage in Kent, there is still opportunity to accomplish more, especially as there are positive co benefits for wildlife and biodiversity, whilst recognising the limitations for capturing carbon emissions. Kent Wildlife Trust are working with partners to increase sequestration in the county as part of the Wilder Carbon Standard¹²², which *'is a mechanism to tackle both the climate and biodiversity crises by achieving carbon sequestration and/or reduced emissions of greenhouse gases through the creation of new native habitats.'*

¹²¹ <https://www.tmbc.gov.uk/climate-change/read-tree-charter/2>

¹²² [Wilder Carbon Standard V2](#)

5.7.7 Green Infrastructure and Biodiversity Policy Options Summary

Application	Business As Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
Biodiversity Net Gain	Mandatory 10% biodiversity net gain under the Environment Act.	Specifically allocate land for BNG offsetting	Deliver 20% BNG, where feasible.
Onsite green infrastructure	National Policy supports green infrastructure in new developments	Multifunctional green infrastructure will be integrated within developments	All major development proposals must demonstrate a net gain in green infrastructure; linking, enhancing and extending existing green infrastructure assets, and creating new ones.
Habitat connectivity	No requirements	Conserve habitats, species and sites, delivering enhancement and creation of ecological networks.	Development that would impact on the strategic ecological network causing fragmentation will not be permitted.
Green roofs and walls	No requirements	The LPA promote the use of roof, wall and site planting on development sites.	All major development proposals should be designed to include roof, wall and site planting,
Tree Canopy Coverage	No requirements	Existing hedgerows and trees are buffered and integrated into development proposals. Any removal should be justified and replaced on site with appropriate planting of an equivalent scale.	Deliver a 20% net gain in tree canopy cover, within the public realm, across the development site.
Green Infrastructure Standard	No requirements	Encourage the use of Natural England Standards and Principles, as well as other tools such as the Building with Nature Accreditation.	All major schemes to gain a Building with Nature accreditation
Carbon Sequestration Sites	No requirements	Policy support for sequestration elements within developments and through individual projects Support sequestration in new development as part of the green infrastructure plan for the scheme. Support carbon sequestration projects Work with partners to develop carbon sequestration projects, identify specific projects in policy.	Allocate land for carbon sequestration Taking account of evidence base documents including the biodiversity and landscape assessments, specifically allocate land for carbon sequestration projects during the plan period.
Carbon sequestration potential	No requirements	Require a before and after assessment of carbon sequestration for proposals Requirement for developers to assess the carbon sequestration potential of the site before and after the proposed development and show how the masterplan has been designed to address this	Assessment and offsetting of carbon sequestration loss and loss of potential improvement Potential to take this further to assess what could otherwise have been delivered on the site and the potential to set up an offset scheme that could support other carbon sequestration projects.
Offsetting	No requirements	Carbon offsetting policy Require promoters to demonstrate how any remaining carbon emissions from new development have been offset through projects within the borough.	Carbon offsetting financial contribution Collect a financial contribution via an appropriate legal agreement of a value sufficient to enable the LPA to offset any remaining carbon emissions from new development.

Table 12: Summary of green infrastructure and biodiversity policy options

5.8 Water Management and Flooding

Tonbridge and Malling Borough has a history of documented flood events from several sources of flood risk. Flood records indicate that the main source of risk is from fluvial sources across the River Medway, and its tributaries, notably the River Bourne, Botany Stream, Mill Stream, and Alder Stream. Historic records also indicate that Tonbridge and Malling Borough has experienced several surface water/drainage related flood events, which have been attributed to a range of sources. The primary source of surface water flooding was attributed to heavy rainfall overloading highway carriageways and paved areas, drains and gullies, but other sources of flooding were perceived to be from blockages and high-water levels impeding free discharge from surface water drains and gullies.

Unsustainable development practices can contribute to flooding through increased impermeable surfaces, altered natural drainage patterns, and the removal of vital green spaces that absorb excess water. To address these concerns and create a more sustainable approach to water management, the local development plan can incorporate the following principles:

5.8.1 Sustainable Drainage Systems (SuDS) and Flood risk assessment

The Local Plan should require the incorporation of Sustainable Drainage Systems (SuDS) in new developments, ensuring that they manage surface water in a sustainable manner. SuDS mimic natural drainage processes, allowing rainwater to be absorbed into the ground, reducing the risk of surface water flooding and enhancing water quality. This would encourage developers to integrate features such as permeable paving, green roofs, and retention ponds to help mitigate flood risks.

Developers can be required conduct comprehensive flood risk assessments for all proposed developments, particularly in flood-prone areas. These assessments should consider future climate projections to anticipate potential flooding risks over the long term. Where necessary, developments can be encouraged to include flood-resistant building design and elevation measures to protect against rising water levels.

5.8.2 Natural Flood Management

Compared to flood defences and flood storage, floodplain restoration represents the most sustainable form of strategic flood risk solution, by allowing watercourses to return to a more naturalised state, and by creating space for naturally functioning floodplains working with natural processes. Natural flood management (NFM) schemes are also an effective method of reducing the impact of flooding whilst also having positive benefits for landscape and biodiversity.

5.8.3 Water Efficiency and Harvesting

The projected trends highlight the importance of effective drought risk management strategies. In order to protect water supplies for the future the UK government is encouraging local authorities to adopt a tighter standard of 110litres/person/day for new homes where appropriate.¹²³

Local authorities and water utilities in the Tonbridge and Malling Borough should also focus on strategies for capturing and storing winter rainfall to ensure adequate water supply during drier summer months. Some kind of rainwater harvesting should be incorporated into new development and some developments can also consider greywater harvesting if appropriate.

¹²³ <https://www.gov.uk/government/news/new-water-saving-measures-to-safeguard-supplies>

5.8.4 Water Management and Flooding Policy Options Summary

Application	Business As Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
Water Efficiency	No mandatory requirements	Consider availability of water and water infrastructure for the lifetime of the development and design responses to promote water efficiency and protect water quality.	Implement water efficiency standards of minimum 110litres/person/day Implement advanced water reuse systems, such as greywater and blackwater treatment and recycling, to provide non-potable water for irrigation, toilet flushing, and other uses.
Rainwater harvesting	No requirements	Appropriate storage capacity for harvested water. Roof materials compatibility to ensure there is no contamination of the water. Incorporating basic filtration methods for debris.	Design the system to serve multiple non-potable uses, such as toilet flushing, laundry, and outdoor irrigation, maximising water conservation.
Sustainable Drainage	Consider SuDS at the outset and during preparation of the initial conceptual site layout (NPPF)	The drainage system must be designed to operate without flooding in any building up to (and including) a 1 in 100-year (1% AEP) plus climate change rainfall event, without exacerbating off-site flood risk. Exceedance flows that cannot be managed within the drainage system must be managed via exceedance flow routes. Attenuation storage volumes provided by drainage areas must half empty within 24 hours to enable runoff from subsequent storms to be received.	Implement vegetated swales or ditches to slow down and filter runoff, promoting water quality improvement. Include basic filter strips adjacent to impermeable surfaces to capture sediments and pollutants before they enter water bodies. Incorporate green infrastructure as a way to deliver sustainable drainage.
Water Catchment and Natural Flood Management	'Design flood' includes Climate Change and surface water risk (NPPF) Kent County Council Local Flood Risk Management Strategy	Compliance with local regulations Buffer zones around river, streams and other water bodies, designed as protected areas, preserving biodiversity and preventing erosion. Include allowance for climate change in flood risk assessments	Consideration of 're-wilding' rivers upstream as well as considering multiple sources of flood risk. Incorporate green infrastructure to maximise water catchment areas.
Resilient developments	Avoid development in areas liable to flood and reduce surface water flooding (NPPF) Flood risk should be managed over the lifetime of a development, taking climate change into account (NPPF)	Consider safe access and egress to developments and buildings during flood events.	Consider the location of infrastructure and equipment in medium or high flood risk developments, to increase their resilience in the event of flooding. These can be particularly relevant for hospitals and other public sector buildings that need to maintain operations during emergencies and extreme weather phenomena.

Application	Business As Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
	Proposed development sites at locations at risk of flooding will be required to satisfy the Sequential and, where necessary, Exception Tests. (NPPF)		Consider the use of building materials and finishes that will allow speedy recovery in the event of flood water entering properties.

Table 13: Summary of water management and flooding policy options

5.9 Design and Circular Economy

5.9.1 Sustainability in Design

Many of the policy options and recommendations for other themes in this study incorporate some kind of requirement to incorporate climate mitigation or adaptation measures into the design. Climate Change Mitigation and adaptation measures are at the heart of sustainable development and therefore must be considered at the very beginning of the design process and not seen as a “add on” requirement near the end. Design guidance such as Building with Nature and Building for a Healthy Life have already been highlighted as excellent tools to incorporate elements of mitigation and adaptation into the design process for new developments.

Climate change and sustainability design features should be highlighted and discussed at pre-application stage providing an opportunity for evaluation and further improvements if appropriate. Local design guides should also incorporate climate mitigation and adaptation measures and considerations.

5.9.2 Passive design

Passive design is design that works with the local climate to help reduce energy use and can include passive cooling, heating or ventilation. Good passive design can help reduce the need for additional heating or cooling depending on location and season. Design elements can include:

- Optimal layout and orientation of buildings to control solar gains and allow natural ventilation
- Fabric and natural ventilation strategies
- green infrastructure such as deciduous trees
- the use of shading for windows such as overhang or awnings (and if active these could also be powered with solar energy).

Passive design measures should be incorporated early into the design process to ensure all opportunities are exploited. A passive design analysis should be undertaken to identify potential opportunities, and these should be incorporated into the scheme where possible.

5.9.3 Subsidence

Subsidence has the potential to cause issues for new and existing developments. According to the data from the British Geological Survey, there are currently no significant risks of subsidence in the Tonbridge and Malling Borough. Nevertheless, the projections based on the UKCP climate scenarios and presented in Section 4.2 show that subsidence risks ~~of~~ are expected to increase in 2050 and even more in 2080.

On average the acceptable lifespan of a home should last at least 60 years and therefore, although subsidence is not currently a major issue for Tonbridge and Malling the risk of subsidence should be considered for new development and measures incorporated into the design of schemes to ensure that it does not become an issue over the lifetime of the building.

5.9.4 Circular Economy

The Circular Economy seeks to move away from the current linear model (a 'take-make-dispose' approach) to increase recycling and promote the consideration of waste as a resource as part of a circular economy. This includes considering how design and construction processes will reduce waste and material demands at all

stages of the development life cycle.

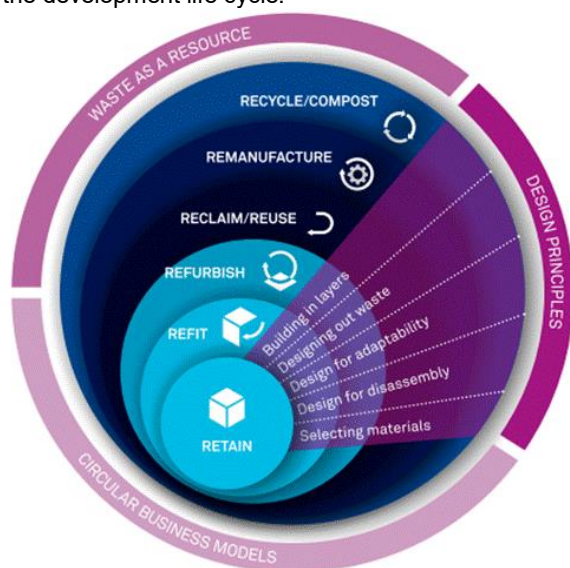


Figure 38: Circular Economy Design Principles (Source: Building Revolutions (2016), David Cheshire, RIBA Publishing)

Figure 38 expands upon the waste hierarchy to establish an approach for designing buildings which first considers retention and maximisation of the value of existing materials. Diminishing returns are gained by moving through the hierarchy outwards, working through refurbishment and re-use through to the least preferable option of recycling materials produced by the building or demolition process. Consideration of existing buildings, structures and materials should be made in the first instance before considering the key design principles for any new elements proposed.

The six key Circular Economy principles can be defined as follows:

- **Building in Layers:** The application of the building in layers principle seeks to prioritise layer independence to allow each of these building fabric elements to be replaced, repaired, or reconfigured independently.
- **Designing Out Waste:** This principle seeks to ensure that waste is reduced throughout the lifecycle of the proposed development. This starts with considering how buildings, structures, and elements can be retained in-situ through refurbishment or repurposing before resorting to deconstruction or demolition. The principle also extends to consideration of waste in use as a result of operation, and replacement cycles of materials. Beyond this it begins to consider how waste can be reduced at the end-of-life of the building.
- **Building for Longevity:** This principle seeks to avoid the premature end-of-life of the proposed development and its components through consideration of maintenance requirements and durability. It is important that materials are selected which are aligned to the design life of the building or building layer to reduce waste arising from repair, replacement, or maintenance in-use.
- **Building for Adaptability or Flexibility:** This principle seeks to ensure that future changes in use either shorter-term (through reconfiguration for example) or longer-term (through structural alteration for example) have been considered.
- **Designing for Disassembly:** This principle seeks to ensure that the design considers how components can be deconstructed for reuse or replacement. In line with the decision tree for new development set out in the LPG, all development should be designed for disassembly. The approach to the application of this principle should consider the key role and design life of each layer of the building. Elements which may be replaced during the lifetime of the building, or are likely to be reusable at end of life, are key areas which benefit from a design for disassembly approach.
- **Using Systems, Elements, or Materials that can be Reused and Recycled:** This principle ensures that materials selected can be reused in their existing form or recycled for remanufacture.

5.9.5 Design and Circular Economy Policy Options Summary

Application	Business As Usual	Higher standard across Tonbridge and Malling	Advanced standard applied to specific sites or development types
Passive Design	NPPF requirements to promote sustainable design features that reduce carbon emissions and promote climate resilience including: – Incorporating multifunctional green infrastructure, – use of materials, – orientation and layout	Consider passive design measures in all new development	Undertake a passive design analysis and show how the findings have been incorporated into the scheme design.
Subsidence	No requirement	No requirement	The risk of subsidence should be considered for new development and measures incorporated into the design of schemes to ensure that it does not become an issue over the lifetime of the building
Circular Economy	No requirement	Qualitative assessment of the design against the six Circular Economy principles. Provision of a brief end-of-life strategy, which explains how key materials will be managed at end-of-life, with a focus on retention, reuse and recycling.	Provision of a Pre-Redevelopment and Pre-Demolition Audit to demonstrate that opportunities to retain have been fully explored in the first instance, and detailing the types and quantities of waste expected to arise from any demolition proposed, including Provision of an Operational Waste Management Plan to demonstrate that adequate and accessible waste storage has been provided for the management of waste in use. For developments also providing a Whole Life-Cycle Carbon Assessment, a Bill of Materials could be requested in order to demonstrate how the development has been designed to be resource efficient.

Table 14: Summary of Design and Circular Economy Policy Options

5.10 Improvement in Processes

A final area for consideration is to improve the Council's internal processes around energy strategies for new developments. As illustrated below this is partly about setting clear requirements for what developers are required to do, having a thorough check through the pre-planning and planning approval process and carrying out checks through to construction.

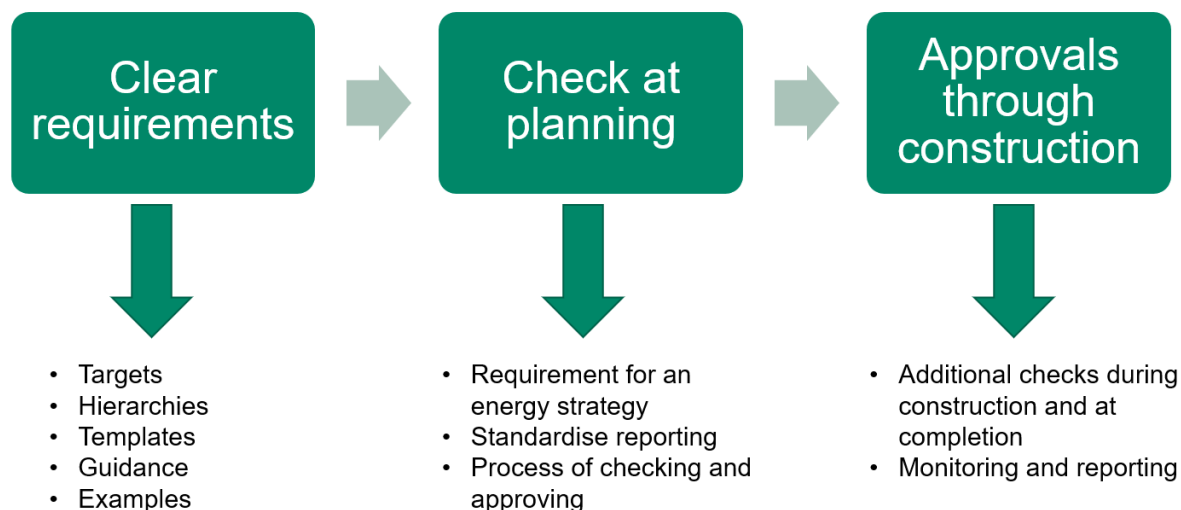


Figure 39: Illustration of the potential elements of an improved process

A key component of an improved process would be a standardised Energy and Climate Change Statement format for each development that requires developers to document the energy strategy and the relevant information related to the specific policy requirements chosen for inclusion in the Local Plan.

Some guidance would need to be produced to assist developers in producing the Energy and Climate Change Statement, which could be a simple document or go into detail and include standardised tables, graphs, templates, and examples. The Energy and Climate Change Statement could be either a standard requirement for all schemes or a simpler checklist could be required for smaller schemes of less than say 5 or 10 units. More guidance material would incur additional resources but should deliver efficiencies in the longer term and improved outcomes if developers have a better understanding of the process and the strategies are in a consistent format as well as making the approval process easier. As a minimum, the guidance would need to clearly explain how the Energy and Climate Change Statement should be structured and what information is required to demonstrate compliance with each policy.

An improved process would have some cost and resource requirements for the Council. Additional resources would be needed to perform these checks and those members of staff would need sufficient knowledge of energy systems and calculation software to appraise the statements which would either involve hiring new staff, training existing staff or paying for external support.

