West Suffolk Council

# Climate Change and Sustainable Building Planning Advice Note 2026

Action on Climate Change West Suffolk Council

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# Executive summary

Planning policy at the local level can play a significant part in addressing the impacts of climate change by developing and creating policies to ensure all proposals for new development incorporate a net zero approach from the outset.

This planning advice note outlines the policy requirements from the climate change section of the West Suffolk Local Plan 2024 to 2041 (July 2025) and signposts advice and guidance to help developers and homeowners proposing new developments to access the most up-to-date information. The impacts of climate change are complex and effect a range of activities in the natural and built environment. The advice note also identifies policies in sections 4.2 The natural environment and 4.8 Infrastructure that relate to delivering green and blue infrastructure and biodiversity net gain, enhancing the natural environment and supporting sustainable and active travel which contributes toward reducing a development's impact and adapting to the effects of climate change.

A toolkit has been prepared alongside this planning advice note, (see appendix two) setting out questions and requests for information as part of a planning application. This toolkit is intended to assist the preparation of planning applications when considering the policy requirements within the climate change section of the West Suffolk Local Plan. This will also provide a consistent approach to ensure documents accompanying planning applications, such as sustainability statements, energy statements, and the Building Research Establishment's Environmental Assessment Method (BREEAM) pre-assessment, include the required evidence based on current planning policies.

Applicants are strongly encouraged to use the toolkit in appendix two, as applicable to the scale and nature of the proposal to clearly demonstrate how the proposal addresses planning policy requirements and how the proposal helps meet the broader climate change challenges and the move towards net zero.

This planning advice note groups these policy requirements into six broad sections:

**Reducing occupational energy demands** – designing development to minimise the amount of energy consumed by the occupier. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy LP1 Sustainable design and construction.
- Policy LP2 Promoting energy and water efficiency in show homes.

**On-site renewable energy generation** – introducing forms of renewable energy generation within development or delivering a dedicated renewable energy generation development. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy LP1 Sustainable design and construction.
- Policy LP6 Renewable and low carbon energy.

**Flooding and water efficiency** – minimising water consumption through the proposal's design and providing sustainable drainage to reduce the risk of flooding. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy LP1 Sustainable design and construction.
- Policy LP2 Promoting energy and water efficiency in show homes.
- Policy LP5 Water quality and resources.

**Place making and the natural environment** – incorporating green infrastructure and creating climate resilient developments. The following policies are relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy SP5 Green Infrastructure.
- Policy SP7 Landscape.
- Policy SP8 Biodiversity net gain and enhancements.
- Policy SP9 protected sites, habitats and features.
- Policy LP1 Sustainable design and construction.
- Policy LP5 Water quality and resources.
- Policy LP7 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards.
- Policy LP12 Trees.
- Policy LP13 Protected species.
- Policy LP21 Open space, sport, play and recreation facilities.

**Transport and accessibility** – encouraging active and sustainable travel and delivering electric vehicle charging points. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy LP1 Sustainable design and construction.
- Policy LP3 Electric vehicle charging points in new development.
- Policy LP41 Active and sustainable travel.

**Embodied carbon, the circular economy and waste** – minimising waste and other forms of pollution on site and reducing the carbon generated throughout the development's lifetime. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy LP1 Sustainable design and construction.
- Policy LP4 Reducing waste and the circular economy.
- Policy LP7 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards.

The planning advice note is not a policy document but a practical guide. However, this planning advice note will be a material consideration when determining planning applications.

# 1. Introduction

1.1 Addressing the climate and environment emergency while protecting and improving our environment and striving to achieve net zero carbon emissions by 2039 is a strategic priority for West Suffolk Council. The West Suffolk Local Plan recognises the importance of providing a robust approach that ensures all development proposals are climate change resilient and includes a suite of policies to contribute towards sustainable development.

1.2. This advice note provides guidance on the West Suffolk Local Plan's policy requirements to ensure climate change resilience, mitigation and adaptation is prioritised when considering proposals. It ensures applications for planning permission, from householder extensions to large-scale developments, residential and non-residential, to consider and address a range of issues designed to incorporate measures to mitigate or adapt to climate change.

## Planning and climate change the national policy context

1.3. At the national level, the Climate Change Act 2008 introduced a statutory target of reducing carbon dioxide emissions to at least 80 per cent below 1990 levels by 2050, stepped every five years. In June 2019, the government committed the UK to bring all greenhouse gas emissions to net zero by 2050.

1.4. The Climate Change Committee is an independent, statutory body established under the Climate Change Act 2008. Its purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for and adapting to the impacts of climate change. It provides independent advice on setting and meeting carbon budgets and preparing for climate change, monitors progress in reducing emissions and achieving carbon budgets and targets, conducts independent analysis into climate change science, economics and policy, and engages with a wide range of organisations and individuals to share evidence and analysis.

1.5. The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied. It sets out in paragraph 11 the presumption in favour of sustainable development which includes a requirement for all plans to promote a sustainable pattern of development that seeks to '… mitigate climate change … and adapt to its effects'. Section 14 Meeting the challenge of climate change, flooding and coastal change also provides policies to guide local policies and decision taking into taking a proactive approach to mitigating and adapting to climate change guidance.

1.6. The Planning Practice Guidance (PPG) is an online resource providing guidance linked to the sections of the NPPF. The climate change section provides guidance on how to identify suitable mitigation and adaptation measures in the planning process to address the impacts of climate change.

## The climate emergency and biodiversity in West Suffolk

1.7. In 2019 West Suffolk Council declared a climate and biodiversity emergency and subsequently agreed a Climate Change Action Plan that included initiatives to improve the environment in West Suffolk. Progress against this plan is reviewed annually by the Environmental and Sustainability Reference Group (ESRG) and the Performance and Audit Scrutiny Committee and reported to Cabinet.

1.8. A comprehensive review of the council's progress towards net zero has been conducted, identifying areas for improvement and prioritising high-impact actions. This review concluded that a net zero target date of 2039 would be achievable yet still ambitious. Good progress has already been made towards the net zero target, and significant further investment is planned in the next few years, such as the removal of fossil fuel plant at Bury St Edmunds and Haverhill Leisure Centres and replacing these with air source heat pumps (ASHPs).

1.9. West Suffolk Council prepares an annual environment statement providing an overview of the council's environmental performance. This report and further information on West Suffolk's work on climate change can be found on our tackling climate change webpages.

1.10. On top of the work the council does to reduce its own emissions, the council also completes targeted work to reduce emissions across West Suffolk. An overview of West Suffolk's wider contributions to reducing the impacts of climate change can be found below.