The extent to which additional monitoring and checking are carried out between planning and completion could be potentially scaled to suit the development. The standard Building Control checks might suffice for smaller schemes but additional checks throughout the process could be applied to larger schemes through the discharge of planning conditions.

6 Policy Recommendations

Taking account of the borough mitigation and adaptation baseline, the local context and character of the area and the feasibility of different options, policy recommendations have been made to address climate change in the Tonbridge and Malling Local Plan. These recommendations cover the full scope of climate change mitigation and adaptation some of which will be particularly relevant for emerging Tonbridge and Malling Local Plan and others are more aspirational and should be encouraged in the Local Plan.

The Local Plan has the greatest influence on new development and the recommendations focus on what can be delivered in and through new development to impact carbon emissions and/or promote climate resilience. Some recommendations have a spatial focus, identifying and allocating land or sites, others can be included in criteria based policies. Many of the policy recommendations can also be combined into a single Local Plan policy for example, Recommendations 11-15 may be combined into a sustainable transport policy.

It is not expected that every policy recommendation will be taken forward into the Local Plan, they will need to be balanced against other local priorities such as providing affordable housing, protection of the historic environment and providing growth in a constrained area. Policies will need to be tested in the whole plan viability study and it has been noted where the recommendations may have an impact on viability. The current Local Plan progress and timetable will also be a consideration when deciding whether a policy recommendation should be incorporated into the Local Plan. Some recommendations will benefit from additional more technical evidence, such as identifying suitable land for renewable energy, which may not fit with the Council's Local Development Scheme, this has also been noted where relevant.

The policy recommendations provide specific information on:

- **Description and evidence base** – a description of the policy and the supporting evidence base;
- **Approach** – an overview of how it could be implemented, considering variables for applying the policy and key implications or challenges;
- **Evidence and viability** – the evidence underpinning the recommendations and an overview of viability; and
- **Implications for implementation** – an evaluation of the implications for effective implementation, compliance and monitoring and examples of similar policies where available.

To identify which recommendations TMBC should consider a priority, a summary Red/Amber/Green (RAG) rating has been produced for each recommendation based on the following headings:

- **Impact** – A short assessment of the likely impact of the recommendation on reducing carbon emissions from new development for climate mitigation, or reducing climate risk for climate adaptation in the Tonbridge and Malling context taking account of the baselining work
- **Local Plan Making** – A short assessment considering what would be needed to incorporate the recommendation into Local Plan policy. This considers precedent and whether there are other similar adopted policies, and whether additional evidence may be required to deliver the recommendation.
- **Development Management Implementation** – A short assessment considering how the policy recommendation would be delivered at planning application stage including whether additional or specialist resources would be needed.
- **Viability** – Consideration of the potential impact of the recommendation on development viability and whether the recommendation will need to be included in the whole plan viability study. This also considers whether there would be additional costs to the Council to prepare additional evidence or resources.

The RAG rating can be directly used to determine which policies should be prioritised by TMBC for inclusion in the Local Plan. The ratings have been used to define a priority level for each recommendation, Low (L), Medium (M) or High (H). It should be noted that the local Plan will need to include a range of different policy requirements for different themes to deliver sustainable development. Therefore, a balance will need to be met between competing Local Plan priorities and although a measure may be considered as a high priority with regards to climate change this does not mean that it will be taken forward in the Local Plan at this stage.

Table 15 summarises the policy recommendation including the priority rating.

Table 15: Summary of Policy Recommendations

Ref	Subject	Summary	Priority (L/M/H)
1	Strategic Climate Change Policy	Overall strategic approach to mitigating and adapting to climate change.	H
2	Energy and Climate Change Statement	Require all new developments to complete an Energy and Climate Change Statement, that is checked, enforced, and monitored, to set out energy and climate change measures and to demonstrate compliance with the requirements.	H
3	Guidance and Support	Produce a technical guidance document and consider further materials to support developers in complying with the requirements.	H
4	Energy Hierarchy	Require all new developments to follow a clear energy hierarchy.	H
5	Demand reduction	Require all new developments to reduce energy demand and introduce energy consumption targets where practical and viable.	H / M
6	Overheating	Set requirements for assessing overheating risks and mitigating these through design, and, avoiding the use of active cooling systems unless essential.	H
7	Low Carbon Heating Systems	Require all new developments to install low carbon heating systems that align with carbon neutral policy.	M
8	Onsite Solar Generation	Require all new developments to maximise the potential scale of PV installation and assess the potential for Solar Thermal if appropriate.	H
9	Energy Storage and Demand Management	Require all developments to assess the potential to introduce energy storage and smart energy management systems.	M
10	Whole Lifecycle Carbon	Where appropriate ask developers to consider whole life-cycle carbon emissions and demonstrate steps to minimise these.	M
11	Electric Vehicle Charging Infrastructure	Require new developments to install EV charging and allocate land for public EV charging points across the borough to support both through transit and local traffic.	H
12	Active Travel, Cycling and Walking	Require new developments to incorporate active travel measures into the design of new development and provide connectivity to existing infrastructure.	H
13	Maximum Parking Standards	Set maximum parking standards for all new developments subject to local sustainability.	L
14	Transport Carbon Emission Assessment	Require developments to calculate the level of carbon emissions generated from transport.	L
15	Public and Shared Transport	Require new development to include connections to public transport and consider shared transport opportunities where possible.	H

Ref	Subject	Summary	Priority (L/M/H)
16	Air Quality Assessment Requirements	Larger developments are required to provide air quality assessment and / or mitigation and compensation plans.	M
17	Renewable Energy Infrastructure	Land identification and allocation for renewable energy infrastructure.	M
18	Heat Networks	Support for heat network zones and potential future infrastructure that can be shown to deliver low carbon and cost effective heat.	L
19	Habitat Connectivity	Compulsory habitat connectivity where a site has the potential to connect two existing designated or identified habitats .	H
20	Biodiversity Net Gain Land for Offsite Provision	Identify land for Biodiversity Net Gain Offsetting.	L
21	Building with Nature Standards and Accreditation	Require new development to be designed to the Building with Nature standards.	H
22	Green Infrastructure Delivery in new Developments	Require new development to incorporate effective green infrastructure.	H
23	Living Roofs and Walls	Require new developments to consider incorporating living roofs and walls.	M
24	Compulsory Tree Planting	Require new development to include tree planting as part of the onsite green infrastructure.	M
25	Carbon Sequestration	Require developments to minimise and compensate for loss in carbon sequestration	L
26	Mandate water Consumption Targets	Require water consumption calculations and set water consumption target of 110 litres/person/day for new developments.	H
27	Rainwater and Greywater Recycling	Require all new developments to consider rainwater and greywater recycling and incorporate water harvesting measures.	H
28	Flood Risk Management	Safeguard areas with high adaptation potential including protecting and restoring catchments upstream of high flood risk areas.	H
29	Sustainable Drainage Systems (SuDS)	Require Sustainable Drainage Systems in new development.	H
30	Passive Design Analysis	Require all new large developments to conduct a passive design analysis to identify specific measures that could be taken to reduce emissions .	H
31	Subsidence	Reduce risks at strategic level, neighbourhood and building scale.	L
32	Circular Economy	Require new development to incorporate circular economy principles	M

Policy Recommendation 1: Strategic Climate Change Policy

Description and evidence base

We recommend that the Local Plan includes a strategic policy setting out the overall approach to mitigating and adapting to climate change in Tonbridge and Malling borough. The policy should include the areas of priority for the borough and be supported by development management policies to provide additional detail and delivery mechanisms.

Approach

Taking account of the baseline analysis, local context and scoping exercise we have identified the following priorities to be addressed by the Local Plan with regards to Climate Change mitigation and adaptation.

- A growth strategy that reduces carbon emissions and addresses climate change risks
- Ensure that new development is sustainable, energy efficient, low carbon and supports a circular economy
- Reducing the reliance on private vehicles and the emissions associated with transport
- Encourage the retrofit of existing buildings to reduce carbon emissions
- Support suitable opportunities for low carbon energy generation and storage to serve the borough
- Improve infrastructure to support sustainable development and help existing residents to reduce emissions
- Work with the natural environment to help reduce emissions and risks associated with a changing climate
- Reduce the impact of flooding, support natural flood management and ensure developments include sustainable drainage systems
- Conserve and enhance habitats to support biodiversity and wildlife resilience
- Ensure new development is designed to address the risks associated with climate change including overheating and water efficiency.

These priorities should be incorporated into a strategic policy for tackling climate change within the Local Plan similar to the Climate Change Principles policy in the Cornwall Council Climate Emergency DPD¹²⁴. The Council may wish to bring some of the elements set out in other recommendations into the strategic policy, for example the sustainable building standards for new development. This approach has been taken in Central Lincolnshire where the majority of the policies within their new Local Plan have been classified as strategic including those related to climate change¹²⁵.

Evidence and viability

Climate change is a strategic issue which should be considered and addressed where possible in every development. A strategic policy setting out the high level principles will allow the Local Plan to update the detailed development management policies, where and when appropriate, without losing the essential principles to tackle climate change in Tonbridge and Malling. Neighbourhood Plan policies will also need to be in line with the strategic policy. The evidence within the study will underpin the strategic policy and there are unlikely to be any viability implications.

Implications for implementation

The strategic policy approach should form part of the Council's Duty to Co-operate discussions with neighbouring authorities.

¹²⁴ <https://www.cornwall.gov.uk/media/uxgjk4jn/climate-emergency-dpd.pdf>

¹²⁵ <https://www.n-kesteven.gov.uk/sites/default/files/2023-04/Local%20Plan%20for%20adoption%20Approved%20by%20Committee.pdf>

Summary and Conclusion

Category	Discussion	Rating
Impact	A strategic policy for climate change mitigation and adaptation will set out the high level requirements for new development. By including climate change in a strategic policy, neighbourhood plans will also be required to address climate change locally.	G
Local Plan Making	Climate change is considered a strategic planning issue both by national policy ¹²⁶ and within the TMBC Local Plan Regulation 18 document. An overarching strategic policy has been included in recently adopted plans ¹²⁷ .	G
Development Management Implementation	Unlikely to have an additional development management implications beyond the other policy recommendations	G
Viability	Unlikely to have viability implications above those included in other policy recommendations	G

Table 16: Strategic Climate Change Policy Analysis

Taking account of the analysis set out in Table 16 it has been concluded that an overarching strategic policy for climate change to be a **high priority** for the Local Plan.

A strategic overarching policy for climate change will ensure that climate change is central to the development plan and is the golden thread running through the document. It will ensure related plans, including neighborhood plans, also address climate change in accordance with the strategic policy. The strategic policy will also help to clearly set out how the Local Plan will “*support the transition to a low carbon future in a changing climate*”¹²⁸ in the Tonbridge and Malling context.

¹²⁶ Para 20 NPPF

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

¹²⁷ <https://www.cornwall.gov.uk/media/uxgjk4jn/climate-emergency-dpd.pdf>

¹²⁸ NPPF Para 152

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

Policy Recommendation 2: Energy and Climate Change Statement

Require all new developments to complete an Energy and Climate Change Statement, that is checked, enforced and monitored through the planning approval and building control process, to set out energy and climate change measures and to demonstrate compliance with the requirements.

Description and evidence base

We recommend requiring all new developments to produce an Energy and Climate Change Statement to accompany their planning application which would include the information necessary to assess all of the other recommended requirements. The Energy and Climate Change Statement would need to be part of an improved process to assess the performance of new developments throughout both the planning and building control systems.

There are known issues with the performance gap, the difference between modelled and real-world performance. Part of this can be addressed through better processes, checking and monitoring through to construction.

Approach

The Energy and Climate Change Statement could be a standardised document that each developer would complete with a set structure. This would be supported by the guidance material proposed in Recommendation 3 which could include a template and standard tables and figures. This document would form the basis of the checks on the compliance with the requirements of the other recommendations, both at the planning stage and through to practical completion through planning conditions.

Evidence and viability

Although not delivering building performance benefits in its own right, better processes improve the confidence in the real-world performance of the building.

It is assumed that, while there would be some cost and resource implications in producing an Energy and Climate Change Strategy this won't be significantly more work than would be required to comply with Building Regulations requirements and relatively insignificant.

Implications for implementation

The energy and climate change strategy work and production of an Energy and Climate Change Statement could either be undertaken by the design team including the M&E engineers or experts could be appointed to complete this. There are numerous examples of Councils that ask for such reports and the GLA has been doing so for over 15 years.

This requirement could be simplified for smaller developments through the use of a standardised Energy and Climate Change Statement Checklist or shorter reporting format. The requirement to use an Energy and Climate Change statement can be added to the Strategic Policy (PR1) and/or any policies where evidence of compliance is required.

Summary and Conclusion

Category	Discussion	Rating
Impact	The Energy and Climate Change Statement alone will not contribute to reducing carbon emissions or promoting climate resilience. However, the statement will provide a single comprehensive document where the evidence of policy compliance will be demonstrated and reviewed by the case officer. This will make it easier for the case officer to assess the application and make it clear to all involved in the decision-making process what has and has not been complied with.	A
Local Plan Making	Similar statements are already required by adopted policies across England.	G
Development Management Implementation	A single document setting out policy compliance will assist case officers and decision makers.	G
Viability	Unlikely to have an impact on viability.	G

Table 17: Energy and Climate Change Statement Analysis

Taking account of the analysis set out in Table 17 it has been concluded that a requirement for an Energy and Climate Change Statement should be a **high priority** for the Local Plan.

The Energy and Climate Change Statement will include details of how the development meets the strategic climate change policy as well as other policy requirements. It will provide a single focused document setting out how the development meets policy and tackles climate change mitigation and adaptation in Tonbridge and Malling. A template could be produced for smaller developments.

Policy Recommendation 3: Guidance and Support

Produce a technical guidance document and consider further materials to support developers in complying with the requirements

Description and evidence base

We would recommend that if adopting the more prescriptive recommendations, guidance materials are produced to support developers to meet the requirements and improve the consistency and quality of submissions to make the Council approval processes more efficient.

Approach

A Supplementary Planning Document or technical guidance document could be prepared that would set out the structure and content of the Energy and Climate Change Statement and also potentially provide a template and standardised content such as tables and figures for the report.

Examples of measures that could be implemented to meet policy requirements and to encourage developers to go beyond standard requirements could also be included. This could be particularly aimed at self-build and retrofitting proposals where the energy efficiency and other measures will provide direct benefits for the applicant as the end user.

A significant proportion of the borough's carbon emissions arise from existing buildings that are generally outside of the scope of the Local Plan. Guidance could be also produced as advice to applicants seeking permission to alter or extend existing properties and buildings. Increasing the energy efficiency and climate resilience of existing buildings could be encouraged and the Council could provide (or signpost to) advice and guidance to promote retrofitting improvements, especially where changes to properties are already being made. This could be incorporated into the Council's wider Climate Change Strategy work.

As the borough has a high-quality historic environment and many heritage assets, guidance and support for climate change related improvements within the historic environment could also be produced, signposting to and building on the existing advice from Historic England and tailored to the local area. Such guidance has been produced by Bath and North East Somerset to guide developers and home owners as to what is possible and likely to be acceptable.

Evidence and viability

The guidance document and support materials would hopefully improve viability by helping developers to complete their Energy and Climate Change Statements and avoiding delays to approvals.

Implications for implementation

It would be most helpful if the guidance material is produced in advance such that it is ready for when the Local Plan is adopted. Although not essential, this may also provide the Planning Inspector with additional clarity as to how the policies will be implemented.

Summary and Conclusion

Category	Discussion	Rating
Impact	Technical guidance and policy support alone will not contribute to reducing carbon emissions or promoting climate resilience. However, the guidance will help applicants apply the policy requirements as intended and encourage higher standards of sustainability to be included in developments.	A
Local Plan Making	Guidance documents will not impact the delivery of the local plan.	G
Development Management Implementation	A single document setting out policy compliance will assist case officers and decision makers.	G
Viability	The guidance document and support materials would hopefully improve viability by helping developers to complete their Energy and Climate Change Statements and avoiding delays to approvals.	G

Table 18: Guidance and Support Analysis

Taking account of the analysis set out in Table 18 it has been concluded that guidance documents to support Local Plan policy should be a **high priority** for the Local Plan.

Guidance documents will help applicants to apply the climate change policies appropriately and avoid confusion, misunderstandings and should help to ensure a straightforward development management process. The Guidance should be tailored to the Tonbridge and Malling context taking account of the specific policies, drivers and risks of climate change as set out in this report.

Policy Recommendation 4: Energy Hierarchy

Require all new developments to follow a clear energy hierarchy

Description and evidence base

We recommend including a requirement for all developers to follow a clear energy hierarchy when developing an energy strategy for all new developments in Tonbridge and Malling. This should be documented in an Energy and Climate Change statement that would be checked by the Council to ensure this as part of the planning and building control approval process (see Policy recommendation 2).

For the UK to reach its Net Zero target and for Tonbridge and Malling to reach its local 2030 target, energy demands need to be reduced and energy generation needs to be switched to renewable energy sources. Any increase in energy consumption or additional use of non-renewable energy sources from new development will make these targets more difficult to achieve.

Approach

TMBC's Local Plan Regulation 18 consultation identifies 'energy-efficient, future-proofed buildings' as a potential climate change measure, alongside 'decentralised renewable and/or low carbon energy generation' and this is reflected in the proposed energy hierarchy.

Developments would be required to follow a standard approach to developing an energy strategy that follows the following hierarchy:

- Reduce energy demands
- Use energy efficiently
- Generate and store renewable energy
- Monitor energy use

Measures should be incorporated at the earliest design stage of a development and maintained throughout the design, construction and operation of a proposal. All opportunities to maximise compatibility with current and future use of local and onsite zero and low carbon energy technologies must be identified and pursued. The approach should be documented in an Energy and Climate Change statement (see Policy recommendation 2) to allow the Council to review this.

Evidence and viability

Many Councils have followed the energy hierarchy approach as a framework for driving better standards in new building, examples include the Greater London Authority, Salford and Brighton. This is a standard approach to structuring the Energy and Climate Change Statement process and helps provide the context for the subsequent policy requirements and the structure of the Energy and Climate Change Statement. By itself, this requirement doesn't have any direct impact on costs so should not directly affect viability.

Implications for implementation

This requirement would have indirect resource implications for the developer in relation to the work required to follow this process and document the results in the Energy and Climate Change Statement, which depending on the complexity of the project could require the assistance of a technical consultant. It would also have indirect resource requirements for the Council in relation to the checking and approval processes.

Other policy recommendations in this report provide the ways in which the energy hierarchy can be followed. This includes Demand Reduction (PR5), Low Carbon Heating (PR7), Onsite Solar Generation (PR8) and Energy Storage and Demand Management (PR9). These policy recommendations could be combined into a single policy all related to onsite energy use.

Summary and Conclusion

Category	Discussion	Rating
Impact	The use of an energy hierarchy will ensure that new development considers demand reduction and adopts a fabric first approach. This should have a positive and long-term impact on reducing emissions from new development.	G
Local Plan Making	Requirements to follow an energy hierarchy when designing new development has been included in many adopted Local Plans ¹²⁹ and is considered a standard approach to structuring an energy statement.	G
Development Management Implementation	The use of an energy hierarchy will help structure the energy and climate change statement and provide consistency across applications.	G
Viability	Unlikely to have an impact on viability.	G

Table 19: Energy Hierarchy Analysis

Taking account of the analysis set out in Table 19 it has been concluded that implementing an Energy Hierarchy requirement should be a **high priority** for the Local Plan.

The energy hierarchy makes it clear how new development should be designed to reduce energy demand and improve energy efficiency in the first instance before considering energy generation. This fabric first approach will help to ensure new development will continue to be sustainable and is not reliant on technologies that may change in the future to reduce carbon emissions and energy use. Buildings remain a significant contributor to the borough's carbon emissions and therefore any measures to reduce emissions in the long term should be encouraged. The energy hierarchy has been used and promoted in local plan policy as well a good sustainable design for many years and continues to be used in recently adopted policies.

¹²⁹ [Adopted Salford Local Plan: Development management policies and designations](#), [Contents \(brighton-hove.gov.uk\)](#)

Policy Recommendation 5: Demand Reduction

Require all new developments to reduce energy demands and consider introducing energy consumption targets where practical and viable

Description and evidence base

We recommend that, in line with the energy hierarchy described in Policy Recommendation 4, all new development is required to demonstrate how energy demands and carbon emissions have been reduced through the design and specification. This would need to be documented in the Energy and Climate Change statement described in Policy Recommendation 21. The evidence provided in this report demonstrates there is a need for buildings to transition away from fossil fuels and towards electrical systems. To support this, it is essential to lower overall energy demand and limit demand on the electrical infrastructure both locally and nationally. Fabric and energy efficiency measures are the most cost effective and reliable way to reduce energy demand, as well as lower CO₂ emissions and costs for occupants of new buildings.

Approach

As a base requirement, developers would be required to present the demand reduction measures and specifications in their Energy and Climate Change Statement, which can then be assessed through the planning approval and building control processes. As described in Section 3, the current requirements in Part L 2021 should provide a decent standard of fabric performance and these are expected to be improved further in the next revision. In addition to the more general requirement for all developers to reduce demand and document performance, we recommend that TMBC consider setting a higher specific target for developments in greenfield and more rural locations, where both the need to make further reductions in lifecycle emissions is greater (to offset higher embodied carbon) and the viability is better compared to previously developed land. In terms of specific options, a maximum space heating demand of 30kWh/sqm/yr could be adopted to reflect an improvement on where Building Regulations are expected to be in 2025 (at approximately 40kWh/sqm/yr). A higher target could be the requirement to meet the Passivhaus standard which sets a maximum space heating target of 15kWh/sqm/year.

Evidence and viability

In the long term, targets on improved fabric performance will have less of an impact on carbon emissions as heat is likely provided by heat pumps that use electricity which will be decarbonised over the next 10-15 years. However, they will reduce energy consumption and deliver reduced energy costs for residents as well as reducing demand on the local electricity network and potentially improving the heat pump performance. There would be a cost to meeting these standards which would need to be accounted for in the viability assessment, as described further in the Currie & Brown cost assessment¹³⁰ undertaken for Bath and North East Somerset in 2018. In terms of an option to apply this standard to some specific sites, this could be applied to larger schemes where the economies of scale will be better or affordable housing where energy cost savings may be considered a higher priority. This could also be applied to self-build plots where the residents can directly benefit from the longer-term savings.

Implications for implementation

This requirement would involve the applicant undertaking additional modelling work to demonstrate the fabric performance and is also likely to require some improvements to the specifications beyond Building Regulations. There would also be additional resources required to check this at the planning approval stage through assessment of the Energy and Climate Change Statement, and Building Control through the SAP and the Simplified Building Energy Model (SBEM) assessments. In terms of precedents, the GLA has long had a policy requiring improvements in building energy efficiency of 10% and 15% beyond Building Regulations requirements for residential and non-residential buildings respectively, which they have recently confirmed will apply to the Part L 2021 baseline carbon emissions. Guidance is also available from the Low Energy Transformation Initiative (LETI)¹³¹ and others on meeting the higher targets.

This policy recommendation could be combined with other policy recommendations including Energy Hierarchy (PR4), Low Carbon Heating (PR7), Onsite Solar Generation (PR8) and Energy Storage and Demand Management (PR9) into a single local plan policy on building energy use.

¹³⁰ [cost_of_carbon_reduction_in_new_buildings_report_publication_version.pdf \(bathnes.gov.uk\)](https://www.bathnes.gov.uk/cost_of_carbon_reduction_in_new_buildings_report_publication_version.pdf)

¹³¹ <https://www.leti.uk/>

Summary and Conclusion

Category	Discussion	Rating
Impact	Demand reduction through fabric performance will have a positive impact on reducing carbon emissions of new development in the short term as shown through the policy options testing and in Figure 35. In the longer term, improved fabric performance will have less of an impact on carbon emissions as grid energy decarbonises, however, reducing demand will deliver reduced energy use, energy costs for residents as well as reducing demand on the local electricity network and potentially improving heat pump performance, where applicable.	G
Local Plan Making	General policy requirements to reduce energy demand through efficiency measures are commonly included in adopted policies, however specific and more challenging requirements, such as those required by Bath and North East Somerset and Cornwall, are likely to require more specific evidence related to viability.	A
Development Management Implementation	Additional technical analysis would need to be undertaken by officers or appointed consultants to check fabric performance calculations.	A
Viability	A general policy requirement to reduce energy demand is unlikely to have significant viability impacts for new development, however, should a challenging requirement for space heating demand be included in policy this would need to be tested through a viability assessment. It should be noted that such policies have been recently adopted by some Councils. Should the council seek to include a specific energy level requirement, additional evidence may be required with additional cost.	A

Table 20: Demand Reduction Analysis

Taking account of the analysis set out in Table 20 it has been concluded that implementing a general policy requirement for demand reduction should be a **high priority** for the Local Plan. Higher standards requiring developments to meet specific demand levels could be appropriate in certain circumstances, particularly on sites with less viability pressures, and should be considered a **medium priority** for the Local Plan.

Policies to reduce energy demand are important as they can have direct and in-direct impact on the carbon emissions resulting from new development. This has been shown through the policy testing, where meeting Passivhaus standards results in lower carbon emissions. However, measures to reduce energy demand below the current industry standard and below that required by the current Building Regulations, have required more detailed evidence before the policies have been adopted, as shown by Bath and North East Somerset, Cornwall and South Lincolnshire. It should be noted though that these policies have been adopted showing that such evidence can be produced. Any such policy will need to be tested in the full Local Plan viability study as energy demand requirements are likely to increase the development cost and this needs to be considered as part of the wider development costs associated with other local plan policies such as affordable housing.

Policy Recommendation 6: Overheating

Set requirements for assessing overheating risks and mitigating these through design, avoiding the use of active cooling systems unless essential.

Description and evidence base

We recommend that all new developments are required to demonstrate how they have assessed and mitigated potential overheating risks associated with the planned development. Overheating risks are increasing as a result of climate change and designing homes with improved fabric and air tightness. Parts of Tonbridge and Malling are also likely to have greater risks associated with its location and demographic and therefore greater need to mitigate those risks and avoid these being passed onto future residents.

Approach

All developments should complete the Good Homes Alliance Overheating assessment tool as part of their planning application. They should then assess the overheating risks as required by Part O of the Buildings Regulations and follow an approach to mitigating these through the design, avoiding the use of active cooling systems if possible.

The Good Homes Alliance (GHA)¹³² tool is an effective way for residential developers to understand the level of overheating risk and demonstrate where there is a need to undertake more detailed analysis. This approach has the benefit of highlighting key principles that are known to elevate or reduce risk such as size of windows and proximity of the site to sources of noise that could impact the practical use of window openings for ventilation.

Larger developments or those with a significant overheating risk could be required to undertake additional assessments such as those described in CIBSE TM52¹³³ and TM59¹³⁴ regardless of the recommendations or requirements set by the GHA tool or Part O.

The assessment should be documented in the Energy and Climate Change Statement as it is intrinsically linked to the wider energy and heat management strategy. More details about the requirements for what analysis to undertake could be included in the policy guidance documents.

Evidence and viability

Measures to address overheating in the design of new buildings are likely to be more effective and will be much cheaper to implement than retrofitting these in the future. Many of the measures, particularly the passive design options, can be delivered at zero or negligible costs if they are implemented early enough in the design.

Implications for implementation

It would be relatively straightforward for the Council to review the GHA tool assumptions made by the developer and challenge these where necessary to ensure constraints are considered and mitigated. However, additional resources and upskilling may be required. Building Regulations Part O requirements would be assessed by Building Control in the usual way along with any additional assessments if that option was taken.

There may be an element of conflict if the Local Plan seeks to promote the development of brownfield sites as these can have more constraints related to passive measures and ventilation options so may need some degree of active cooling to mitigate ventilation limits. Cooling, although less preferable and will increase energy demand, could be considered as a useful technology to enable greater use of brownfield sites and minimise development on greenfield land. Using cooling heat recovery solutions to convert waste heat into energy for domestic hot water services can help to mitigate some of the issues that cooling systems bring.

This policy requirement could be included in a wider design policy alongside the passive design analysis policy recommendation (PR30). Alternatively, this could be included in a climate change adaptation policy alongside other adaptation measures.

¹³² Good Homes Alliance, 'Overheating tool and guidance'. Available at: <https://goodhomes.org.uk/overheating-in-new-homes>

¹³³ CIBSE TM52: The Limits of Thermal Comfort: Avoiding Overheating in European Buildings (2013)

¹³⁴ CIBSE TM59: Design methodology for the assessment of overheating risk in homes (2017)

Summary and Conclusion

Category	Discussion	Rating
Impact	Overheating has been identified as a key climate risk for Tonbridge and Malling. The requirement for additional assessments to ensure new development adequately addresses overheating issues will have a positive impact on reducing the climate risk.	G
Local Plan Making	The GHA tool is already in use to assess overheating. Some authorities have required overheating to be considered in a general sense without a specific requirement to use the GHA tool.	G
Development Management Implementation	Some additional resource and upskilling may be required to review the GHA tool assumptions made by the developer.	A
Viability	Many overheating mitigation measures can be incorporated into the design of the scheme without significantly affecting build costs when considered at an early stage.	G

Table 21: Overheating Analysis

Taking account of the analysis set out in Table 21 it has been concluded that implementing a policy requirement for requirement to assess and mitigate overheating issues should be a **high priority** for the Local Plan.

The climate risk assessments identified that the borough is at risk of health issues due to higher temperatures, therefore it is important that potential overheating issues are addressed to minimise vulnerability and improve resilience and in accordance with NPPF para 153¹³⁵. The measures to reduce overheating should be included in the overall design of the buildings and therefore they need to be considered at the earliest stages.

¹³⁵

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

Policy Recommendation 7: Low Carbon Heating Systems

Require all new development to install heating systems that align with carbon neutral policy, and which are designed to maximise efficiency.

Description and evidence base

We recommend that all new developments are required to install heating systems that are aligned with the Council's carbon neutral target and to ensure that these systems are selected and designed to be as efficient as possible. These systems should be installed alongside energy demand reduction measures.

The Government have said that they plan to ban the use of gas in new homes from 2025 and proposals for the future homes standard and future buildings standard signalling the use of heat pumps as the most likely compliant solution.

Approach

A heating hierarchy could be adopted to drive this policy which could include the following;

1. Connection to low carbon heat networks (where these offer improvements over onsite heat pumps)
2. Heat pumps, with the choice of systems designed to maximise efficiency (through consideration of the assessment of configuration, operational temperatures, heat sources)
3. Electric heating (where demands are low or where point sources are more effective and where this wouldn't not result in higher running costs for occupants compared to the use of heat pumps)
4. Alternative low carbon heat sources (such as biomass) where other options are not possible and where these can be shown to be appropriate and any related issues (such as air quality, fuel sourcing, running costs etc) have been addressed.

The use of gas boilers (and other fossil fuel heating systems) would not be possible unless there was an exceptional case and it can be proven that none of the other options are technically or financially viable.

Consideration should also be given to the use of solar thermal systems which, although they would not be sufficient to provide all the heating demand by themselves, could be used to improve overall performance of the heating system.

Evidence and viability

In practical terms this requirement should mean that most buildings are installed with heat pumps which will be required by building regulations from 2025 onwards. However as described in this report, depending on the timing of the adoption of the Local Plan and both the adoption and implementation of the Building Regulations (allowing for any transition period), there might be a window when gas boilers are still being installed across the borough.

The use of heat networks reflects the fact that these could offer benefits over individual heat pumps but only where they are available. We are not aware of any strategic low carbon heat networks in Tonbridge and Malling but mindful of the Heat Network Zoning Policy coming into effect in 2025, which could result in the development of new projects. There is more discussion on heat networks for Policy Recommendation 17.

Implications for implementation

Developers would need to demonstrate in their Energy and Climate Change Statement that they have adopted the highest viable option in the hierarchy. As noted, in almost all cases, this would be expected to be a heat pump unless heat networks are brought forward in some areas across the borough. There may be some unique cases where an electric heating solution may be appropriate (such as where heat demands are very low) but it will be for the developer to prove this.

This policy recommendation could be combined with other policy recommendations including Energy Hierarchy (PR4), Demand Reduction (PR5), Onsite Solar Generation (PR8) and Energy Storage and Demand Management (PR9) into a single local plan policy on building energy use.

Summary and Conclusion

Category	Discussion	Rating
Impact	Heating systems account for a significant proportion of building carbon emissions. Requiring new development to install heating systems in accordance with a heating hierarchy in favour of heat networks or heat pumps can significantly reduce the carbon impact when combined with renewable energy generation (either on site or through grid decarbonisation). The government has indicated that the use of fossil fuel heating will be phased out through the Building Regulations through the Future Homes and Future Buildings Standards, coming into force around the expected adoption date of the TMBC Local Plan. Policy testing showed that the impact of requiring a heat pump and meeting the Future Homes or Buildings Standard result in similar reduction in carbon emissions (see Figure 35). The Future Homes and Building Standard is currently an intention and not yet a requirement and there may be a window when Building Regulations still allow gas boilers to be installed in new development.	A
Local Plan Making	The policy would require all new development to follow the heating hierarchy. The government has already indicated that a switch away from fossil fuel heating is necessary.	G
Development Management Implementation	Applicants would demonstrate how the heating hierarchy has been applied in the Energy and Climate Change Statement.	G
Viability	Heat pumps will be required through building regulations and therefore this policy is unlikely to have a significant impact on viability.	G

Table 22: Low Carbon Heating Analysis

Taking account of the analysis set out in Table 22 it has been concluded that implementing a policy requirement to adhere to a heating hierarchy should be **medium priority** for the Local Plan.

Reducing carbon emissions from heating is a top priority as they account for a significant proportion of domestic and commercial emissions. Requiring new development to install low carbon heating systems would be a positive step to “transition to a low carbon future” as set out in the NPPF however this is not considered a high priority for the Tonbridge and Malling Local Plan as this is likely to be implemented within Building Regulations around the time of the Local Plan adoption although the Council may wish to include a requirement to ensure that it is implemented irrespective of national changes..

Policy Recommendation 8: Onsite Solar Generation

Require all new development to install PV and seek to maximise the potential scale of installation and assess the potential for solar thermal if appropriate.

Description and evidence base

We recommend that the Local Plan includes an expectation that all new developments install solar PV, and that developers are required to show in the energy and climate change statement how this has been maximised, unless it can be demonstrated that it is not viable or has been limited for genuine technical feasibility issues. We would also recommend that the Local Plan encourage PV installations for redevelopments and refurbishments where possible. TMBC's Regulation 18 consultation refers to PV generation specifically, as a class of renewable energy generation, and is listed as a potential climate change measure, and a possible local policy requirement in the Local Plan.

Although onsite PV is likely to have a positive but limited impact on the carbon emissions from new development, it will have a big impact on the total energy consumption and, as a result, the running costs for the occupants. Also, the cumulative impact of PV on all new development will have a significantly positive impact on local grid resilience at a time when increasing pressure will be put on grid capacity and reliability as well as supporting wider decarbonisation through electrification.

We would also recommend adding a requirement for developers to consider solar thermal for new developments with a significant hot water demand or where other energy generation solutions are limited as part of their energy strategy assessment.

Approach

This policy recommendation aims to put the onus on the developer to show how they have maximised the installation of PV across the site thereby giving them the responsibility of assessing and proving the potential or providing evidence where it cannot be installed, or the installation has been limited.

The assessment of the potential for solar thermal would also need to be included within the Energy and Climate Change Statement where relevant.

Evidence and viability

Solar PV will deliver carbon saving in the short term as well as longer-term benefits for residents and building owners in terms of energy costs and resilience. Based on the current understanding of proposals for the Future Homes Standards, PV may not be required to deliver compliance and therefore developers may not choose to install it.

Assuming the use of PV isn't part of the specification to meet Building Regulations an additional requirement to install PV would have a cost, which is steadily falling according to the Renewable Energy Resource Report¹³⁶ completed for B&NES Council by Regen. This, therefore, would result in a slight impact on viability, which would decline over time alongside the cost. However, wording of the policy around an expectation to maximise within technical and financial constraints would allow the developer to address viability issues but put an onus on them to demonstrate this. Developers could also look into alternative approaches to financing the PV that might better incentivise the installations such as though pricing arrangements of the units or alternative ownership arrangements in the case of installations on blocks of flats.