## Overview of the council's wider contribution to West Suffolk

- The council owns a 12MW solar farm which contributes 12,000MWh of renewable electricity to the national grid each year.
- The council's Solar for Business scheme has facilitated over 10MW of solar installations at over 100 businesses, saving approximately 2,000 tonnes of carbon annually.
- 158 domestic properties have had solar photovoltaics (PV) installed as part of the Solar Together scheme.
- 1,368 residences have had energy efficiency and renewable upgrades installed via Warm Homes Suffolk, saving 1,760 tonnes of carbon per annum.
- The council awarded funding to town and parish councils to facilitate the conversion of their streetlights to LED, leading to an annual carbon saving of 85 tonnes.

1.11. West Suffolk Council are part of the Suffolk Public Sector Leaders group which is a collaboration between public sector bodies in Suffolk, including all Local Authorities, Public Health Suffolk and others, working towards net zero by 2030. Working in consultation with residents, we developed the Suffolk Climate Emergency Plan. This sets out our joint approach to support residents, communities, businesses and educational establishments. You can view the annual review report here and track our progress on the Suffolk Climate Emergency Dashboard.

1.12. West Suffolk Council are also a member of the Suffolk Climate Change Partnership which consists of all Suffolk's Local Authorities, working with local organisations including Groundwork East, the Environment Agency, Community Energy England, the Greater South East Net Zero Hub and the University of Suffolk. The Partnership not only shares best practice but also delivers on the ground projects that support communities, schools and businesses to improve their resilience to a changing climate and move towards net zero greenhouse gas emissions by 2030.

1.13. A key theme of Suffolk's Climate Emergency Plan is the delivery of sustainable homes, both new housing and through the retrofit of existing homes, and as part of this initiative a Net Zero Carbon Toolkit has been published. This is a practical and easy to navigate guide on how to plan any net zero housing project that should be considered in conjunction with the West Suffolk Local Plan and building regulations.

## Why do we need a planning advice note?

1.14. In our experience, designs for new residential or commercial developments often consider introducing energy efficiency and carbon saving options towards the end of the design process where options are limited. Planning policy at the local level can play a significant part in addressing the impacts of climate change by setting out policies that ensure all proposals for new development incorporate a net zero approach from the outset, as appropriate to the scale of the proposal. The West Suffolk Local Plan plays a key role in implementing the Government's and council's ambitions to reduce greenhouse gas emissions and adapt to climate change.

1.15. This planning advice notice refers to these policies and provides guidance for meeting these requirements within proposals including signposting to advice, further guidance and good practice examples to help developers and householders prepare proposals for new developments and/or retrofitting measures into existing development.

1.16. Appendix two provides a toolkit setting out a series of questions for applicants to consider when preparing a planning application to ensure proposals include sufficient evidence to meet the local plan's policy requirements for householder, non-major and major developments. The toolkit asks applicants to consider sustainable and low carbon features supported or encouraged by the West Suffolk Local Plan.

1.17. Appendix three is a technical resource that has been adapted from Lancaster District Council PAN9 – Energy Efficiency in New Development Planning Advisory Note. The table lists a range of measures which could be included within a development to reduce its impact on climate change. The table also explains how these measures work and their effectiveness and suitability when introduced into a development. We would recommend reviewing these measures when considering sustainable design features within a development as part of a planning application. This is not an exhaustive list and we will support sustainable design measures that go above the development plan's policy requirements and building regulation standards, subject to the other policy requirements within the West Suffolk Local plan.

# 2. West Suffolk Local Plan Policies

2.1. Applications for planning permission must be determined in accordance with the development plan unless material considerations indicate otherwise. The West Suffolk Local Plan and the made neighbourhood plans form the development plan for determining planning applications in the West Suffolk area. In particular the following sections of the West Suffolk Local Plan are relevant to this advice note. Section 4.1 Climate change, health and wellbeing, and design of the West Suffolk Local Plan includes policies that seek to address different elements of climate change. Section 4.2 The natural environment and 4.8 infrastructure also include policies that relate to delivering green and blue infrastructure and biodiversity net gain, enhancing the natural environment and supporting sustainable and active travel which contributes toward reducing a development's impact and adapting to the effects of climate change. These policies include:

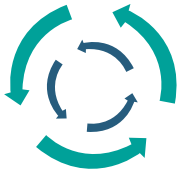
- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy SP5 Green Infrastructure.
- Policy SP7 Landscape.
- Policy SP8 Biodiversity net gain and enhancements.
- Policy SP9 Protected sites, habitats and features.
- Policy LP1 Sustainable design and construction.
- Policy LP2 Promoting energy and water efficiency in show homes.
- Policy LP3 Electric vehicles charging points in new developments.
- Policy LP4 Reducing waste and the circular economy.
- Policy LP5 Water quality and resources.
- Policy LP6 Renewable and low carbon energy.
- Policy LP7 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards.
- Policy LP12 Trees.
- Policy LP13 Protected species.
- Policy LP21 Open space, sport, play and recreation facilities.
- Policy LP41 Active and sustainable travel.

2.2. This planning advice note sets out the requirements for these policies in six topic areas that should be considered when preparing a proposal and making decisions about improvements that will not cause environmental harm and will contribute to futureproofing for climate change. These six topic areas are:

**Reducing operational energy demand**

**On-site renewable energy generation**

**Flooding and water efficiency**



**Embodied carbon and the circular economy**

**Transport and accessibility**

**Placemaking and the natural environment**

2.3. This planning advice is a practical guide to support applicants in meeting the policy requirements set out in the West Suffolk Local Plan. **This planning advice note will be a material consideration when determining planning applications.**

2.4. Whilst these policies are the focus of this planning advice note, addressing climate change requires a comprehensive approach that overlaps with several other policies within the West Suffolk Local Plan. For example, Policy SP5 Green infrastructure seeks to create good quality green and blue infrastructure which can make a positive contribution to climate change mitigation. The West Suffolk Local Plan should be read as a whole when preparing a planning application for development and applying the appropriate policies.

**Nowton park solar panels**

# 3. Building regulations

3.1. New buildings and extensions require building regulations approval, and advice should be sought separately on complying with the regulations. The Building Regulations 2010 have been amended from 15 June 2022, and the following paragraph from an explanatory circular on the government website explains what these changes cover:

"This amendment to the Building Regulations 2010 applies to:

- new and existing dwellings
- new and existing non-domestic buildings
- with regards the new Part O on overheating, all new residential buildings.

The Amendment Regulations provide for a new metric for the measurement of energy efficiency in the form of the target primary energy rate. They also introduce new regulation for on-site electricity generation and in relation to overheating. They also make provision about ventilation standards when work to which Part L: conservation of fuel and power applies."

3.2. In summary the June 2022 changes are to Document L: volume 1 for dwellings and volume 2 for non-residential development, Document F: ventilation new and existing dwellings, Document O: overheating, for new dwellings only, and Document S: electric car charging, for new dwellings only.