We recommend that higher expectations, which could include a minimum amount of PV, be included for greenfield sites where both the technical feasibility and financial viability of installing PV will be much greater.

Implications for implementation

This requirement would require the developer to show in their Energy and Climate Change Statement that they have installed PV and roof plans to demonstrate how this has been maximised on the available roof space by including copies of the roof plans. If a developer proposed no PV or where it was clear that additional suitable roof area has not been used then the developer would have to demonstrate in their Energy and Climate Change Statement that there were either technical or financial reasons for this, which can then be assessed as part of the

¹³⁶ [bnes_renewable_energy_resource_update_report_2018_publication_version.pdf \(bathnes.gov.uk\)](https://www.bathnes.gov.uk/media/10000/bnes_renewable_energy_resource_update_report_2018_publication_version.pdf)

planning approval process. This should be relatively straightforward for planning officers to assess as part of the approval process.

This policy recommendation could be combined with other policy recommendations including Energy Hierarchy (PR4), Demand Reduction (PR5), Low Carbon Heating (PR7), Energy Storage and Demand Management (PR9) and Electric Vehicle Charging Infrastructure (PR11) into a single local plan policy on building energy use.

Summary and Conclusion

Category	Discussion	Rating
Impact	Generating energy directly onsite will have a positive, impact on reducing carbon emissions from new development as shown during the policy option testing and in Figure 35. It will have a positive impact on reducing grid energy use and support local grid resilience. Solar PV will deliver carbon saving in the short term as well as longer-term benefits for residents and building owners in terms of energy costs and resilience.	G
Local Plan Making	Onsite PV installation requirements for developments have been included in policies for many years. Recently adopted policies, such as those in the Worthing Local Plan, have included a requirement for onsite renewable energy.	G
Development Management Implementation	Applicants would be required to demonstrate compliance, or set out reasons for not doing so, in the Energy and Climate Change Statement and site plans. This should be relatively straightforward for planning officers to assess as part of the approval process.	G
Viability	The requirement to maximise onsite PV will have an impact on build costs compared to meeting the current building regulations, however this is expected not to be prohibitive to delivering development.	G

Table 23: Onsite Solar Generation Analysis

Taking account of the analysis set out in Table 23 it has been concluded that a requirement to maximise onsite solar renewable energy generation should be a **high priority** for the Local Plan.

On site Solar PV has been widely installed and required in planning policy for many years, it is a well tested and well used technology and the cost of installations has decreased as the technology has become more widespread. Maximising the use of solar PV on development sites, both commercial and residential, will help to reduce carbon emissions and improve energy security. The amount of PV able to be installed varies by site type, location and available roof space, but all effort should be made to maximise the amount of energy able to be generated from onsite PV and this should be considered in the site design. Careful design will need to be undertaken in areas of high landscape and character sensitivity particularly in conservation areas of which the borough has many.

Policy Recommendation 9: Energy Storage and Demand Management

Require all developments to assess the potential to introduce storage and smart energy management systems.

Description and evidence base

We recommend that all new developments should consider the potential for thermal and battery storage as well as smart metering and other demand management systems.

The use of these systems will provide long terms benefit for the building owners in both energy costs and resilience as well as providing wider benefits to the local power networks.

Approach

This requirement is more of a proactive encouragement for developers to consider the use of these systems as part of their energy strategy process particularly in affordable housing units and areas of fuel poverty. They would be expected to consider the options relevant for their development and document this within their Energy and Climate Change Statement stating clearly which systems will be installed and if not, details of the infrastructure that has been incorporated for future installations or clear reasoning as to why no such installations have been included.

This requirement is also a potential hook to allow the Council to push for more if, as expected within the industry, the case for these systems improves over the period of the Local Plan as they become cheaper and/or energy prices increase.

Evidence and viability

Given the soft wording proposed here it is assumed that this would not require significant additional work and not force additional costs that might impact on viability. It would be difficult to use stronger requirements or specific targets as there are a range of potential options that would be suitable for different building types and also less precedent and existing evidence base. However, we would suggest that policy encourages the use of energy storage and demand management systems, particularly in affordable housing units.

Implications for implementation

Developers would be required to document their assessment of storage and demand management systems in their Energy and Climate Change Statement, and this would be checked at the development management stage.

This policy recommendation could be combined with other policy recommendations including Energy Hierarchy (PR4), Demand Reduction (PR5), Low Carbon Heating (PR7), Onsite Solar Generation (PR8) and Electric Vehicle Charging Infrastructure (PR11) into a single local plan policy on building energy use.

Summary and Conclusion

Category	Discussion	Rating
Impact	Energy storage and demand management alone are unlikely to have a positive impact to reduce carbon emissions in a significant way. However, they can help encourage energy efficiency and behaviour change.	A
Local Plan Making	This policy recommendation is to encourage the implementation of energy storage and demand management.	G
Development Management Implementation	Details should be included as part of the Energy and Climate Change statement for the case officer to review.	G
Viability	Unlikely to impact viability.	G

Table 24: Energy Storage and Demand Management Analysis

Taking account of the analysis set out in Table 24 it has been concluded that encouraging the implementation of energy storage and demand management should be **medium priority** for the Local Plan.

Energy storage and demand management is not as widespread in adopted policy as other measures to reduce carbon emissions from buildings, however, the policy recommendation is to encourage rather than require these types. By identifying that these systems can be helpful in reducing emissions and including this in the guidance recommended in policy recommendation 3, such storage and systems may be implemented across the borough. This should be particularly encouraged for the proportion of affordable housing expected to be required by the local plan to address the identified need.

Policy Recommendation 10: Whole Lifecycle Carbon

Where appropriate ask developers to consider whole life-cycle carbon emissions and demonstrate steps to minimise these.

Description and evidence base

We recommend that, where deemed to be appropriate, developers are asked to consider the whole-lifecycle carbon emissions associated with the development.

Part L of the Building Regulations, and most of the recommended requirements described above, only address the regulated operational emissions associated with the development. It does not include the unregulated emissions or the embodied emissions which make up a significant share of the whole lifecycle emissions of a building. In particular, embodied emissions are in many cases the most significant component and this will only increase as the decarbonisation of electricity reduces the operational emissions to zero over time.

Approach

This requirement could be applied where the implications of embodied carbon are deemed to be most significant, specifically large development sites on greenfield land which will have more associated new infrastructure as well as higher levels of viability.

Given the complexities around calculating whole lifecycle carbon (WLC), we would anticipate this requirement to be applied to larger developments where the extra costs and resources to undertake the assessment can be made cost effective and the impacts are greater.

Where applied it would require developers to calculate the WLC for the development. There are software tools such as OneClick LCA¹³⁷ and eTool¹³⁸ that can be used to do the calculations.

Evidence and viability

There is limited existing evidence and precedent to support a more definitive target around whole lifecycle carbon. Undertaking these calculations is likely to impose a cost on the developer as they are likely to need to appoint experts to undertake them and provide resource to collect the relevant information. Should the Council wish to include a requirement in policy this could be included in the whole plan viability study.

Implications for implementation

A developer would be required to document both the results of the WLC assessment, and the steps taken to mitigate these through the design within the Energy and Climate Change Statement, which would then be reviewed by the planning officer.

This policy recommendation could be combined with the circular economy Policy Recommendation (PR32).

¹³⁷ [Sustainable Construction Software for Greener Buildings and Ecodesign \(oneclicklca.com\)](https://oneclicklca.com/)

¹³⁸ [eTool - Life Cycle Assessment Tool for Net Zero Delivery](#)

Summary and Conclusion

Category	Discussion	Rating
Impact	The policy recommendation is for applicants to consider whole lifecycle carbon emissions from new development where appropriate. This will consider the operational and embodied carbon emissions of a new development, taking account of existing development on site. Measures to tackle and reduce these emissions will have a positive impact on the carbon emissions of new development.	G
Local Plan Making	There are limited adopted policies related to whole lifecycle carbon. The Greater London Authority includes a policy requirement for major developments to assess and report on whole lifecycle emissions.	A
Development Management Implementation	The findings of the whole lifecycle carbon assessment should be documented in the Energy and Climate Change Statement to be reviewed by the case officer. This may require consultant assistance or upskilling of planning officers.	A
Viability	There will be cost implications for undertaking a whole lifecycle carbon assessment.	A

Table 25: Whole Lifecycle Emissions Analysis

Taking account of the analysis set out in Table 25 it has been concluded that requiring whole lifecycle emissions testing and mitigation measures should be **medium priority** for the Local Plan.

Whole life carbon assessments help to account for the unregulated carbon emissions of development and can include the embodied carbon of existing development on site. Building emissions are a significant contributor to climate change within Tonbridge and Malling borough and applicants should set out how these have been reduced.

Policy Recommendation 11: Electric Vehicle Charging Infrastructure

Require new development to install EV charging and allocate land for public EV charging points across the borough.

Description and evidence base

Developments should be required to install EV charging infrastructure to support the rollout and uptake of EVs. Individual charging points are covered in Building Regulations, but additional public charging points should also be included within plans.

We also recommend allocating land for new EV public charging facilities within new developments and within existing settlements. A proportion of these public charging points should be appropriate for rapid charging (min 50kW) in suitable locations. These facilities will provide access to charging for residents without off street parking and for visitors to the borough. Improvements in public charging infrastructure will encourage the uptake of electric vehicles as an alternative to traditional combustion vehicles.

Approach

Developers should be required to demonstrate the provision of private and public charging points in their development plans. The Council should identify and allocate areas for public charging hubs in existing locations, which could include:

- Existing public car parks
- On-street charging areas
- New hub areas within settlements, close to visitor attractions or the key road network
- Areas within new development to serve the existing community as well as the new.

Priority should be given to areas without off-street car parking, land that is already available and/or in public ownership.

Evidence and viability

Approximately 33% of households within the Tonbridge and Malling Borough do not have access to off-street parking, and only 3.5% of these have access to a public charger within a 5-minute walk¹³⁹. Additional evidence can be undertaken to identify the areas where new charging facilities would be most appropriate, however there is a need for additional EV charging points all across the borough to serve both the existing and new communities and existing car parking information may already be satisfactory to identify initial locations. We recommend working with the transport team at Kent County Council as part of the Council's wider Corporate Climate Change Strategy to also deliver additional charging facilities. Providing additional public EV charging facilities within and close to existing settlements, as well as within new developments, will help to increase in the uptake of electric vehicles across the borough. Rapid Chargers (50kW+) are required to support the en-route charging that is needed to complete a journey. Visitors to and through the borough are those most likely to take advantage of these chargers. This will encourage the use of EV vehicles travelling through the borough and, when placed in appropriate areas such as town centres, can have positive economic impacts. The switch to electric vehicles will help reduce transport related carbon emissions as well as help to improve air quality within the borough.

Implications for implementation

For private developments the provision of EV charging points should be specified in plans that can be checked at planning approval and by Building Control on completion.

The need for public charging facilities should be included in the Infrastructure Delivery Plan and Infrastructure Funding Statement. Delivery of the hubs could be achieved in collaboration with the Air Quality Management Plan, due to be updated shortly. The Council should consider the best locations for public charging with a focus on where the need is greatest and where a high number of users will be served. Electric vehicle charging infrastructure should form part of wider Duty to Cooperate discussions with the Highways Authority and the electricity infrastructure provider.

¹³⁹ <https://onstreetcharging.acceleratedinsightplatform.com/>

This policy recommendation could be combined with other policy recommendations including Active Travel, Cycling and Walking (PR12), Maximum Parking Standards (PR13) and Public and Shared Transport (PR15) into a single local plan policy on sustainable transport. It could also be combined with the policies recommendations for Onsite Solar Generation (PR8) and Energy Storage and Demand Management (PR9).

Summary and Conclusion

Category	Discussion	Rating
Impact	Carbon emissions from transport account for almost half of the borough emissions. Electric vehicles can help to reduce the carbon emissions.	G
Local Plan Making	Encouraging the transition to low emissions vehicles is supported in national policy, including promoting new charging infrastructure. New public charging points can be delivered through a land allocation including as part of large mixed-use allocations or through identifying suitable opportunity sites. Additional evidence could be developed to identify specific sites however existing council data and data available from Kent County Council may also be sufficient for the Local Plan at this stage.	G
Development Management Implementation	The policy requirement is an extension of existing building regulations for delivering charging points in new development.	G
Viability	Installing charging points during construction is unlikely to have significant viability implications compared to current building regulations. Any additional evidence undertaken to identify locations for new public charging facilities may include a cost.	G

Table 26: Electric Vehicle Charging Analysis

Taking account of the analysis set out in Table 26 it has been concluded that requiring an increased level of electric vehicles charging infrastructure should be **high priority** for the Local Plan.

Electric Vehicle charging points are essential to ensure an effective transition to low emission vehicles and delivering charging points of the right type, in the right location is important. The majority of charging takes place at home and as such charging points in residential developments are particularly important. However, public charging points are essential for those without access to off-street parking of which Tonbridge and Malling has a significant percentage. Kent County Council could be a partner in developing and administering this policy recommendation.

Policy Recommendation 12: Active Travel, Cycling and Walking

Require new developments to incorporate active travel measures into the design of new development.

Description and evidence base

Active travel measures should be prioritised within the Local Plan through supporting strategic improvements and projects as well as careful design requirements for new development. Supporting active travel is quoted as a key theme for exploration in TMBC's Local Plan Regulation 18 consultation, *'making it easier to cycle and walk safely to access local services'*.

The Regulation 18 consultation also lists cycling and walking as key transport issues in Tonbridge and Malling, which the Local Plan can help to address. This can be achieved by *'improving the availability of dedicated and segregated cycle routes across the borough'* and *'improving the footpath network, especially in rural locations where pavements may be inadequate, and provide safe crossings'*.

The design and layout of developments should provide safe and attractive pedestrian and cycle routes that link destinations both within, and between, neighbourhoods or developments. This should include making the most of existing connections and incorporating infrastructure to enable active travel to be a genuine alternative.

TMBC is producing an Active Travel Strategy for the borough and it is likely to include elements similar to a Local Cycling and Walking Infrastructure Plan. The Strategy will identify priority routes to make cycling and walking easier and safer. New developments should help to deliver and connect to these routes either through onsite infrastructure if appropriate, or through financial contribution. Sustainable and active travel options will also have benefits for health and wellbeing, as well as air quality. For example, where a development may have air quality implications due to combustion vehicle movements there is an opportunity to integrate additional active travel principles which will reduce emissions further. Other principles and recommendations set out in the Active Travel Strategy should also be incorporated.

Approach

The Council should promote active travel in the following ways:

- Require new developments to demonstrate active travel principles have been fully incorporated into the design and layout of new development including delivery of, and connections to, existing routes and routes identified in the Active Travel Strategy
- All new development to include adequate secure cycle storage in line with BREEAM standards
- New and refurbished commercial developments to include adequate secure cycle storage and showering facilities
- Identify and support strategic cycling infrastructure projects, include them within the Infrastructure Delivery Plan and consider how such projects could be funded in partnership with the Highways Authority
- Prioritise cycling and walking infrastructure projects for infrastructure funding.

Evidence and viability

45% of carbon emissions within Tonbridge and Malling Borough arise from transport and encouraging a switch to cycling and walking will help to mitigate the existing and future transport emissions. Active travel is not a new concept and has been incorporated into nationally recognised design standards such as Building for a Healthy Life¹⁴⁰ and Building with Nature. These standards place emphasis on integrated connectivity through a range of measures, such as routes that respond to pedestrian and cyclist desire lines, protected cycle ways, design legibility to streets and integrating navigable features for those with mobility limitations.

Adequate and secure cycle storage has been promoted in new developments for many years and the BREEAM standards set out requirements that can be incorporated into local policy.

Incorporating active travel design principles and supporting walking and cycling infrastructure is expected to have little impact on development viability when considered early in the process.

¹⁴⁰ [Building for a Healthy Life](#)

Implications for implementation

Development allocation policies should include active travel requirements within the development criteria and there should be an expectation that it will be fully incorporated into the design.

Support for appropriate strategic cycling infrastructure projects should also be incorporated into development management policies.

Strategic cycling and walking infrastructure should form part of wider Duty to Cooperate discussions with the Highway Authority.

This policy recommendation could be combined with other policy recommendations including Electric Vehicles Charging (PR11), Maximum Parking Standards (PR13) and Public and Shared Transport (PR15) into a single local plan policy on sustainable transport.

Summary and Conclusion

Category	Discussion	Rating
Impact	Transport is the largest emitter of carbon within the borough. Active travel, walking and cycling produce significantly less carbon emissions than other forms of transport. Sustainable and active travel options also have positive impacts on air quality.	G
Local Plan Making	Active travel measures are well supported by existing national policy, and active travel is one of the five key themes explored in TMBC's Regulation 18 consultation.	G
Development Management Implementation	Active and sustainable travel measures to be included in existing planning applications statements and assessed by the case officer and Kent Highways.	G
Viability	Unlikely to have an impact on viability when considered early in the design process.	G

Table 27: Active Travel, Cycling and Walking Analysis

Taking account of the analysis set out in Table 27 it has been concluded that requiring active travel, cycling and walking measures should be **high priority** for the Local Plan.

Active travel measures are supported in national policy and are already identified as a key theme for the Local Plan. Transport is the main emitter of carbon emissions in the borough and measures to increase cycling and walking are relatively easy to incorporate into new development, helping to reduce emissions and promote health and wellbeing benefits.

Policy Recommendation 13: Maximum Parking Standards

Set maximum parking standards for new development subject to local sustainability.

Description and evidence base

We recommend the use of maximum parking standards within allocations and through development management policy where appropriate.

Approach

The Council should determine maximum parking standards for new developments, this includes bespoke standards for individual allocations as well as standards set out in development management policies to guide future development. These may vary in different locations and be lower in more sustainable locations served by good public transport and with good access to services and facilities. Targets could be higher for development in urban areas where transport connections can be demonstrated to be good. Higher restrictions should be considered for development close to transport hubs. Further evidence could be produced to identify public transport accessibility levels across the borough and this can be used to inform where a higher standard may apply.

Evidence and viability

The NPPF states that *“Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport”*¹⁴¹

Within Tonbridge and Malling Borough there is a reliance on the private car to access services and facilities with over 85% of the population owning at least 1 car or vehicle¹⁴². Residents can be encouraged to use alternative transport options through the use of appropriate maximum parking standards. The TMBC Regulation 18 consultation lists parking as a key transport issue, which the Local Plan can help to address, such as by *‘the provision of sufficient parking in residential developments and urban areas’*.

Kent’s supplementary guidance on Residential Parking¹⁴³ currently states a maximum standard of 1 parking space for all 1-2 bed flats and houses, 1 space for 3 beds if they are in an urban area with the possibility of 2 spaces if the house is in a suburban/rural area, and 2 spaces for 4+ beds (1 space if in a city/town centre).

Implications for implementation

The maximum parking standards should be proportionate to the sustainability of the development site and determined in conjunction with the Highways Authority. Provision will need to be made to account for people with reduced mobility.

This policy recommendation could be combined with other policy recommendations including Electric Vehicles Charging (PR11), Active Travel, Cycling and Walking (PR12) and Public and Shared Transport (PR15) into a single local plan policy on sustainable transport.

¹⁴¹ Para 108 NPPF <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

¹⁴² NOMIS Census 2021

¹⁴³ [Supplementary-guidance-residential-parking.pdf \(kent.gov.uk\)](#)

Summary and Conclusion

Category	Discussion	Rating
Impact	Carbon emissions from transport account for almost half of the borough emissions. The implementation of maximum parking standards should encourage the use of alternative transport options, which will consequently have a positive impact on reducing carbon emissions	G
Local Plan Making	Maximum parking standards should be determined in conjunction with the Highways Authority and take into account that a large proportion of the borough has limited access to public and alternative transport. Additional evidence may be required to identify accessibility levels, and where more restricted standards would apply.	A
Development Management Implementation	The parking standards should be applied at the development management stage.	G
Viability	Unlikely to have an impact on viability when considered early in the design process.	G

Table 28: Maximum Parking Standards Analysis

Taking account of the analysis set out in Table 28 it has been concluded that a maximum parking standard should be **low priority** for the Local Plan.

In Tonbridge and Malling, a large proportion of the borough does not have access to alternative transport, which results in a reliance on private vehicles, therefore in certain areas, maximum parking standards may be more difficult to implement and it will need to be balanced against other elements of the Local Plan.

Policy Recommendation 14: Transport Carbon Emission Assessment

Requirement to calculate the level of carbon emissions generated from transport.

Description and evidence base

We recommend all developments undertake an assessment of the likely transport carbon emissions resulting from the scheme. The results of the assessment should be reported to the Council alongside an explanation of how sustainable travel principles have been incorporated into the scheme to reduce transport related carbon emissions. This could be incorporated into the Energy and Climate Change Statement or as a separate transport statement.

We recommend that the Council also encourage the use of transport carbon management plans for new developments setting out all the measures taken to reduce transport carbon emissions including physical infrastructure, methods to encourage behaviour change and future proofing.

Approach

There is currently no standard methodology for calculating transport carbon emissions from new developments however it is expected that methodology like that used for air quality assessments is likely to be acceptable. The assessment should be carried out early enough in the process to influence design and infrastructure choices and therefore it should be available during pre-application discussions.

This requirement could be targeted at greenfield, rural and/or larger developments where the potential impact on transport emissions is higher.

Evidence and viability

There is little evidence to support setting a transport emissions target for new development, however by undertaking an assessment developers can consider if there are any ways to reduce transport emissions further.

Implications for implementation

The Council will need to review the assessments and should do so in conjunction with the Highways Authority where appropriate. Any transport carbon management plans should also be reviewed by the Highways Authority.

Summary and Conclusion

Category	Discussion	Rating
Impact	Transport is the largest emitter of carbon in the borough, this assessment mandates the explanation of sustainable travel principles incorporated into the development scheme.	G
Local Plan Making	There is no standard methodology, so methodology used for air quality assessments is likely to be acceptable.	R
Development Management Implementation	The results of the assessment should be reported to the Council, and could be incorporated into the Energy and Climate Change Statement. The Council will need to review these in conjunction with the Highways Authority.	R
Viability	There is little evidence to support a transport emissions target, a viability assessment could be undertaken.	R

Table 29: Transport Carbon Emissions Analysis

Taking account of the analysis set out in Table 29 it has been concluded that requiring transport carbon assessments should be **low priority** for the Local Plan. Although transport carbon assessments can be undertaken for new development this is likely to be challenging with no standard methodology that has been adopted in policy.

Policy Recommendation 15: Public and Shared Transport

Require new development to include connections to public transport and consider shared transport opportunities.

Description and evidence base

We recommend promoting the delivery of new public transport and the provision of car/e-bike/bike clubs within allocations and through development management policy. We also recommend identifying strategic public transport improvements that would support the existing population and future growth within the borough.

The Local Plan can ensure new development is well served by public transport as a genuine alternative to a private vehicle. Large scale developments should include the provision of public transport, either through new services or extending existing services. They should also prioritise access to rail stations and provide genuine and appropriate “first and last mile” access to and from public transport hubs in conjunction with active travel measures.

Where appropriate, and in more rural or less sustainable locations, developments should incorporate car/e-bike clubs for residents to use. Such clubs should be set up such that they are a genuine alternative to the private vehicle with maintenance and management measures in place.

Approach

Promoting public transport through:

- New services to serve new development and extended to existing development where possible, including on demand services in rural locations
- Car/e-bike/bike clubs in larger developments
- Consider the use of public transport vouchers and tokens to encourage residents to switch

Evidence and viability

Large scale developments can often provide an opportunity to improve public transport options and deliver car/e-bike/bike clubs. Public transport vouchers and tokens can also be used to encourage the switch from individual vehicles and has been successful in some developments in the east of England. On demand bus services are also increasingly being delivered in rural locations.

Existing bus and rail services are listed as key transport issues in the Regulation 18 consultation, which the Local Plan can address by *‘providing funding to establish new bus services which can become commercially sustainable’* and by *‘improving access to and facilities at local [train] stations, especially for cycling, walking and disabled passengers’*.

Implications for implementation

The Council should work with the Highways Authority and public transport providers to identify appropriate requirements for allocations. A development management policy should also include requirements to guide future developments.

Improved public transport infrastructure should also be included in the Infrastructure Delivery Plan (IDP) and Infrastructure Funding Statement and be considered when reviewing priorities for infrastructure investment.

Public transport provision should form part of wider Duty to Cooperate discussions with the Highway Authority and we recommend proactive discussions with transport infrastructure providers.

This policy recommendation could be combined with other policy recommendations including Electric Vehicles Charging (PR11), Active Travel, cycling and walking (PR12) and Maximum Parking Standards (PR13) into a single local plan policy on sustainable transport.

Summary and Conclusion

Category	Discussion	Rating
Impact	Encouraging user to use sustainable transport options will have a positive impact on carbon emissions.	G
Local Plan Making	The Local Plan can identify which allocations should deliver public and/or shared transport options as part of the development, guided by site specific transport analysis and advice from KCC highways. Other development can be encouraged to deliver public and/or shared transport options, including connections to existing routes and set out details in the planning application. The policy can be supported by the borough wide transport assessment.	G
Development Management Implementation	Public and shared transport options can be assessed as part of the application process alongside other transport.	G
Viability	There are potential viability options, but this would be on a site-by-site basis, and can be mitigated by focusing on improving or connecting to existing options where possible.	A

Table 30: Public and Shared Transport Analysis

Taking account of the analysis set out in Table 30 it has been concluded that requiring connections to public and shared transport opportunities should be **high priority** for the Local Plan.

Good public transport is a key mechanism to reducing transport carbon emissions. Some parts of the borough have good access to public transport, both rail and bus infrastructure. However, other parts of the borough are more rural and have limited access to public transport. Any measures to connect to and improve public transport provision in the borough will have a positive impact in reducing transport carbon emissions and can provide better access for existing properties as well as new developments. It is recognised that there are potential viability issues but these should be dealt with on a case by case basis.

Policy Recommendation 16: Air Quality Assessment Requirements

Larger developments are required to provide air quality assessment and / or mitigation and compensation plans.

Description and evidence base

The 2023 Air Quality Annual Status Report for TMBC confirms that several areas still have higher levels of NO₂ compared to the acceptable limits. It confirms that the main pollutant of concern in the 6 Air Quality Management Areas (AQMAs) is NO₂.

The National Air Quality Strategy¹⁴⁴, published in 2023, highlights the local authorities' responsibilities to work towards new air quality targets and to reduce PM_{2.5} in their areas. Primary PM_{2.5} is emitted from human activities, like burning fuels, braking and various industrial processes, as well as from natural sources like sea spray and dust. Domestic combustion contributed 27% of emissions in 2021 and industrial combustion of biomass fuels accounts for 18%¹⁴⁵.

Air quality and climate change are fundamentally interrelated. Many common air pollutants are 'climate active', and reducing emissions will lessen the warming effect on our climate. A warming climate also threatens to make air quality worse, with the prevalence of harmful photochemical smog likely to increase throughout longer, hotter summers.

Approach

In addition to the policy recommendations directly related to transport, there are several measures that can address the air quality impact that new developments might have on the local area. These should only focus on developments of larger scale, that are expected to have a significant impact during construction, but also throughout their operation. For example, larger developments can be requested to provide one or more of the following:

- air quality assessment
- emissions mitigation assessment
- wider air quality mitigation

Finally, we recommend that development in low air quality areas, include additional mitigation measures in place that will improve the air quality in the specific location.

Evidence and viability

Local Authorities have already similar measures in place, with a number of LAs in Sussex¹⁴⁶ requiring an air quality assessment and / or an emissions mitigation assessment, depending on the scale of the development.

Similarly, Gedling Borough Council in Collaboration with East Midlands Air Quality Network¹⁴⁷, has published guidance for developers requiring an air quality assessment, mitigation and compensation, depending on the expected impact of the development on the local air quality.

Implications for implementation

This recommendation is expected to have implications for the developer, needing to involve a professional who will undertake an air quality assessment and possibly a mitigation assessment. However, it is an important step in encouraging sustainable new developments in terms of maintaining and improving local air quality conditions.

As transport is the main cause of poor air quality in the borough, this could be combined with the policy recommendations for transport, especially Active Travel (PR12)

¹⁴⁴ [National Air Quality Strategy](#)

¹⁴⁵ [Emissions of air pollutants in the UK - Summary - GOV.UK \(www.gov.uk\)](#)

¹⁴⁶ [Sussex AQ Guidance 2021 \(midsussex.gov.uk\)](#)

¹⁴⁷ [Gedling Borough Council - EMAQN Planning Guidance](#)

Summary and Conclusion

Category	Discussion	Rating
Impact	Air quality and climate change are fundamentally interrelated. Transport is a key contributor to poor air quality and dominates the borough carbon emissions. A warming climate is also likely to make air quality worse. Therefore, this policy recommendation is likely to have a positive impact with regards to climate change mitigation and adaptation. However, this will only apply to large developments, so the overall impact is likely to be less.	A
Local Plan Making	Local Authorities have already similar measures in place, with several LAs in Sussex requiring an air quality assessment and / or an emissions mitigation assessment, depending on the scale of the development. A similar approach can be applied.	G
Development Management Implementation	Some schemes will already require air quality assessments and review mechanisms are already in place.	G
Viability	There will be a small addition cost for developments where air quality assessments may not already be required.	A

Table 31: Air Quality Assessment Analysis

Taking account of the analysis set out in Table 31 it has been concluded requiring air quality assessments for all larger developments should be a **medium priority** for the Local Plan.

Air quality and climate change are linked, through transport as a major cause of both carbon emissions and air pollution and declining air quality as a result of a changing climate. The borough has pockets of poor air quality, and in these management areas air quality assessments will already be required. As air quality is not a major issues across the rest of the borough this requirement could be applied only to larger developments and must be balanced against of priorities for the Local Plan.

Policy Recommendation 17: Renewable Energy Infrastructure

Proactive support and land identification and/or allocation for renewable energy infrastructure

Description and evidence base

We recommend supporting renewable energy generation and storage in policy and through allocating land for new development. We recommend undertaking a Renewable Energy Assessment (REA) which can identify areas of land that might be suitable for wind and solar energy generation. These wider areas can be identified on the policies map to guide future development.

The Council should also allocate specific sites for renewable energy development, this could be sites submitted to the Council through the call for sites with the landowner consent or proactively identified by the Council using the REA and via the Regulation 18 consultation. The sites should be assessed for suitability and be included in the plan with development criteria.

The Council can also support the transition to renewable energy and low carbon heat by supporting electricity infrastructure upgrades. The Local Plan can identify specific upgrades and include them in the Infrastructure Development Plan after consultation with the electricity infrastructure provider.

This will help to ensure renewable energy delivery within the plan period to support the existing and new population.

Approach

The Council should support renewable energy development within the borough by:

- Supporting the principle of renewable energy generation and storage within the borough through strategic policy and setting out local development management criteria, taking account of local constraints,
- Supporting and encouraging community led renewable energy and low-carbon heat schemes particularly in areas of fuel poverty and off grid supplies,
- Identifying land on the policy map, where renewable energy development could be feasible, as “Areas of Renewable Energy Opportunity” guided by the findings of a Renewable Energy Assessment,
- Allocating sites for renewable energy development within the plan period; and,
- Identifying and supporting electricity infrastructure upgrades.

By allocating land specifically for renewable energy, proposals outside of these allocations will be required to demonstrate why they are more appropriate. This can help protect the high quality and highly constrained landscape within Tonbridge and Malling borough from unplanned development.

Evidence and viability

A Renewable Energy Assessment (REA) can identify areas of land where renewable energy is likely to be feasible and the level of renewable energy that can be generated across the borough. This evidence can be used to identify the “Areas of Renewable Energy Opportunity” and potential sites for development allocation.

Discussions should be held with the local electricity infrastructure provider during the Regulation 18 consultation to identify where upgrades may be required and how these can be achieved.

Implications for implementation

Renewable energy should be supported through policy and through site specific allocations.

The need for renewable energy and electricity infrastructure upgrades should also be included in the Infrastructure Delivery Plan and Infrastructure Funding Statement.

Summary and Conclusion

Category	Discussion	Rating
Impact	Large scale renewable energy installations will have a positive impact on the carbon emissions of new and existing development.	G
Local Plan Making	Additional evidence would be required to identify the most suitable land for renewable energy including a technical assessment and a call for sites.	A
Development Management Implementation	Allocated land would make the development management process more streamlined for allocated sites and add a degree of protection to other areas of land.	A
Viability	Additional evidence and work would be required although it would not be expected to negatively affect development viability.	A

Table 32: Renewable Energy Infrastructure Analysis

Taking account of the analysis set out in Table 32 it has been concluded that allocating land for renewable energy infrastructure should be **medium priority** for the Local Plan.

Renewable energy, particularly on a larger scale will have a significant positive impact on reducing carbon emission from the borough. The NPPF in paragraph 152 expects Local Plans to support renewable and low carbon energy and goes on to specify in paragraph 155b that plans should “*consider, identifying suitable areas for renewable and low carbon energy sources.*”¹⁴⁸ The borough is highly constrained with 2 areas of outstanding natural beauty and over 80% green belt. However, recent appeal decisions have shown that solar PV applications are being granted both in green belt locations and on land of high agricultural value.¹⁴⁹ There is an opportunity for the Local Plan to proactively plan for renewable development in the borough which can also help to resist renewable energy schemes coming forward through the development management process and gaining permission due to a lack of existing provision or plan.

Additional evidence may be required to identify suitable land and to help guide allocations and it is also recognised that the Local Plan has many priorities to balance.

¹⁴⁸

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

¹⁴⁹ <https://acp.planninginspectorate.gov.uk/ViewCase.aspx?caseid=3301454> ;
<https://acp.planninginspectorate.gov.uk/ViewCase.aspx?caseid=3317247>

Policy Recommendation 18: Heat Networks

Support the identification of heat network zones and the development of heat networks and require development to connect to these

Description and evidence base

The Government is currently consulting on the Heat Network Zoning Policy as part of the Energy Bill. This policy would give powers to Local Authorities to designate heat network zones where it can be demonstrated, through a standard national methodology, that connection to the heat network would be the lowest cost and lowest carbon solution to deliver heat. Although we are not aware of any existing or planned strategic heat networks in Tonbridge and Malling, we would recommend that a policy is included to act as a hook for future development in this space.

Approach

Recognise that where evidence is provided to show that a heat network in a specific area can offer a more cost effective means for decarbonising heat the Local Plan can be supportive of this new infrastructure and buildings such as Energy Centres associated with it. The Local Plan can include a requirement that new development must connect to a low carbon heat network where one is accessible, and a connection, if made, is shown to be viable.

Evidence and viability

The evidence to support this policy would be the Heat Network Zoning Policy and the Heat and Buildings Strategy which provide details of the potential extent of heat network deployment across the UK that the Government modelling believes will be needed to decarbonise heat supply. Additional local evidence could be undertaken should the Council wish to pursue a heat network for Tonbridge and Malling. For example, the River Medway running through built up areas could be considered a more cost effective source of heat than air source systems and provide an alternative decarbonised heat solution for local businesses and homes.

Implications for implementation

As described above, this policy is unlikely to have any material implications due to the lack of existing strategic heat networks and the time to the ratification of the Energy Bill, but it would be a hook for future development of policy if/when a heat network zone is designated in Tonbridge and Malling.

Summary and Conclusion

Category	Discussion	Rating
Impact	Heat networks, especially using residual heat from existing infrastructure, will have a significant positive impact in reducing emissions.	G
Local Plan Making	There are no existing heat networks in the borough and significant work would be required to identify one. However, a general support for connecting to future networks could be included in policy without additional evidence.	G
Development Management Implementation	Unlikely to have significant impact on the development management process.	G
Viability	Developing a heat network will require a significant financial investment. However, it would not be expected to negatively affect development viability as new heat networks are only expected where they are able to offer a lower cost option than an alternative local low carbon solution such as individual air source heat pumps.	G

Table 33: Heat Network Analysis

Taking account of the analysis set out in Table 33 it has been concluded that implementing a policy requirement for identifying and developing heat networks should be a **low priority** for the Local Plan. However, given that the Local Plan looks ahead to 2041, there is an opportunity to include a general reference to support the development of, and connection to, heat networks where appropriate for future development.

Policy Recommendation 19: Habitat Connectivity

Compulsory habitat connectivity where a site has the potential to connect two existing designated or identified habitats.