3.3. The government has committed to implement the Future Homes Standards to ensure all new homes will produce on average, at least 75 per cent less carbon emissions than homes delivered under the 2013 homes building standards. The government have announced that these future homes standards are expected to be implemented from March 2027. For further information and guidance on the building regulations including the Future Homes and Buildings Standards, please find a link to the Government's building regulation's webpage.

Electric car charging

# 4. What will be required to submit with your planning application

## Validation requirements

4.1. The West Suffolk Council local validation requirements (planning applications and listed building consent), known as the 'local validation list', sets out the information that West Suffolk Council requires to be submitted before a planning application can be validated. It also provides guidance on the detail and scope of that information, which will depend on the scale and nature of the proposal. This is set out on the council's website.

## Statements required by the West Suffolk Local Plan

4.2. The West Suffolk Local Plan requires statements to be submitted depending on the nature and scale of the development proposed within a planning application. The following section outlines where a policy requires a statement to be submitted as part of a planning application and what the statement should include to comply with local policy. These requirements only relate to policies set out in the climate change section of the West Suffolk Local Plan. The West Suffolk Local Plan should be read as a whole when preparing a planning application for development and the appropriate policies carefully considered, including the requirements for assessments and statements.

## Sustainability statements

4.3. Policies LP1 sustainable design and construction, LP2 promoting energy and water efficiency in show homes and LP5 water quality and resources require a sustainability statement to be submitted depending on nature and scale of the proposal.

4.4. Policy LP1 sustainable design and construction requires all proposals for residential development to submit a sustainability statement, setting out what measures are proposed to address water efficiency and achieve energy efficiency. The policy also requires sustainability statements to demonstrate how the design of the proposal follows a fabric first approach, and what renewable technologies have been considered. Further guidance on delivering energy efficient and water efficient housing and undertaking a fabric first approach to development can be found in the reducing occupational energy demands and the flooding and water efficiency sections.

4.5. Policy LP2 promoting energy and water efficiency in show homes require mixed-use and residential development schemes for 100 or more homes with one or more show homes or marketing suites to include a section within their sustainability statement to include provisions for one or more show homes to include environmentally sustainable alternatives and/or additions and indicate what these items will include.

4.6. The policy also requires the sustainability statement to outline the educational or explanatory material that will be provided to demonstrate the additional energy and water efficient items to buyer. Further guidance on the types of items that could be included in this statement can be found in the reducing occupational energy demands and the flooding and water efficiency sections.

4.7. Policy LP5 water quality and resources require all non-residential development proposals to submit a sustainability statement which demonstrates how the proposal has sought to reduce water use. Further guidance on the how proposals can reduce water consumption can be found in the flooding and water efficiency section.

## Site-specific flood risk assessment

4.8. Policy SP2 flood risk and sustainable drainage requires a site-specific flood risk assessment (FRA) to be submitted where required by national policy including the application of a sequential test and, if necessary, the exception test.

4.9. The policy requires flood risk assessments to identify where the proposal is likely to be affected by all forms of flooding, taking into account the impacts of climate change and current and future available sites and demonstrate how the proposal reduces all forms of flooding and to the betterment over the existing situation. Further guidance on preparing a site-specific flood risk assessment can be found in the flooding and water efficiency section.

## Building Research Establishment's Environmental Assessment Method (BREEAM) assessment

4.10. Policies LP1 Sustainable design and construction and LP5 Water quality and resources require a BREEAM to be submitted depending on the nature and scale of the proposal.

4.11. Policy LP1 Sustainable design and construction require all proposals for buildings of 500 square metres or more for non-residential and residential institutions to submit the latest version of the BREEAM new construction assessment to demonstrate the proposal meets the excellent standard. This must be evidenced on completion by a BREEAM fully fitted certificate. Further guidance on the BREEAM assessment process can be found in the reducing occupational energy demands section.

4.12. Policy LP5 Water quality and resources requires major non-residential proposals over 1,000 square metres to achieve full water credits on the BREEAM water calculator. Further guidance on the BREEAM water calculator can be found in the flooding and water efficiency section.

## Waste reduction and circular economy statement

4.13. Policy LP4 reducing waste and the circular economy requires all major development proposals to submit a waste reduction and circular economy statement. This statement should demonstrate how the proposal is applying circular economy to the development. Further guidance on circular economy principles can be found in the embodied carbon, the circular economy and waste section.

## Foul drainage assessment

4.14. Policy LP5 water quality and resources requires major development proposals where it is not possible to connect to a public sewer to submit a foul drainage assessment. Further guidance including a link to the Government's foul drainage assessment form can be found the embodied carbon, the circular economy and waste section.

## Water supply management statement

4.15. Policy LP5 water quality and resources requires proposals for non-residential development with a significant non-domestic water demand to submit a water supply management statement. This should demonstrate that there is sufficient water capacity available for the proposed development, in liaison with the relevant water supply company. Further guidance for reducing water consumption and supply can be found in the flooding and water efficiency section.

## Foul drainage assessment

4.14 Policy LP5 water quality and resources requires major development proposals where it is not possible to connect to a public sewer to submit a foul drainage assessment. Further guidance including a link to the Government's foul drainage assessment form can be found the embodied carbon, the circular economy and waste section.

## Water supply management statement

4.15 Policy LP5 water quality and resources requires proposals for non-residential development with a significant non-domestic water demand to submit a water supply management statement. This should demonstrate that there is sufficient water capacity available for the proposed development, in liaison with the relevant water supply company. Further guidance for reducing water consumption and supply can be found in the flooding and water efficiency section.

## Landscape and visual impact assessment

4.16 Policy LP6 renewable and low carbon energy require all proposals for renewable energy technology or integrating renewable technology on existing or proposed structures to provide a proportionate landscape and visual impact assessment. This assessment should demonstrate how the proposal has been integrated into the character, townscape and landscape of the wider area and minimise any visual impacts identified. Further guidance for assessing the landscape and visual impacts of developments can be found in the on-site renewable energy generation and place making and the natural environment sections.

## Renewable energy statements

4.17 Policy LP6 renewable and low carbon energy require proposals for renewable energies to submit specific statements and assessments depending on the type of renewable energy provided.

4.18 Proposals for wind energy will be required to submit a residential amenity assessment, a statement to demonstrate how the development mitigates for air traffic operations and an appraisal of the impact of wind turbines on bats, migrating birds and bird strikes. Proposals for solar farms are required to submit ecology, nature conservation and mitigation statements. Proposals for anaerobic digestion and energy from waste are required to submit a statement of waste management to demonstrate the nature of the waste and origins of the fuel. This includes the distances from the proposed plant, transport routes of the fuel and how waste products from the fuel would be disposed of. Proposals for energy storage are required to submit a site management plan that demonstrates fire safety measures are adequately addressed. Further guidance for the requirements for these respective statements can be found in the on-site renewable energy generation section.

## Site-specific construction environment management plan

4.19 Policy LP7 protecting and enhancing natural resources, minimising pollution and safeguarding from hazards states that all applications for development where the existence or potential for creation of pollution is suspected, both on and off site must include a full assessment of the impacts of potential hazards and mitigation measures which could include a site-specific construction environment management plan and may be secured through a planning condition. Further guidance for completing a site-specific construction environment management plan can be found in the embodied carbon, the circular economy and waste.

## Land contamination risk assessment

4.20 Policy LP7 protecting and enhancing natural resources, minimising pollution and safeguarding from hazards requires proposals for development on or adjacent to land which is known to be or potentially affected by contamination; or land which may have a particularly sensitive end use; or involving the storage and/or use of hazardous substances to submit an appropriate risk assessment. This should take a tiered approach and include as a minimum a tier one land contamination preliminary risk assessment and where necessary further technical reports. Further guidance for completing a site-specific construction environment management plan can be found in the embodied carbon, the circular economy and waste.

## Sustainable development toolkit

4.21 The toolkit accompanying this planning advice note in appendix two, is set out in four parts. Part one, two and three ask questions to assist applicants in the preparing of planning applications to ensure they demonstrate the proposal has considered the local plan policy requirements at the earliest stage. It supports specific measures depending on the scale and nature of the proposed development.

4.22 Part four ask questions to assist applicants in demonstrating how the proposal has incorporated sustainable and low carbon features supported or encouraged by the West Suffolk Local Plan. Applicants are strongly encouraged to complete the relevant parts of the toolkit in appendix two to clearly demonstrate they have considered the local plan policy requirements at the earliest opportunity and meet the broader climate change challenges.

# 5. Reducing occupational energy demands

5.1. Occupational energy is the energy consumed during the use of a building for example, for lighting, heating, cooling or providing hot water in a home. In 2023, energy consumed by using buildings were responsible for 20 per cent of greenhouse gas emissions in the UK, with two thirds of these emissions coming from housing. By reducing this occupational energy demand in developments, buildings will lower their greenhouse gas emissions, the impact on the energy network and the overall running costs of the building.

5.2. Proposals should minimise occupational energy consumption and encourage sourcing energy from on-site renewables as much as possible. A sustainability statement must be submitted with the planning application setting out the measures proposed to reduce energy demand.

## West Suffolk Local Plan Policies

The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development;
- Policy LP1 Sustainable design and construction; and
- Policy LP2 Promoting energy and water efficiency in show homes.

## Fabric first approach

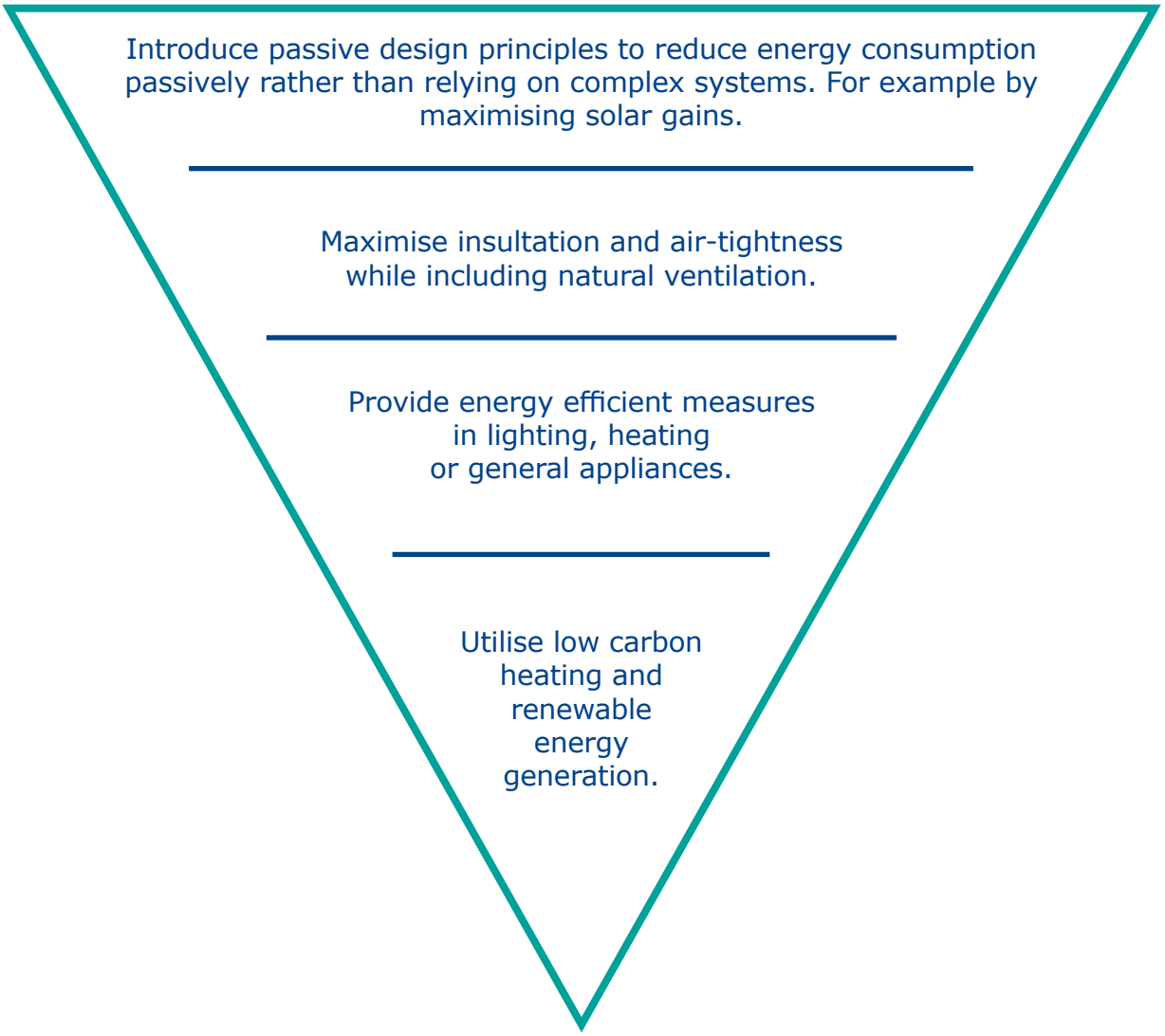
5.3. A proposal's design should utilise the fabric first approach in accordance with policy LP1. This includes achieving carbon standards primarily through energy efficient design and materials that provides high levels of insultation, low thermal bridging and well-controlled ventilation. Fabric first developments should set out how demands on heating and cooling have been considered in the design stage and reduced through passive design principles such as:

**Passive design principles**

- The building form – simple building designs with reduced surface area should be considered to minimise heat loss. The orientation and design of the roof can also optimise opportunities for on-site photovoltaic.
- The orientation of the building – the orientation can maximise solar gains and minimise overshadowing in winter.
- The location of windows – smaller windows facing north can minimise heat loss, whilst larger windows facing south can maximise solar heat gain).
- Thermal mass and shading – helps to moderate the temperature as building materials absorb and release heat.