Description and evidence base

To support the migration of species between different habitats, the Local Plan can promote the reconnection of habitats across the borough. Connected habitats are known to have higher genetic diversity, healthier fauna and flora and species are proven to occupy a larger range. Healthy ecosystems provide a multitude of services to human populations including regulating temperature (reducing temperature extremes), purifying air and water, controlling erosion, and maintaining healthy soils for agriculture. In Tonbridge and Malling, this could take the form of a riparian corridor to minimise flooding and improve water quality for urban areas.

Connectivity could also involve connecting distinct habitat types. For example, if a site overlaps two habitats identified as *floodplain grassland* and *hedgerow* it will be mandatory for the design of the site to include a green or blue corridor to connect these habitats. Therefore, new developments will have the opportunity to connect fragmented habitats. A robust habitat survey should be conducted to identify suitable and impactful wildlife corridors in the borough. For the corridor to function fully, a habitat management plan should be introduced.

Approach

The design of new development should take account of the surrounding habitat and must provide connections where possible. This should be incorporated into the onsite green infrastructure plan.

Adopted development allocations should seek to create and strengthen habitat connectivity, these should be set out in the development criteria and identified graphically. The Council could consider identifying “habitat connectivity opportunity areas” on the policies map using the biodiversity evidence base.

Evidence and viability

TMBC’s Regulation 18 consultation states that *‘the Kent Local Nature Partnership (KLNP) has identified a number of Biodiversity Opportunity Areas (BOAs) across the county where biodiversity enhancements, restoration or creation could be targeted to reinforce habitat connectivity’*.

A Biodiversity Study or the Green Infrastructure Strategy could provide an evidence base to support this policy as well as helping to identify the key habitats within the borough and where suitable connections can be made as well as the most appropriate type.

Implications for implementation

The Council should co-operate with Kent Nature Partnership and any Local Plan policies should support and reflect the Nature Recovery Strategy. Cross boundary connections and key habitats close to neighbouring authorities should be included in duty to co-operate discussions.

This policy recommendation could be combined with other recommendations such as Green Infrastructure in new Development (PR22), Living roofs and Walls (PR23), and compulsory Tree Planting (PR24). This recommendation could also be delivered through applying the Building with Nature standards (PR21)

Summary and Conclusion

Category	Discussion	Rating
Impact	Loss of habitats and species are likely to be caused by a changing climate. Improving habitat connectivity will have a positive impact on helping the environment to be more climate resilient.	G
Local Plan Making	The Green Infrastructure Study can be used to support this policy requirement. This requirement can also be met by applying the Building with Nature standards in recommendation 21. Protected and designated habitats should be shown on the policies map.	G
Development Management Implementation	Details on how this policy requirement has been met can be set out as part of the planning application.	G
Viability	Can be included as part of onsite biodiversity net gain and other onsite green infrastructure and therefore it is unlikely to impact viability.	G

Table 34: Habitat Connectivity Analysis

Taking account of the analysis set out in Table 34 it has been concluded that compulsory habitat connectivity, where possible, should be **high priority** for the Local Plan.

Habitat connectivity is an important part of helping the natural environment and wildlife adapt to climate change. Tonbridge and Malling already has a high quality natural environment, however development can lead to habitat fracturing but can also provide opportunities for improvements and restoration. This is supported in national policy and by the AONB management plans. There are opportunities both in allocations, as well as through development management decisions, to improve habitat connectivity where possible. This should be included in the design of the new development.

Policy Recommendation 20: Biodiversity Net Gain Land for Offsite Provision

Identify land for Biodiversity Net Gain Offsetting

Description and evidence base

Biodiversity net gain (BNG) is the achievement of measurable gains for biodiversity through new development and occurs when a development leaves biodiversity in a better state than before development. Although the net gain should be delivered onsite as a preference there are occasions where this may not be feasible. Therefore, some biodiversity provision may need to be delivered offsite. There is an opportunity for the Council to identify potential suitable land for offsite BNG to be delivered, particularly land where the gains will help to deliver wider benefits such as improved habitat connectivity.

Approach

The Local Plan can include site allocations for biodiversity net gain offsetting. These can be sites within the Council's ownership of land that have been submitted through the call for sites specifically for this purpose or land submitted by a private party. Land can be assessed for suitability and preferably be available for BNG offsetting if required for new development. We recommend that the Council undertake an assessment to identify the approximate level of land needed for BNG offsetting arising from the proposed allocations using tools such as the Eco Uplift tool¹⁵⁰ to provide estimations.

Any assessment should be undertaken by a suitably qualified and/or experienced ecologist to help identify suitable sites.

Evidence and viability

The Environment Act¹⁵¹, granted Royal Assent November 2021, includes provisions to make BNG a mandatory requirement within the planning system in England.

Implications for implementation

The Council should undertake a suitable study and co-operate with the Local Nature Partnership to identify off-site BNG opportunities.

¹⁵⁰ <https://digital.aecom.com/product/ecouplift>

¹⁵¹ UK Government (2021). [The Environment Act](#)

Summary and Conclusion

Category	Discussion	Rating
Impact	Identifying and protecting land within the LPA for biodiversity net gain offsetting will help to provide opportunities for offsetting to be delivered within the borough. However, offsetting sites may be delivered within the borough without allocation and therefore this is considered to have a moderate impact on climate change adaptation.	A
Local Plan Making	This recommendation is for the Local Plan to allocate land suitable for biodiversity net gain offsetting. However, if no such land is readily available and set up to deliver BNG offsetting the Local Plan could identify land that is ecologically suitable for offsetting in the future. It is recognised that this is a new requirement and has not yet been tested.	A
Development Management Implementation	The allocation or identification of land for BNG offsetting is unlikely to have an impact on development management. However there will be an additional cost associated with identifying suitable land.	A
Viability	Undertaking a study to identify sites will incur costs but is unlikely to have a significant impact on viability.	G

Table 35: Biodiversity Net Gain Land for Offsetting Analysis

Taking account of the analysis set out in Table 35 it has been concluded that identifying land for BNG offsetting should be **low priority** for the Local Plan.

It is likely that developments within the borough will require offsite contributions to achieve the mandatory biodiversity net gain target. There is an opportunity for the Local Plan to identify land within the borough for BNG offsetting and, although the Local Plan cannot require developments to use these sites, it would increase the choice of land available and also help to benefit the wider biodiversity of the borough.

Policy Recommendation 21: Building with Nature Standards and Accreditation

Require new development to be designed to the Building with Nature standards

Description and evidence base

Building with Nature (BwN) is a nationally recognised framework of best practice green infrastructure (GI) standards that puts nature at the heart of placemaking and development.

Development that meets the Standards Framework provides more sustainable, people and wildlife friendly places and helps reduce planning risk by ensuring development is aligned with current and emerging policy themes for climate change, nature recovery and people's wellbeing. The standards also cover a wide spectrum of sustainability issues and could help deliver other policy recommendations including Green Infrastructure (PR22), Habitat Connectivity (PR19), Active Travel (PR12), Sustainable Drainage Systems (PR28).

Approach

We recommend that all new development be designed to the BwN standards. As a minimum we recommend the Local Plan includes a requirement for all development to set out in a statement how the Standards have been considered as part of the design.

For major developments, and those with greater viability, it is recommended that schemes are encouraged to achieve the BwN accreditation both at outline stage (Design Award) and full / part reserved matters application/s (Full Award).

Evidence and viability

The BwN standards are widely used to guide and assess developments. The standards are underpinned by evidence and good practice, having been co-developed with local authorities, private sector developers, people and communities. The standards reflect the Council's ambition for the Local Plan to promote climate resilience and ensure high quality design is at the heart of new development.

BwN also has a Board of Trustees, whose professional specialisms span strategic planning, local authority management, regeneration, social housing, strategic development, charitable organisational management, natural environment, and sustainability. As well as a Standards Board, which is made up of expert representatives from industry and government across the UK. This includes; Natural England, Landscape Institute, CIEEM, The University of Manchester and the RTPi.

The framework has been tested and refined in multiple locations across the UK, with inner city regeneration projects, major urban extensions and strategic allocations, smaller in-fill development, and commercial facilities, demonstrating how using the Standards can deliver multiple benefits to both people and the natural world in a range of contexts. The standards have been adopted in policy by several other Local Plan Authorities, including the Tewkesbury Borough Plan¹⁵², and Blackburn with Darwen Borough Council Local Plan¹⁵³.

Implications for implementation

The BwN standards are clearly defined, and applicants can set out how each standard is met in the design and access statement or in a GI statement. The accreditation is undertaken by a BwN Approved Assessor and reviewed by an auditor before the award can be announced. Once accredited, the developer will receive certification and a BwN report that can be submitted with the planning application.

¹⁵² https://tewkesbury.gov.uk/wp-content/uploads/2022/Planning%20policy/Local%20plan/Tewkesbury%20Borough%20Plan%202011%20to%202031/Adoption/Tewkesbury%20Borough%20Plan%20Adoption%20Version_Final%20minus%20Foreword%20with%20Appendices.pdf

¹⁵³ <https://blackburn-darwen.org.uk/wp-content/uploads/Schedule-of-draft-Main-Modifications.pdf>

Summary and Conclusion

Category	Discussion	Rating
Impact	The Building with Nature standards promote climate and environmental resilience through well designed developments delivering high quality on site green infrastructure.	G
Local Plan Making	The BwN standards are widely used to guide and assess developments and they cover a wide range of sustainability issues supported by national policy.	G
Development Management Implementation	Applicants will need to set out how the standards have been incorporated into the design of the new development. Guidance and training are available for applicants and case officers. Applicants required to achieve the BwN accreditation can submit certification with the planning application.	G
Viability	Meeting the standards is unlikely to have an impact on viability as they promote good design which should be delivered on all developments.	G

Table 36: Building with Nature Analysis

Taking account of the analysis set out in Table 36 it has been concluded that requiring new development to meet the building with nature standards should be a **high priority** for the Local Plan.

The Building with Nature standards can be incorporated into design policies to ensure new developments fully consider and work with the natural environment. The Council's regulation 18 document identified the natural environment as a key strategic theme for the Local Plan. Using the BwN standards for new development would help to ensure the natural environment is protected and valued as well as delivering a range of climate change measures. Major developments can be encouraged to achieve the BwN design award as recently included in the Inspectors main modifications to the Blackburn with Darwen Borough Council Local Plan.

Policy Recommendation 22: Green Infrastructure Delivery in New Developments

Require new development to incorporate effective green infrastructure

Description and evidence base

When effectively planned and provided for, green infrastructure (GI) is multifunctional, and has many wider ranging benefits. These include supporting mitigation and adaptation to the impacts of climate change (extreme weather, flooding, drought and heatwaves), improving health and wellbeing, facilitating stronger and more cohesive communities, supporting economic growth and investment, regenerating land and softening the impact of development, creating a sense of place, improving access to heritage and nature, and enhancing biodiversity and natural habitats.

Approach

The design of new development should include high quality, multifunctional green infrastructure that includes the integration of sustainable drainage systems and enhancing biodiversity, opportunities for carbon sequestration, the historic environment, landscape character, the Rights of Way network and design quality, and making provision for the ongoing and effective management of the GI.

Adopted development allocations should seek to create and strengthen the GI network, enhancing and extending existing green infrastructure assets, and creating new ones.

Evidence and viability

The forthcoming Green Infrastructure Study will provide an evidence base to support this policy as well as the National Green Infrastructure Framework Principles and its supporting GI Design Guide.¹⁵⁴

The National Design Guide, the National Model Design Code (NMDC) and Guidance Notes for Design Codes illustrate how places can be designed by outlining and illustrating the Government's priorities in the form of ten characteristics, this includes Nature (Characteristic 5).

TMBC recognises the importance of GI in the Local Plan Regulation 18 consultation, and how it *can 'make a positive contribution to mitigating and adapting to climate change as well as being part of well-designed, attractive places'*. Also, how GI can *'help manage flooding through sustainable drainage and attenuation and help species adapt to climate change'*.

Implications for implementation

Any policy should support and reflect the outputs of the Green Infrastructure Strategy.

This policy recommendation could be combined with other recommendations such as Habitat Connectivity (PR19), Living roofs and Walls (PR23), and Compulsory Tree Planting (PR24). This recommendation could also be delivered through applying the Building with Nature standards (PR21)

¹⁵⁴ Natural England (2023) [GI Design Guide \(naturalengland.org.uk\)](https://www.naturalengland.org.uk)

Summary and Conclusion

Category	Discussion	Rating
Impact	High quality green infrastructure has multiple benefits and will have a positive impact on both climate change mitigation and adaptation.	G
Local Plan Making	The Green Infrastructure Study can be used to support this policy requirement. This requirement can also be met by applying the Building with Nature standards in Recommendation 21.	G
Development Management Implementation	Applicants can set out in the application how the policy has been complied with.	G
Viability	Unlikely to have a significant impact on development viability above what is already required by national policy.	G

Table 37: Green Infrastructure Analysis

Taking account of the analysis set out in Table 37 it has been concluded that requiring new development to incorporate effective green infrastructure should be a **high priority** for the Local Plan.

The regulation 18 consultation document already recognises the important role green infrastructure can play to support the natural environment, mitigate and adapt to climate change and how it provides other wider benefits such as encouraging active travel and improving health and wellbeing. The forthcoming Green Infrastructure Study is expected support this policy recommendation and may provide additional detail to be included in policy.

Policy Recommendation 23: Living Roofs and Walls

Require new developments to consider incorporating living roofs and walls

Description and evidence base

Living roofs and walls are an essential sustainable design consideration and can take many forms in order to maximise their benefits in a given location. Vegetated roofs, including terraces and gardens, can improve the thermal performance of the building, reduce the urban heat island effect, support sustainable urban drainage by absorbing rainfall to reduce flooding, enhance biodiversity, provide amenity for residents who may not have access to private gardens, provide opportunities to grow food and improve appearance.

They can provide green infrastructure in more urban areas and in higher density sites and they can play an important role in mitigating and adapting to climate change alongside other measures.

Approach

We recommend including a requirement for new development to include living roofs and walls in new development where feasible. This could be aimed at commercial development, care homes or developments where landscape maintenance arrangements will already be in place.

A higher requirement for high quality designs for green walls incorporating vegetation over most of a building's vertical surfaces should also be considered in new developments where appropriate.

The benefit of living roofs can be included in the guidance or SPD (Recommendation 3) to accompany the climate change policies to encourage uptake if a specific requirement is not taken forward in the Local Plan.

Evidence and viability

All Green infrastructure features can form part of the national Nature Recovery Network, which is part of the Government's 25 Year Environment Plan.

The TMBC Green Infrastructure Strategy should consider living roofs and walls as one way onsite green infrastructure can be delivered. And can form part of the evidence to support policy.

Implications for implementation

Any policy should support and reflect the outputs of the Green Infrastructure Strategy. The GI Planning and Design Guide (Natural England, 2023) also provides information on designing GI to deliver multiple functions and designing GI in different area types.

This policy recommendation could be combined with other recommendations such as Habitat Connectivity (PR19), Green Infrastructure in new Development (PR22) and compulsory Tree Planting (PR24). This recommendation could also be delivered through applying the Building with Nature standards (PR21)

Summary and Conclusion

Category	Discussion	Rating
Impact	High quality green infrastructure has multiple benefits and will have a positive impact on both climate change mitigation and adaptation.	G
Local Plan Making	The Green Infrastructure Study can be used to support this policy requirement. This requirement can also be met by applying the Building with Nature standards in recommendation 21.	G
Development Management Implementation	Details of how the living roofs and walls have been incorporated into new development, and how they will be maintained, should be included within the planning application to be assessed alongside the other onsite green infrastructure.	G
Viability	This requirement will be part of the wider green infrastructure required on site and should not add a significant financial cost to the development.	G

Table 38: Living Roofs and Walls Analysis

Taking account of the analysis set out in Table 38 it has been concluded that requiring living roofs and walls in new development as part of the onsite green infrastructure should be a **medium priority** for the Local Plan.

Living roofs and walls should not be the only form of green infrastructure on site but can play an important role in increasing the level of green infrastructure in development, particularly in more urban or higher density developments. This policy recommendation is to require new development to consider the use of living walls and roofs and to demonstrate how they have been incorporated and will be maintained, or why they are not suitable.

Policy Recommendation 24: Compulsory Tree Planting in New Developments

Require new development to include tree planting as part of the onsite green infrastructure.

Description and evidence base

With trees and other green infrastructure providing such vital services as temperature regulation, reducing surface water runoff rate, water storage, not only should existing trees be protected but, where possible, additional trees should be planted within a development area. Consider selecting species which are drought tolerant or have resilient characteristics such as root strength, disease resistant, fast growth. With species selection, consider appropriate species which serve the function of ecosystem restoration including, where possible, selecting native species and consulting the Global Invasive Species Database and berry rich species.¹⁵⁵ Within this, choose a variety of tree species to restore plant diversity and protect soils. Moreover, the strategic location of the species on the site should optimise opportunities for shading, for example by planting saplings to create an overlapping canopy once the trees have reached maturity, which in future will reduce temperatures.

Approach

This requirement aims to have developers demonstrate where they have integrated additional tree cover into their design. It could also include demonstrating how trees have been strategically placed to provide shading and habitat connectivity.

Evidence and viability

As a precedent, Surrey Heath Local Plan requires applicants to demonstrate how their landscaping plan has taken into consideration the impacts of climate change, which includes in the selection of species and the location of the planting. Additionally, they must demonstrate that new trees and landscaping in the development have a strategic climate change purpose, including for mitigating climate change and adapting to the consequences, for example by integrating planting with SuDS provision. Likewise, rural Councils like [Perth and Kinross](#) insist on preservation of existing woodland, the developer must *enhance the condition of existing woodland cover and expand them to develop habitat networks that complement the landscape character*.

Tonbridge and Malling has higher tree canopy cover than the national average, but TMBC is considering the preparation of biodiversity evidence which will investigate further into the effect of canopy cover on new development. The Regulation 18 consultation identifies setting a minimum tree canopy coverage on new developments as a potential policy.

Implications for implementation

Details of how this requirement has been met could be set out by applicants in the landscape/green infrastructure plan to support the application or could form part of wider requirements such as Biodiversity Net Gain.