5.4. All proposals for residential development are required to submit a sustainability statement that sets out what measures are proposed to deliver water and energy efficient housing. These sustainability statements should also demonstrate how the design follows a fabric first approach.

5.5. There are no official guidelines or targets for delivering a fabric first building, instead the following set of key principles can be used which focus on optimising a building's fabric to reduce its energy demands through heat loss:




5.6. Further details of measures that should be considered when undertaking a fabric first approach can be found in appendix three. This is not an exhaustive list. It sets out measures that go above the development plan's policy requirements and building regulation standards which will be supported.

5.7. Many of these principles also apply when considering how renewable energy sources could be optimised within the proposal. For example, the orientation and design of the roof can impact the effectiveness of photovoltaic panels on a building. Therefore, it is often beneficial to consider passive design principles when considering renewable energy development.

## The Building Research Establishment Environmental Assessment Method (BREEAM) standards

5.8. Policy LP1 requires all new buildings of 500 square metres or more for non-residential and residential institution proposals to meet the latest version of BREEAM, New Construction Excellent standard and evidenced on completion by a BREEAM fully fitted certificate. BREEAM is an internationally recognised standard that provides independent certification of the sustainability performance of new buildings over its lifetime. BREEAM is assessed using the following 12 categories to provide a sustainability rating:

- Management
- water
- energy
- transport
- health and wellbeing
- resources
- resilience
- land use and ecology
- pollution
- materials
- waste
- innovation.

5.9. The BREEAM assessment evaluates the development from the building's specifications through to its construction and end use. Therefore, the BREEAM framework should be considered as early as possible in the building process to give opportunities to consider how proposals will meet the 'Excellent' or better BREEAM rating. It may be costly to retrospectively incorporate BREEAM after the proposal has been designed, and there are certain BREEAM credits which can only be achieved in the early stages of a project. More information on the BREEAM process can be found on the BREEAM website.

5.10. Policy LP1 also encourage proposals for residential development of more than 100 homes to complete a BREEAM pre-assessment as part of any planning application and subsequently complete a community's assessment excellent standard. The BREEAM Communities standards assesses the environmental, social and economic sustainability of the proposal at the earliest stages of the design process.

5.11. The BREEAM communities consist of three steps to consider the sustainability principles of the development and evaluates the proposal's design to consider the governance, social and economic wellbeing, natural resources, energy, land use, ecology, transport, movement and innovation of the proposed housing and wider place shaping. Similar to the non-residential BREEAM assessment, engaging with the communities assessment standards at an early stage provides opportunities to incorporate sustainability and reduce the environmental impact of the proposal that is resilient to the effects of climate change. More information on the BREAAM communities can also be found on the BREEAM website.

## Future home standards

5.12. The Future Homes Standard are intended to ensure that all new homes constructed will produce on average, at least 75 per cent less carbon emissions than homes delivered under the 2013 homes building standards. The government have announced that these future homes standards are expected to be implemented from March 2027. The first step in moving towards The Future Homes Standard was the publication in 2021 of changes to Part L of the building regulations that came into effect on 15 June 2022. **Proposals for residential development are encouraged to go beyond the building regulations and meet the future homes standards prior to their introduction into building regulation.**

## Passivhaus and other building standards

5.13. Whilst policy LP1 encourages Building Research Establishment Environmental Assessment Methodology (BREEAM) for residential proposals of more than 100 homes, West Suffolk Council encourages and supports proposals that seek to go beyond building standards set out in the development plan and building regulations. For example, policy LP1 also greatly encourages proposals to implement Passivhaus principles and certification into their process and will consider these proposals to be exempt from the BREEAM requirements above.

5.14. The Passivhaus standards are a building standard for energy efficiency that ensures homes are designed, constructed and certified to minimise energy needed for heating and cooling and meet the standards which can be found on the Passivhaus website. Much like other building standards, we would recommend that the Passivhaus Standards are considered at the earliest possible stage of design to ensure the proposal meets all of the requirements set out in the standards.

## Promoting energy efficiency measures through show homes

5.15 Policy LP2 requires proposals for 100 homes or more that have one or more show homes or marketing suites to set out provisions for one of the show homes to be equipped with environmentally sustainable alternatives and/or additions to indicate what these items are within the sustainability statement.

5.16 The sustainability statement should also include the educational or explanatory material that will be provided to demonstrate the additional energy and water efficient items and/or fittings that will be available to purchase. The price of these items (including delivery and/or installation) should reflect the same profit margin to the developer as other standard buyer's options.

5.17 Whilst proposals are required to meet building regulations and the policy requirements of the development plan, there are a wide range of additional options available that go beyond these requirements. The sustainability statement should set out the sustainable features that the developer will offer as options available to buyers to provide a more energy and water efficient home. The statement should also include educational or explanatory material that will be provided to buyers to demonstrate the benefits of installing these features. These optional extras could include:

- Renewable energy generation (for example solar photovoltaic or solar thermal panels).
- Smart energy management and metering systems.
- LED lighting.
- Highly energy efficient appliances.
- Sustainably sourced materials for flooring, walls, windows and doors.
- Compost bins.
- Heat pump.

5.18 Further examples of sustainable features can be found in appendix three.

5.19 At least one show home is required to demonstrate these sustainability features to help buyers understand how these products work and/or the options available to them to provide a more sustainable home.

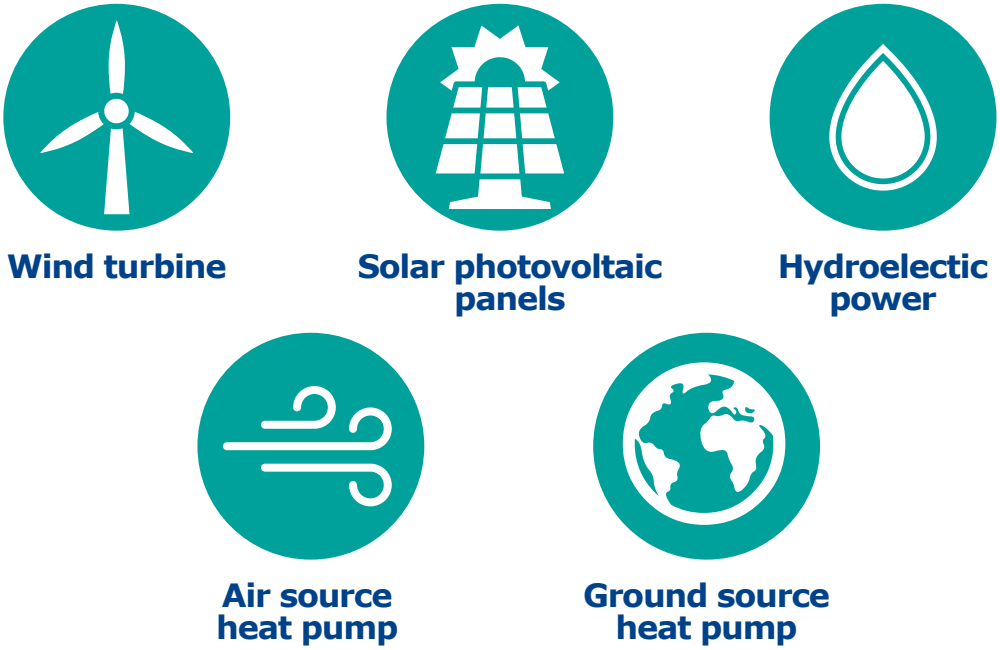
## Resources

5.20. For further information and guidance see below for a range of resources and examples of good practice.

- Building Research Establishment Environmental Assessment Methodology (BREEAM) Communities – BREEAM Communities
- BREEAM Home Quality Mark – Home Quality Mark from BRE
- BREEAM New Construction – BREEAM New construction
- Future Homes Hub UK – Home Buyer Customer Journey Guide to support Sales and Marketing teams
- Good Homes Alliance – Overheating Risk Tool
- Green Suffolk – Your building
- Green Suffolk – Net Zero Carbon Toolkit
- Passivhaus – What is Passivhaus?
- The Carbon Trust – Sustainability guides, reports, and videos
- UK Green Building Council – Net Zero Carbon Buildings Framework
- Welsh Government – Planning for Sustainable Buildings

# 6. On-site renewable energy generation

6.1. National guidance has emphasised the importance of increasing energy generation from renewable and low carbon technologies to secure energy supplies, reduce greenhouse gas emissions and provide investment in new jobs and businesses. Renewable energy generation is the process of generating electricity from natural and repeatedly occurring sources in the environment. This energy can be generated using a range of methods for example:




6.2. The local plan recognises the importance of increasing the amount of energy generated from renewable and low carbon technologies and the role it plays in reducing greenhouse gas emissions. Policy LP6 provides a positive strategy and supports proposals for renewable energy technologies subject to demonstrating the criteria have been met.

6.3. Policy LP1 encourages proposals to include photovoltaic panels within the development or other types of renewable energy where it can be generated more appropriately on-site. The scale of renewable energy included within proposals can vary significantly from introducing photovoltaic panels on roofs to dedicated renewable energy proposals and nationally significant infrastructure projects. The development plan also recognises that renewable energy generation may impact the character and/or appearance of the wider landscape. This will be dependent on the type of technology proposed, the scale of the development, the proposal's location, surrounding landscape, proximity to nature conservation areas and/or heritage assets.

## West Suffolk Local Plan Policies

6.4. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy LP1 Sustainable design and construction.
- Policy LP6 Renewable and low carbon energy.

## All proposals for renewable and low carbon energy

6.4. Policy LP6 supports all proposals for renewable energy technology subject to the following criteria:

A proportionate landscaping and visual impact assessment, including a landscape or townscape character appraisal.

Where a proposal would result in the loss of significant development of agricultural land, poorer quality agricultural land has been considered;

Evidence to show the proposal does not adversely impact the amenities of sensitive neighbouring uses.

The proposal provides biodiversity net gain and does not result in a detrimental impact to geodiversity and water quality;

Evidence to show the proposal does not adversely impact heritage assets, highway safety and associated infrastructure, topography, broadcast interference, aviation, radar and telecommunications and associated infrastructure, and soil quality.

6.6. The local plan supports the delivery of well-designed renewable energy generation in West Suffolk that is well integrated into the character and landscape of the surrounding area. The impact from proposed renewable energy technologies will vary depending on the scale and type of the renewable energy proposed on site. Proposals are required to provide evidence to demonstrate how the criteria listed above has been considered within the design of the proposal, including any potential cumulative impacts. The evidence should also set out how the proposed renewable energy's design has been influenced by the surrounding area, including how the any impacts identified within the proposal has been mitigated.

6.7. Proposals for solar farms can present an opportunity for biodiversity enhancement. Although the area under the solar panels can be shaded and dry, other areas around the panels can provide opportunities for ecological enhancements such as species rich hedgerows and meadows particularly with appropriate land management. Proposals should assess their impacts on biodiversity, demonstrate significant biodiversity net gains and be supported by habitat management and monitoring plans.

## Incorporating renewable energy into development

6.8. Policy LP1 requires proposals to consider renewable sources of energy (such as solar photovoltaic, solar thermal, air or ground source heat pumps, community or shared energy initiatives). Proposals are encouraged to include photovoltaic panels on roofs unless it can be demonstrated that the orientation of the roof, lack of suitable roof area or other constraints makes this impractical, or because renewable energy can be generated more appropriately on-site by other means.

6.9. Appendix three shows examples of renewable sources of energy that could be considered within a proposal. Proposals should include a sustainability statement which demonstrates how these renewable sources of energy have been considered and which renewable sources are considered appropriate within the development. This is not an exhaustive list of renewable energy sources, and the council will support other renewable sources within proposals, subject to compliance with other policies within the development plan.

## Dedicated renewable energy generation development

6.10. Alongside the requirements above, policy LP6 also sets out specific requirements for different types of renewable energy proposals. These have been set out below.

### Wind energy proposals

Proposals should for wind energy include:

- A residential visual amenity assessment.
- A statement explaining how air traffic operations have been mitigated where necessary.
- An appraisal of the impact of the wind turbine(s) on bats and migrating birds, and bird strike, including any mitigation measures necessary to address these impacts.

### Solar energy proposals

- Proposals for solar farm should include a statement explaining:
- The potential ecological and nature conservation impacts, how these will be mitigated and demonstrate a net gain in biodiversity;
- The potential impact for glint and glare and including effects on biodiversity

### Anaerobic digestion and energy from waste

Proposals for anaerobic digestion or energy from waste should include a statement explaining:

- The nature of the waste and/or the origins of the fuel.
- The proposed transport routes for obtaining fuel which includes the distances from the proposed plant and frequency of delivery.
- How the waste product comprising the fuel would usually be disposed of or used.

### Energy storage proposals

Proposals for energy storage should include a site management plan that demonstrates fire safety measures are adequately addressed.

6.11. Applicants should include these respective statements as part of their planning application submission, demonstrating how the impacts listed and any potential cumulative impacts have been considered within the proposals. The evidence should set out how the design of the proposed development has been influenced by the surrounding area, including actions taken to reduce and mitigate any identified impacts.