This policy recommendation could be combined with other recommendations such as Habitat Connectivity (PR19), Green Infrastructure in new Development (PR22), and Living roofs and Walls (PR23). This recommendation could also be delivered through applying the Building with Nature standards (PR21)

¹⁵⁵ Green-Grey Community of Practice. 2020. Practical Guide to Implementing Green-Grey Infrastructure.

Summary and Conclusion

Category	Discussion	Rating
Impact	Tonbridge and Malling has higher tree canopy cover than the national average, so compulsory tree planting is likely to have a positive, but limited impact on carbon emissions.	A
Local Plan Making	National policy supports tree planting ¹⁵⁶ and it can form part of the wider green infrastructure on site. This requirement can also be met by applying the Building with Nature standards in Recommendation 21.	G
Development Management Implementation	Applicants can set out in the application how the policy has been complied with as part of the wider green infrastructure on site.	G
Viability	This requirement will be part of the wider green infrastructure required on site and should not add a significant financial cost to the development.	G

Table 39: Compulsory Tree Planting Analysis

Taking account of the analysis set out in Table 39 it has been concluded that requiring new development to plant trees should be a **medium priority** for the Local Plan.

Although national policy highlights that tree can make an important contribution to the character and quality of new development, Tonbridge and Malling already have a high quality natural environment with excellent tree coverage. More trees should form part of onsite green infrastructure, but this requirement is not as high a priority as for other areas of the country with less existing tree coverage or compared with other recommendations for the Local Plan.

¹⁵⁶ Para 131 NPPF

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1182995/NPPF_Sept_23.pdf

Policy Recommendation 25: Carbon Sequestration

Require developments to minimise and compensate for loss in carbon sequestration.

Description and evidence base

This policy would aim to address the impact of development on the potential for carbon sequestration, either directly through changes to the land use or, going further, the loss in opportunity for alternative use of the land for additional carbon sequestration.

Approach

Developers would be required to assess the existing carbon sequestration associated with the existing site, based upon the use of published values associated with different land uses. Going one step further, developers could also be asked to assess the sequestration of the site if improvements were made to understand the potential that would be lost by developing the site.

The sequestration potential for the proposed development should then be calculated using the same process to allow for the proposed green infrastructure. Measures should be taken by the developer to improve this, both through the quantity and quality of the green infrastructure proposed. In some cases, this could be delivering additional benefits, such as SUDs and amenity spaces, or could be using the development footprint such as with green roofs/walls and street trees/raingardens.

This policy should potentially be applied to greenfield land where the existing and potential sequestration would be much more significant.

The difference between the before and after could then be calculated and potentially used to inform an offset arrangement, addressed either through payment or commitments to deliver equivalent sequestration improvements onsite or elsewhere.

Evidence and viability

Further work would be required, both to develop the evidence base for this policy and to assess the viability and set the payment/penalty cost. We are not aware of any similar Local Plan policies, so do not believe there is a precedent for this type of scheme. One option might be to start with a policy that requires the assessment, but without the penalty of an associated offset scheme, and then use this to drive improvements on site while also collecting the data that could inform, and provide, an evidence base for a future offset arrangement.

Implications for implementation

Although we are not aware of this being done before, we believe this assessment could be relatively straightforward as it could use the same methodology as the biodiversity net gain calculations with the additional carbon sequestration calculations established from national data sets used to assess Land Use, Land Use Change and Forestry (LULUCF) emissions. However, if adopted further work would be required to confirm this and standardise the methodology and values to be used in any calculations.

Summary and Conclusion

Category	Discussion	Rating
Impact	Unlikely to have a significant impact on reducing carbon emissions, as Tonbridge and Malling already have tree canopy cover that's higher than the national average.	A
Local Plan Making	Additional evidence would be required to identify a suitable methodology for calculation sequestration potential of land. There is no precedent for these assessments.	R
Development Management Implementation	The assessment would need to be verified at development management stage by a specialist.	A
Viability	Further work would be required to deliver this recommendation with an additional cost.	A

Table 40: Carbon Sequestration Analysis

Taking account of the analysis set out in it has been concluded requiring a carbon sequestration assessment should be **low priority** for the Local Plan.

Carbon sequestration and offsetting is an important part of achieving net zero carbon emissions, helping to offset emissions that have not yet been reduced and eliminated. Although it should be noted that this is unlikely to have a significant impact on mitigating the development carbon emissions. Additional evidence would be required to explore the role of carbon sequestration and storage to support a policy requirement. This would involve additional cost and this will need to be balanced against other priorities for the Local Plan.

Policy Recommendation 26: Water Consumption Targets

Require new development to meet a water consumption target of 110litres/person/day

Description and evidence base

Building Code (G) requires that the average water usage of a new home (including those created by a change of use) is no more than 125 litres/person/day or 110 litres/person/day if required as part of a Local Plan policy.

Regarding water efficiency, South-East Water, with the Environment Agency, plan to reduce water consumption through several demand management measures. These include reducing consumption from the current 150 litres/person/day in 2017/18¹⁵⁷ to 139 litres/person/day by 2025, 118 litres/person/day by 2045 and 90 litres/person/day by 2080. Aligned with this, reducing water consumption to the greatest extent feasible will be critical in the South-East region and, as such, mandating all new developments to achieve a water efficiency rate of 110 litres/person/day and with incentives to go beyond this to 90 litres/person/day is recommended, unless proven to not be technically or financially feasible.

Approach

We recommend that a water efficiency level of 110 litres/person/day should be required in policy for all developments. For each development, a water calculator¹⁵⁸ should be completed to demonstrate that the 110 litres/person/day target is being met or exceeded, where possible.

The European Water Label¹⁵⁹ is a scheme initiated by bathroom manufacturers across Europe and it provides a database of bathroom products of different levels of water efficiency. It is a useful resource that can help developers identify products that meet their water consumption targets.

Evidence and viability

In the London Plan¹⁶⁰, residential developments must be designed so that mains water consumption meets 105 litres or less per head per day. The South Downs National Park Authority¹⁶¹ defines strict water consumption values of 110 litres/ person/ day for all residential development, further, they outline requirements for major non-residential and multi-residential development that on water consumption they must *'meet at least 2 BREEAM credits (a 25% improvement on the baseline based on Part G of Building Regulations)'*.

TMBC's Regulation 18 consultation identifies water efficiency (specifically consumption within the home) as a potential local policy requirement, and identifies that the optional technical standards produced by the Government can be introduced through the Local Plan process.

Implications for implementation

Development proposals must set out the water usage for each building showing how water efficiency measures have been incorporated into the specifications and a calculation (which could adopt standard calculator tools such as those used in Building Regulations Part G, Home Quality Mark or BREEAM). This can then be checked at the planning approval stage and by Building Control at completion.

This policy requirement could be combined with other requirements such as Rainwater and Greywater Recycling (PR27) or as part of a wider climate change adaptation policy.

¹⁵⁷ South East Water Resources Management Plan (2019). Available online at: <https://cdn.southeastwater.co.uk/Publications/Water+resources+management+plan+2019/south-east-water-final-wrmp-2020-2080.pdf>

¹⁵⁸ <http://www.thewatercalculator.org.uk/>

¹⁵⁹ [European Water Label](#)

¹⁶⁰ [the London Plan](#)

¹⁶¹ [South Downs National Park Authority](#)

Summary and Conclusion

Category	Discussion	Rating
Impact	Tonbridge and Malling lies within an area of water stress. ¹⁶² Climate change is expected increase the risk and likelihood of drought conditions and this has been identified as a risk for Tonbridge and Malling. Therefore reducing water consumption from new development is likely to have a positive impact on promoting climate resilience.	G
Local Plan Making	Water consumption standards have been included in adopted Local Plans ¹⁶³ . The optional standards set out in the building regulations can be incorporated into planning policy.	G
Development Management Implementation	Details of how the optional standards have been met should be set out in the planning application to be reviewed by case officers.	G
Viability	Water consumption levels of 110 litres/person/day have been accepted as viable for adopted Local Plans ¹⁶⁴ . This should be included in the TMBC Local Plan viability study.	G

Table 41: Water Consumption Targets Analysis

Taking account of the analysis set out in Table 41 it has been concluded that Water consumption targets of 110 litres/person/day should be a **high priority** for the Local Plan.

There is a risk of drought and water shortages in Tonbridge and Malling due to climate change, an area that is already consider water stressed. Water consumption targets of 110 litres/person/day have already been included in adopted policies through applying the optional standards in the building regulations.

¹⁶² <https://www.gov.uk/government/publications/water-stressed-areas-2021-classification>

¹⁶³ Central Lincolnshire [Local Plan for adoption Approved by Committee.pdf \(n-kesteven.gov.uk\)](#)

¹⁶⁴ South Downs National Park Authority Local Plan and Affordable Housing Viability Assessment August 2017
<https://www.southdowns.gov.uk/wp-content/uploads/2018/04/Core-13-Whole-Plan-and-Affordable-Housing-Viability-Report.pdf>

Policy Recommendation 27: Rainwater and Greywater Recycling

Incorporate water harvesting measures in new development

Description and evidence base

In England the average person uses about 150 litres of water a day for a range of uses including sanitation, where significant savings are possible. Given that climate projections forecast half as much rainfall in summer in the South East of England by 2080, it is important to build water efficiency into our building stock. In addition to using water efficient sanitary fittings, it is important to consider rainwater and greywater recycling.

Rainwater recycling refers to the collection and storage of rainwater run-off from hard outdoor surfaces, such as roofs, to meet a non-potable water demand in the development.

Greywater recycling involves the appropriate collection, treatment and storage of domestic waste water (which is defined as that discharged from kitchens, baths or showers, laundry rooms and similar) to meet a non-potable water demand in the development.

Non-potable water demands can include WC flushing, irrigation and potentially other operational water uses depending on the building type.

Approach

Developments should be required to consider the possibility to recycle rainwater or greywater, after they have demonstrated that they have used water efficient sanitary fittings to reduce their potable water demand. This is applicable to any scale of project and does not necessarily involve a great cost. It can vary in scale from a water butt used for plant irrigation in a small domestic property, to larger scale communal waste water harvesting and recycling in larger developments. Therefore, it is recommended that this can be a planning requirement for all new developments, residential and non-residential. Relevant best practice standards for greywater and rainwater systems includes the following:

- Greywater systems in compliance with BS 8525-1:2010 Greywater systems - Part 1 Code of Practice.
- Rainwater systems in compliance with BS EN 16941-1:2018.

This policy requirement can be combined with the water consumption target requirement (Policy Recommendation 25).

Evidence and viability

BREEAM schemes have had requirements for the implementation of greywater and rainwater recycling in projects for more than a decade and this has contributed to achieving potable water use reduction across the UK. This has become a more common way of conserving potable water and should be encouraged for any development.

Implications for implementation

This requirement would have some resource implications for the developer in order to identify potential water recycling options and design the relevant system. This also requires the contribution of a specialist consultant if not already involved in the project. For larger scale developments, this is not expected to present significant challenges.

This policy requirement could be combined with other requirements such as Water Consumption Targets (PR26) or as part of a wider climate change adaptation policy.

Summary and Conclusion

Category	Discussion	Rating
Impact	Tonbridge and Malling lies within an area of water stress. ¹⁶⁵ Climate change is expected increase the risk and likelihood of drought conditions, onsite water harvesting and recycling measures in new development is likely to have a positive impact on promoting climate resilience.	G
Local Plan Making	A policy requirement for all new developments to be encouraged to install rainwater and greywater harvesting can be included. The Council may want to specifically require new development to install rainwater harvesting and storage for use in gardens and other green infrastructure features as has been included in other adopted policies. ¹⁶⁶	G
Development Management Implementation	Details to be included in the planning application to be reviewed by the case officer	G
Viability	This recommendation is unlikely to lead to viability issues however it should be included in the TMBC Local Plan viability study.	G

Table 42: Rainwater and Greywater Harvesting Analysis

Taking account of the analysis set out in Table 42 it has been concluded that encouraging rainwater and greywater harvesting measures should be a **high priority** for the Local Plan.

Tonbridge and Malling lies within an area of water stress and climate change is expected to exasperate this situation as shown in the risk assessment in Appendix A0. Rainwater harvesting for garden irrigation has been adopted in recent Local Plans and should be a minimum requirement for the Tonbridge and Malling Local Plan. An encouragement for wider rainwater and greywater recycling should also be included as a minimum.

¹⁶⁵ <https://www.gov.uk/government/publications/water-stressed-areas-2021-classification>

¹⁶⁶ [Epping Forest District Local Plan 2011-2033 Part One \(eppingforestdc.gov.uk\)](#)

Policy Recommendation 28: Flood Risk Management

Safeguard areas with high adaptation potential including protecting and restoring catchments upstream of high flood risk areas

Description and evidence base

We recommend protecting areas of high adaptation potential, for example land that is critical for groundwater recharge or water storage, which will enable development to be directed towards areas with lower adaptation value (i.e. areas with limited attenuation potential). In allocating development, consideration must be given to the impact of the development on flood risk in existing sites. New development will increase the impermeable surface area of a site, which results in increased surface run off, potentially increasing the likelihood and severity of flooding elsewhere.

By safeguarding areas with the highest potential for adaptation, these sites can be maximised and development can be directed towards areas with lower adaptation productivity (i.e. areas which have limited attenuation potential). For example, planting of riparian woodland will enable floodplain storage, reduce runoff and both delay the onset of flooding and the impact of floods in the borough. Simultaneously, floodplains and riparian woodland will create new high-biodiversity habitats and increase canopy and shading for temperature regulation.

Approach

The Local Plan should identify and support any existing natural flood management (NFM) or catchment improvement projects. It should also encourage and support future projects and commit to working with partners, including the Environment Agency and the Lead Local Flood Authority, to bring forward projects within the plan period. Any landscape scale projects supported by the Council should include elements of natural flood management wherever appropriate.

TMBC's Regulation 18 consultation emphasises the pertinence of fluvial flooding in the borough, and that in response to this, there has been substantial investment in major infrastructure projects, such as the Leigh Barrier and East Peckham flood mitigation scheme, to reduce the risk of flooding.

Areas identified within the SFRA can be identified on the policies map as areas "safeguarded for flood management potential". Development should be avoided in such locations and any adjoining development should include assessments to demonstrate the development will not have a negative impact on the ability to bring forward natural flood management projects in the safeguarded areas.

The Council should also consider whether these sites are suitable for biodiversity net gain offsetting, carbon sequestration and identify potential projects that will deliver multi-benefits.

Evidence and viability

The SFRA provides detailed evidence of areas to safeguard and provides the evidence base for the benefits that would be derived for this. In regard to viability, the Council would need to assess the practical implication of safeguarding this land on development areas and other demands on land allocation. For funding, to support specific projects it might be possible to apply to the Natural Flood Management (NFM) Fund administered by DEFRA or source this through the Section 106 infrastructure funding if it is directly related to development.

Implications for implementation

Sites of high adaptation potential can be identified using Working with Natural Processes (WWNP)¹⁶⁷ data sets. This data informs which sites should be strategically selected for riparian woodland restoration, reconnecting floodplains, catchment woodland restoration or for runoff attenuation.

¹⁶⁷ UK Government. 2017. Working with natural processes to reduce flood risk. Available: <https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/working-with-natural-processes-to-reduce-flood-risk>

Summary and Conclusion

Category	Discussion	Rating
Impact	Tonbridge and Malling borough is at risk of flooding as set out in the SFRA and the climate risk assessment. Climate change is expected to increase the risk of fluvial flooding and measures to manage and reduce instances of future flooding will have a positive impact.	G
Local Plan Making	Areas identified within the SFRA can be identified on the policies map as areas “safeguarded for flood management potential”. Flood management projects and schemes should be supported where possible, particularly with regard to natural flood management with multi benefits for the natural environment.	G
Development Management Implementation	Designated areas to be taken into account on relevant applications.	G
Viability	This is unlikely to have an impact on development viability.	G

Table 43: Flood Risk Management Analysis

Taking account of the analysis set out in Table 43 it has been concluded that protecting appropriate land identified in the SFRA for future flood management and supporting flood management projects where possible should be a **high priority** for the Local Plan.

Flooding is a key current and future risk for Tonbridge and Malling as identified in the climate risk assessment and the SFRA. Any measures to reduce the risk of flooding should be supported and included in the Local Plan. The Council can work with the Environment Agency, Kent County Council, the AONB units, the Medway Valley Countryside Management Partnership, Kent Wildlife Trust and any other organisations to develop flood risk management projects, with a particular focus on natural flood management. The Local Plan can support such projects in policy, identifying any existing projects, those in development and making provision for future projects.

Policy Recommendation 29: Sustainable Drainage Systems (SuDS)

Require Sustainable Drainage Systems in new development

Description and evidence base

Flood risk has been identified as one of the major risks for Tonbridge and Malling Borough. This is likely to be aggravated by climate change due to the increased precipitation projected for the coming years. In urban environments with reduced natural infiltration, high precipitation can result into flooding, as the existing water management networks are likely unable to cope with the higher volumes of water. This can have a significant impact on properties and people's safety.

Approach

There is an expectation in national planning policy that all developments in areas at risk of flooding should give priority to the use of SuDS.

Developments should consider the incorporation of Sustainable Drainage Systems, ensuring that they manage surface water in a sustainable manner. SuDS mimic natural drainage processes, allowing rainwater to be absorbed into the ground, reducing the risk of surface water flooding and enhancing water quality. This would encourage developers to integrate features such as permeable paving, green roofs, and retention ponds to help mitigate flood risks.

Measures should be incorporated at the earliest design stage of a development and maintained throughout the design, construction and operation of a proposal. Where SuDS are being installed, consideration needs to be given to their maintenance throughout the development's lifetime. Therefore, a SuDS management plan should also accompany these proposals.

Evidence and viability

The required implementation of Sustainable Drainage Systems (SuDS) is recognised by TMBC as a potential climate change measure, in the Local Plan Regulation 18 consultation.

SuDS can deliver a wide range of environmental benefits. The Construction Industry Research and Information Association (CIRIA) has published several documents in the past few years, aiming to help local authorities and professionals deliver SuDS successfully¹⁶⁸. This includes their Guidance for Local Authority Planners focusing on practices for property flood resilience.