6.12. All proposals for renewable energy generation with a capacity of 50 megawatts (MW) or less will be determined by West Suffolk Council. Proposals with a capacity over 50MW are classified as nationally significant energy infrastructure projects and are considered by the Secretary of State for Energy Security and Net Zero under the Planning Act 2008 with the council being a statutory consultee. Developers who are considering submitting a proposal for a nationally significant energy infrastructure project should contact the planning inspectorate. Further details can be found on the national infrastructure planning portal.

## Resources

6.13. For further information and guidance see below for a range of resources and examples of good practice.

- Department for energy security and net zero – Clean Power 2030 Action Plan: A new era of clean electricity – main report
- Department for energy security and net zero – Consents and planning applications for national energy infrastructure projects
- Green Suffolk – Net Zero Carbon Toolkit
- Landscape Institute – Reviewing Landscape and Visual Impact Assessments and Landscape and Visual Appraisals
- Local Partnerships Local Government Association – Renewable Energy Good Practice Guidance
- National planning guidance – Renewable and low carbon energy
- SME Climate Hub – Installation of Renewable Energy
- Solar Energy UK – Natural Capital Best Practice Guidance
- The Renewable Energy Hub UK – The Renewable Energy Hub

Anselm community centre solar panels

# 7. Flooding and water efficiency

7.1. One of the most notable effects of climate change is the increase in the frequency and intensity of severe weather events. This impact on the water cycle has and will continue to lead to an increased risk of flooding and scarcity of usable water.

7.2. Proposals must consider how to adapt and minimise the increasing risk of flooding within the development. National policy requires development to be directed away from areas at highest risk of flooding and ensure development is made safe for its lifetime without increasing the risk of flooding elsewhere. The local plan recognises the importance of minimising flood risk by directing development to areas with the lowest risk of flooding and requiring sustainable drainage to mitigate the impacts of flooding on site.

7.3. The Environment Agency classifies the district as being in a serious water stressed area. West Suffolk's risk of water scarcity is likely to increase as the impacts of climate change increase, leading to reduced rainfall within the area. Therefore, proposals for developments must seek to reduce water consumption as much as possible, to help relieve the pressure on local water supply.

## West Suffolk Local Plan Policies

7.4. The following policies are particularly relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy LP1 Sustainable design and construction.
- Policy LP2 Promoting energy and water efficiency in show homes.
- Policy LP5 Water quality and resources.

## Flood risk management

Policy SP2 Flood risk and sustainable drainage requires development to be directed to those areas at the lowest risk of all forms of flooding in line with national policy. Section 14 of the National Planning Policy Framework (NPPF) focuses development to the areas of lowest flood risk by requiring proposals within areas of known risk from any form of flooding to undertake a sequential risk-based assessment of the proposal and where necessary an exceptions test.

7.6. National Planning Practice guidance for flood risk and coastal change clarifies when proposals are required to undertake a sequential and/or exceptions test. The sequential test must demonstrate that proposals in medium and high risk flood areas have considered alternative reasonably available sites that are of lower risk of flooding taking all sources of flood risk and climate change into account. West Suffolk's strategic housing and land availability assessment (SHELAA) identifies potential land which is considered to be suitable, available and achievable for housing and economic development uses. This assessment can be used as a starting point for the sequential test to identify reasonably available sites for consideration whether they are at lower risk.

7.7. To help inform whether a sequential test is required, West Suffolk's find my nearest mapping system can be used to identify areas of flood zone two and three. The Environment Agency's flooding webpage also provide mapping that highlights the long term risk of flooding from rivers, the sea, surface water, reservoirs and groundwater.

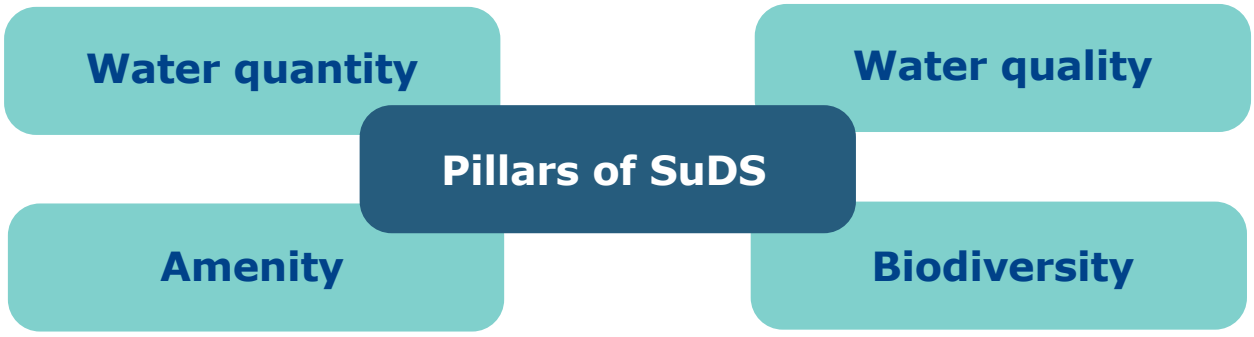
7.8. Footnote 63 of the National Planning Policy Framework (NPPF) states that site-specific flood risk assessments should be provided for all development in flood zones two and three. Proposals in flood zone one also require a site-specific flood risk assessment where the site is one hectare or more in size; the land has been identified by the Environment Agency as having critical drainage problems; the land is identified in the strategic flood risk assessment as being at increased flood risk in the future; or land that may be subject to other forms of flooding, where its development would introduce a more vulnerable use.

7.9. A site-specific flood risk assessment should identify whether the proposed development is likely to be affected by all forms of flooding, now and in the future and demonstrate how proposals contribute to reduce its impact of flood risk. The Environment Agency has prepared guidance for preparing a flood risk assessment which can be found on the following webpage Flood risk assessments: applying for planning permission – GOV.UK. Suffolk County Council are the lead flood authority and we recommend contacting them as soon as possible in the planning process for advice. Guidance on development and flood risk can also be found on the Suffolk County Council website.

## Sustainable drainage

7.10. Sustainable drainage systems (SuDS) seek to mimic natural drainage of surface water run-off within development by using a mix of built and nature-based techniques.

7.11. Proposals should reduce all forms of flooding, consider a wide range of systems, taking the location, scale and type of development into account. These SuDS must demonstrate how they provide benefits to the pillars of SuDS set out below.




7.12. Policy SP2 Flood risk and sustainable drainage require proposals to set aside around 15 per cent of land for sustainable drainage. The sustainable drainage systems (SuDS) strategies should be integrated into the proposals design. Proposals should demonstrate how the following has been considered within the development:

- The cumulative impact of development on flood risk both on-site and in the wider area.
- The effect of climate change which include increased rainfall and increased risk of flooding.
- Must be safe for its lifetime and provides safe access and escape routes.
- How the SuDS can be integrated into the green and blue infrastructure.
- How the SuDS can be integrated into ecology and landscaping policy requirements.
- Ensuring the SuDS are accessible if they will form part of the open space on site.
- How the system is managed during its lifetime.
- The development has no negative impact on water quality through pollution from water discharge.
- Suitable buffer zones to existing water courses.
- If the proposal is near an airbase, beneath, within and close to flight paths or other designated air manoeuvring areas, the SuDS should minimum opportunities for bird strikes.