As an example of other Local Authorities, Birmingham City Council and Surrey County Council require major developments to ensure that SuDS for the management of runoff are put in place. Surrey County Council¹⁶⁹, as a Lead Local Flood Authority (LLFA) provide additional information and even pre-application advice to help applicants submit the best possible solution for their development.

Implications for implementation

This is already encouraged by the NPPF and is a requirement that is becoming increasingly common practice. However, additional support provided by the Council could be beneficial in facilitating the delivery of high quality SuDS.

¹⁶⁸ [Flood risk management and surface water drainage \(ciria.org\)](https://www.ciria.org/)

¹⁶⁹ [Planning Advice - Sustainable Drainage Systems \(SuDS\) - Surrey County Council \(surreycc.gov.uk\)](https://www.surreycc.gov.uk/)

Summary and Conclusion

Category	Discussion	Rating
Impact	Tonbridge and Malling borough is at risk of flooding as set out in the SFRA and the climate risk assessment. Climate change is expected to increase the risk of surface water flooding and measures to manage and reduce instances of future flooding will have a positive impact.	G
Local Plan Making	SuDS have been included in adopted policies and are supported in national policy. The Building with Nature standards include SuDS.	G
Development Management Implementation	How SuDS have been incorporated should be included in the planning application as part of the Design and Access statement to be reviewed by the case officer and by the lead local flood authority if necessary.	G
Viability	Unlikely to be a significant impact on viability given that SuDS are supported in national policy and can be incorporated into the design of the scheme at an early stage.	G

Table 44: Sustainable Drainage Systems Analysis

Taking account of the analysis set out in Table 44 it has been concluded requiring the incorporation of SuDS in all new development should be a **high priority** for the Local Plan.

Sustainable Drainage Systems are already supported in national policy however, as flooding has been identified as a key issue for Tonbridge and Malling, it is important for the Local plan to ensure new development includes appropriate sustainable drainage to manage surface water runoff. These should be incorporated into the design of the scheme at the earliest opportunity, making the most of multi benefits to the natural environment and for health and wellbeing.

Policy Recommendation 30: Passive Design Analysis

Require all new large developments to conduct a passive design analysis to identify measures that can be incorporated into the scheme design and confirming how energy demand is reduced and thermal comfort is maintained / optimised.

Description and evidence base

Passive design can have a significant impact for the purposes of mitigation and adaptation to climate change. It aligns very well with our policy recommendation on overheating and the energy hierarchy, and it encompasses a wider range of considerations that would aim to reduce energy demand while encouraging the adaptation to climate change, especially with regards to overheating.

Approach

Larger developments should be required to conduct passive design analysis, taking into consideration the orientation and natural characteristics, climatic conditions and microclimate of the specific site. They will need to consider how to optimise the building orientation and layout to reduce heat gains, but also consider the use of thermal mass and appropriate building fabric. Additionally, they should consider daylight and ventilation strategies that do not impact energy use, while maintaining comfortable conditions for the building occupants. This can involve night ventilation, shading controls and other passive design options that would improve mitigation and adaptation for the specific development. This study also needs to take into consideration climate change and consider thermal comfort under future climatic conditions and the findings should be included in the Energy and Climate Change Statement.

Evidence and viability

Literature and policies agree on the significance of passive design measures to minimise energy use and achieve thermal comfort. Examples include the GLA's Energy hierarchy, the Passivhaus standard, the BREEAM methodology and LETI standards, which all encourage a fabric first approach and a consideration of local parameters that will enable the minimisation of energy demand while improving thermal comfort.

TMBC's Regulation 18 Consultation identifies passive design, including orientation, layout and landscaping, as a potential climate change measure.

Implications for implementation

Passive design is reasonably easy to integrate in any scale of project and should be part of best practice for any new building design. However, conducting a detailed passive design analysis which will estimate the benefits of the passive design on energy demand and thermal comfort, will require the contribution of a specialist who can provide a higher level of detail and confirmation of what the proposed passive design measures actually achieve. It would also require additional resources in the Council for the review of the passive design analysis.

This policy requirement could be included in a wider design policy alongside the Overheating recommendation (PR6).

Summary and Conclusion

Category	Discussion	Rating
Impact	Passive design can be a simple way to mitigate and adapt to climate change and when combined with other measures can have a positive impact.	G
Local Plan Making	Passive design measures can be required through a general design policy as well as complimentary policies on overheating and energy hierarchy this is a well-tested and applied policy requirement in adopted Local Plans.	G
Development Management Implementation	How the development has incorporated passive design measures can be documented in the Energy and Climate Change Statement to be reviewed by the case officer.	G
Viability	Passive design measures are unlikely to have a negative impact on the viability of new development.	G

Table 45: Passive Design Analysis

Taking account of the analysis set out in Table 45 it has been concluded requiring the incorporation of passive design measures in new development should be a **high priority** for the Local Plan.

Passive design measures can be a simple way to help reduce carbon emissions and energy use in new development as well as promoting climate resilience. The regulation 18 consultation document references passive design as a potential climate change measure and a requirement for measures to be incorporated into the design of large development following an analysis should be included in the Local Plan.

Policy Recommendation 31: Subsidence

Reduce risks at strategic level, neighbourhood and building scale.

Description and evidence base

The British Geological Survey (BGS) GeoClimate shrink–swell national datasets show potential change in subsidence due to changes in climate. They have been developed by combining long term UK Climate Projection (UKCP) scenarios for rainfall and temperature changes with the geotechnical properties of the ground, to identify areas projected to experience the largest increases in susceptibility to subsidence over the next century.

According to the data from the British Geological Survey, there are currently no significant risks of subsidence in the area of Tonbridge and Malling Borough. Nevertheless, the projections based on the UKCP climate scenarios and presented in section 0 show that subsidence risks are expected to increase by 2050 and further still by 2080.

Approach

Solutions addressing other climate risks, such as overheating and flooding are also beneficial in terms of adapting to the risks of subsidence. Therefore, many of these solutions could be viewed as cost-effective due to their dual or multiple functions.

We recommend that subsidence solutions should focus on ground stability engineering, focusing on the areas of increased risk. At a strategic level, this means considering subsidence risks in large scale flood infrastructure projects, water and plant management aspects, as well as in place-making activities. The maintenance and, where needed, upgrade of drainage networks are also a consideration that should form part of all major development.

Additionally, as mentioned under Policy Recommendation 28 on SuDS, developments should consider the incorporation of (SuDS) and the integration of features such as permeable paving, green roofs, and retention ponds which will help the soil address the risks linked to the soil shrink–swell.

Finally, at the building scale, efforts should be focussed on reinforcement and appropriate design and construction, taking care not to conflict the need for structural stability with the need for high quality adaptive design, and vice versa.

Evidence and viability

The BGS datasets have recently identified a number of areas in the South East of England which are expected to face increased risks of subsidence in the future.

Hertfordshire County Council¹⁷⁴ has several suggested solutions addressing subsidence through the encouragement of design approaches and studies that can provide adaptation to a number of risks, including flooding and overheating, as described in the recommended approach above.

Implications for implementation

The recommendation provided for subsidence largely aligns with the previous recommendations described, addressing other climate risks. Therefore, they are not expected to have additional implications in most cases.

This policy recommendation could be included as part of a wider design policy.

¹⁷⁴ [Solutions \(hertfordshire.gov.uk\)](https://www.hertfordshire.gov.uk/solutions)

Summary and Conclusion

Category	Discussion	Rating
Impact	The borough has a risk of subsidence in the longer term. As the risk is not in the short term it is considered that measures would have a minimal impact on climate change adaptation at this stage.	A
Local Plan Making	Additional requirements to tackle future subsidence issues are not strongly supported by short term evidence.	A
Development Management Implementation	Additional expertise may be required to assess subsidence reports.	A
Viability	There are expected to be additional build costs which may affect viability.	A

Table 46: Subsidence Analysis

Taking account of the analysis set out in Table 46 it has been concluded requiring subsidence solution in new development for all larger developments should be a **low priority** for the Local Plan.

Subsidence is considered a low risk for Tonbridge and Malling during the plan period, although it may become a greater risk later and development built during the plan period is likely to still be in place. However, the risk is currently low and the Local Plan will need to balance other priorities.

Policy Recommendation 32: Circular Economy

New development to incorporate circular economy principles.

Description and evidence base

We recommend that, where deemed to be appropriate, developers are asked to consider how the development proposals adopt the Circular Economy principles, and seek to reduce and manage waste generation.

Government statistics show that around 60% of all waste generated in the UK is derived from construction related activities. The Circular Economy seeks to move away from the current linear model (a 'take-make-dispose' approach) to increase recycling and promote the consideration of waste as a resource and part of a circular economy. The principles of the Circular Economy seek to prioritise retention and refurbishment of existing building stock and work toward a goal of net zero waste to landfill.

Approach

This requirement should be applied to major applications. A higher level of requirement could be adopted for larger developments where the extra costs and resources to undertake the assessment can be made cost effective and the impacts are greater. This could include scenarios where:

- There is substantial demolition proposed;
- The scale and type of development proposed is similar to the existing; and
- The proposal is of a temporary nature.

Evidence and viability

Specific targets for diversion of construction stage (construction, demolition and excavation) waste from landfill are defined within certification criteria including BREEAM and HQM. The implementation of these types of targets is constrained by the need to monitor on-site and report post-construction, requiring developers and contractors to have adequate resources and processes in place.

There is overlap between some of the BREEAM Credits and Circular Economy, in particular the following where specific design-stage studies would be expected to be developed in order to evidence that the criteria of the credits have been met:

- Mat 06 Material efficiency;
- Wst 01 Construction waste management; and
- Wst 06 Design for disassembly and adaptability.

Implications for implementation

A developer would be required to assess how the design of the development proposals has been developed to respond to the six Circular Economy principles. It is anticipated that this level of assessment could feasibly be undertaken by the architect and design team. For any higher standards, it is likely that specialist engagement would be required.

The Circular Economy response could either be part of a wider Energy and Climate Change Statement, alongside assessment of WLC, or as a separate planning document, which would then be reviewed by the planning officer.

This policy recommendation could be combined with the Whole Lifecycle Carbon policy recommendation (PR10).

Summary and Conclusion

Category	Discussion	Rating
Impact	The structure of a building accounts for approximately 50% of the embodied carbon, so the reuse of buildings and minimisation of waste will have a positive impact on reducing carbon emissions.	G
Local Plan Making	Circular economy principles are supported by national policy and have been included in some adopted plans. The policy could be written to encourage rather than require.	A
Development Management Implementation	The Circular Economy response could either be part of a wider Energy and Climate Change Statement, alongside assessment of WLC, or as a separate planning document, which would then be reviewed by the planning officer. Additional upskilling may be required.	G
Viability	The Circular Economy assessment is unlikely to add additional build costs to the development.	G

Table 47: Circular Economy Analysis

Taking account of the analysis set out in Table 47 it has been concluded that requiring new development to follow circular economy principles is a **medium priority** for the Local Plan

The TMBC local plan is likely to include sites on previously developed land and it is important that the embodied carbon of these sites is considered, and circular economy principles are applied where possible. This is still a relatively new area of focus for Local Plans and as such there is limited precedent in adopted policy therefore it is expected policy would be to require the general “principles” to be applied, and applicants to set out how these have been incorporated, rather than anything more prescriptive.

Appendix A Climate Change Risk Assessment

The following climate change risk assessment is the basis of the climate change adaptation study. The risks were selected from the UK Climate Change Risk Assessment, with the exception of risks less relevant to the Local Plan, such as the international dimensions. The relevance of the risk was then evaluated in relation to the Tonbridge and Malling Borough.

The economic magnitude of each risk has been assessed for both a 2°C and 4°C warming scenario. The following are the UK-wide magnitude categories where the cost of damage (economic) or forgone opportunities are represented in ranges to reflect the uncertainty in the evidence base:

- Very High (VH) is over £1 billion per annum
- High (H) is over £ hundreds of millions per annum
- Medium (M) is over £ tens of millions per annum
- Low (L) is less than £ ten million per annum

Potential costs and damages are denoted with a negative sign e.g. - VH while possible opportunities are denoted with a positive sign e.g., +VH. Where uncertainty exists over the category, the range has been indicated e.g. – L to – VH. For some of the risks and opportunities, there are both potential costs and benefits.

ID	Risk or Opportunity	2050s, 2/4°C	2080s, 2°C	2080s, 4°C	Relevance to Tonbridge and Malling Local Plan
N1	Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology (including water scarcity, flooding and saline intrusion)	Not known	Not known	Not known	Low
N2	Risks to terrestrial species and habitats from pests, pathogens and invasive species	Not known	Not known	Not known	Low
N4	Risks to soils from changing climatic conditions, including seasonal aridity and wetness.	- H	- H	- H	Moderate
N5	Risks and opportunities for natural carbon stores, carbon sequestration and GHG emissions from changing climatic conditions, including temperature change and water scarcity	- VH	- VH	- VH	Moderate

N6a	Risks and opportunities for forestry productivity from extreme events and changing climatic conditions (including temperature change, water scarcity, wildfire, flooding, coastal erosion, wind and saline intrusion)	- L to - H	- L to - H	- L to - H	Low
N6b	<u>Risks to</u> and opportunities for agricultural productivity from extreme events and changing climatic conditions (including temperature change, water scarcity, wildfire, flooding, coastal erosion, wind and saline intrusion).	- H	- VH	- VH	Low
N6b	Risks to and <u>opportunities</u> for agricultural productivity from extreme events and changing climatic conditions (including temperature change, water scarcity, wildfire, flooding, coastal erosion, wind and saline intrusion).	+ H	+ VH	+ VH	Low
N7	Risks to agriculture from pests, pathogens and invasive species	- M	- H	- H	Low
N8	Risks to forestry from pests, pathogens and invasive species	- M	- M	- H	Low
N11	Risks to freshwater species and habitats from changing climatic conditions and extreme events, including higher water temperatures, flooding, water scarcity and phenological shifts	- H	- H	- H to - VH	Low
N12	Risks to freshwater species and habitats from pests, pathogens and invasive species	- L	- L	- M	Low
N14	Risks to marine species, habitats and fisheries from changing climatic conditions, including ocean acidification and higher water temperatures.	- M	- M	- H	Low
N16	Risks to marine species and habitats from pests, pathogens and invasive species.	- M	- M	- M	Low
N17	Risks and opportunities for coastal species and habitats from coastal flooding, erosion and climate factors	- M	- M	- M	Low
I1	Risks to infrastructure networks (water, energy, transport, ICT) from cascading failures	- VH	- VH	- VH	High
I2	Risks to infrastructure services from river, surface water and groundwater flooding	- H to - VH	- H to - VH	- H to - VH	High
I5	Risks to transport networks from slope and embankment failure	- M to - H	- M to - H	- H	Low

I8	Risks to public water supplies from reduced water availability	- H	- H	- H	High
I12	Risks to transport from high and low temperatures, high winds, lightning	- M to - H	- M to - H	- M to - H	High
H1	Risks to health and wellbeing from high temperatures	- VH	- VH	- VH	High
H3a	Risks to people, communities and buildings from river and surface flooding	- VH	- VH	- VH	High
H3b	Risks to people, communities and buildings from coastal flooding	- H	- H	- H	Low
H4	Risks to people, communities and buildings from sea level rise	- L	- L	- M	Low
H6a	Risks and opportunities from winter household energy demand	+ VH	+ VH	+ VH	High
H6b	Risks and opportunities from summer household energy demand	- H	- VH	- VH	High
H8	Risks to health from vector-borne diseases	- L to - M	- M	- M	Moderate
H11	Risks to cultural heritage	Not known	Not known	Not known	Low
H12	Risks to health and social care delivery	Not known	Not known	Not known	Low
H13	Risks to education and prison services	Not known	Not known	Not known	Low
B1	Risks to business sites from flooding	- VH	- VH	- VH	High
B2	Risks to business locations and infrastructure from coastal change from erosion, flooding and extreme weather events	- M	- M	- M	High
B6	Risks to business from disruption to supply chains and distribution networks	Not known	Not known	Not known	Low

Source: AECOM. 2023. (Based on the United Kingdom Climate Change Risk Assessment)

Appendix B Modelling Assumptions

Scenario	Notes
BAU1	Electricity CEF value of 0.211 kgCO ₂ e/kwh from DESNZ Trajectory 2021 assumed from 2021 until 2041 Gas boiler efficiency of 80% for all Part L 2021 buildings Energy demand of Part L 2021 assumed to have a 10% reduction from Part L 2013 for both domestic and non-domestic developments
BAU2	Electricity CEF varying in line with the DESNZ trajectory from 2021 and throughout the local plan period (2026-2041) Gas boiler efficiency of 80% for all Part L 2021 buildings Energy demand of Part L 2021 assumed to have a 10% reduction from Part L 2013 for both domestic and non-domestic developments
BAU3*	Business as usual assuming all new developments meet Part L 2025 (FHS) from 2026 (allowing for a transition period) with the Electricity CEF varying in line with the DESNZ trajectory throughout the local plan period (2026-2041) Heat pump efficiency of 250% Energy demand of Part L 2025 (FHS) assumed to have a 20% reduction from Part L 2013 for domestic developments Energy demand of Part L 2025 (FHS) assumed to have a 30% reduction from Part L 2013 for non-domestic developments
ASHP*	Assume compulsory heat pumps Heat pump efficiency of 250% Energy demand of Part L 2025 (FHS) assumed to have a 20% reduction from Part L 2013 for domestic developments Energy demand of Part L 2025 (FHS) assumed to have a 30% reduction from Part L 2013 for non-domestic developments
Onsite PV	Assume 3 kWp per house and 1.5 kWp per flat (where this would be the share of a larger array) and 0.03 kWp per m ² for commercial units PV Output for the year of 2021 calculated to be 872 kWh/kWp
PH10% & PH100%	For the purposes of modelling the Passivhaus scenario considers the application of the fabric standards and achievement of the space heating and energy use requirements only, 15 kWh/m ² /yr for space heating No-on site renewable generation assumed Energy demand of Passivhaus is assumed to have a 50% reduction from Part L 2013 for both domestic and non-domestic developments The difference between PH10% and PH100% models is that the former applies the additional energy saving to 10% of new homes annually where as the latter is applied to all.

*The modelling assumptions for these scenarios are identical. The explanation for why these two scenarios have been modelled as separately can be found in 'Section 5.4.5 Policy Option Testing' of the report.