7.13. Policies SP2 and LP7 require all proposals to demonstrate that the development will not have a negative impact on the water quality through pollution. Proposals for major development or proposals where it is not possible to connect the development to a public sewer will be required to submit a foul drainage assessment. The foul drainage assessment form can be found on the Government's website and must be completed where a connection to the public sewer is not feasible.

7.14. Policy SP2 also require primary roads, including relief roads, distributors and spine roads, to include swales on one or both sides of the highway. Other roads must include sustainable drainage systems (SuDS) and space for swales, having regard to the Suffolk Streets Design Guide. The Suffolk Flood Risk Management Partnership also provide guidance for preparing SuDS within their Flood Risk Management Strategy, setting out what is expected by Suffolk County Council within proposals.

7.15. Sustainable drainage systems should be multifunctional and can be well integrated into the proposal's blue and green infrastructure and deliver extensive wider benefits. These can include enhanced nature incorporation into built environments, for biodiversity, placemaking, human health and wellbeing, air quality, and urban heat island mitigation. They can also filter and provide a level of treatment to the water running into them. Policy SP2 supports proposals to include the following as part of the SuDS strategy.

- Flood meadows
- Rain gardens
- Wetlands
- Other grass and woodland habitats
- Tree pits
- Other rainwater and harvesting measures
- Green roofs
- Ponds

## Reducing water consumption

7.16. Anglian Water thriving east report (2023) highlights that one of Suffolk's greatest challenges in regard to water scarcity is climate change. Due to the county operating a water-intense economy with high levels of agriculture, combined with experiencing the third lowest levels of rainfall in the East region, Suffolk's risk of water scarcity is significantly heightened when taking into account future rainfall projections and precipitation rates. It will therefore be crucial for all developments to reduce water consumption as much as possible, to relieve the pressure on water supply in the local area.

7.17. Policies LP1 and LP5 require proposals to prepare a sustainability statement which sets out the measures to deliver a water efficient development and reduce water consumption for residential and non-residential developments. All developments are also required to limit water consumption in residential development to 110 litres per person per day using efficient water fittings. This includes from external water uses such as from an outside tap. Water butts should also be provided for all new homes in accordance with policy LP5 to reduce the reliance on the mains water supply.

7.18. As described in reducing occupational demands, the Building Research Establishment Environmental Assessment Methodology BREEAM evaluates the development from the building's specifications through to its construction and end use using 12 categories. All major non-residential development over 1000 square metres proposals should achieve full water credits on the BREEAM water calculator, using the latest version of the BREEAM standard. The maximum amount of water credits available for a fully fitted development is 9, across the following four categories: water consumption, water monitoring, water leak detection, and water efficient equipment. More information on the BREEAM process can be found on the BREEAM website.

7.19. All proposals for non-residential development should also set out how they are seeking to reduce water use within the development through their sustainability statement. If a proposal for non-residential development requires significant non-domestic water use, the proposal must include a water supply management statement to demonstrate that there is sufficient water capacity available to operate. This must include liaising with the relevant water supply company to confirm the water is available for the proposed development. The statement should also highlight how water consumption on the site is being minimised within the proposal to reduce the development's demand for water.

7.20. Developers should also consider how to make best use of rainwater, and how to reduce the development's reliance on the mains water supply. Further details of measures that should be considered when reducing water consumption can be found in appendix three. This is not an exhaustive list and measures that go above the development plan's policy requirements and building regulation standards will be supported.

## Promoting water efficiency measures through show homes

7.21. Policy LP2 requires proposals for 100 homes or more that have one or more show homes or marketing suites to set out provisions for one of the show homes to be equipped with environmentally sustainable alternatives and/or additions to indicate what these items are within the sustainability statement.

7.22. The sustainability statement should also include the educational or explanatory material that will be provided to demonstrate the additional energy and water efficient items and/or fittings that will be available to purchase. The price of these items (including delivery and/or installation) should reflect the same profit margin to the developer as other standard buyer's options.

7.23. Whilst proposals are required to meet building regulations and the requirements set out within the development plan, there are a wide range of additional options available that go beyond these requirements. The sustainability statement should set out the sustainable features the developer will offer as options available to buyers to provide a more energy and water efficient home. The statement should also include educational or explanatory material that will be provided to buyers to demonstrate the benefits of installing these features. These optional extras could include:

- Grey water recycling systems
- dual flush or low flush toilets
- tap aerators
- water efficient showerheads
- rainwater harvesting
- water butts.

7.24. Examples of sustainable features that proposals can consider can be found in appendix three.

7.25. At least one show home will be required to demonstrate these sustainability features to help buyers understand how these products work and/or the options available to them to provide a more sustainable home.

## Resources

7.26. For further information and guidance see below for a range of resources and examples of good practice.

- Anglian Water – Thriving East Report
- Anglian Water – Water Resource Management Plan 2024
- Association for Environment Conscious Building – AECB Water Standard
- Department for Environment, Food and Rural Affairs – National standards for sustainable drainage systems
- Future Homes Hub UK – Home Buyer Customer Journey Guide to support Sales and Marketing teams
- Good Homes Alliance and Enabling Water Smart Communities – Water Efficiency and Reuse in Housing
- National Planning Practice Guidance – Flood risk and coastal change guidance
- Suffolk County Council – Guidance on development and flood risk
- Suffolk County Council – Suffolk Design: Streets Guide
- Suffolk Flood Risk Management Partnership – Suffolk Local Flood Risk Management Strategy February 2023
- Suffolk Flood Risk Management Partnership – Appendix A to the Suffolk Flood Risk Management Strategy: Sustainable Drainage Systems (SuDS) a local design guide
- The Town and Country Planning Association – Briefing 7: a community guide to planning practice guidance on flood risk and coastal change
- Watersafe – Developing water efficient homes
- Waterwise and the Home Builders Federation – How to Save Water at Home

# 8. Place making and the natural environment

8.1. "Places affect us all – they are where we live, work and spend our leisure time. Well-designed places influence the quality of our experience as we spend time in them and move around them. We enjoy them, as occupants or users but also as passers-by and visitors. They can lift our spirits by making us feel at home, giving us a buzz of excitement or creating a sense of delight. They have been shown to affect our health and well-being, our feelings of safety, security, inclusion and belonging, and our sense of community cohesion." National Design Guide.

8.2. This first paragraph in the National Design Guide (2021) sets out why good design is so important. The guide also highlights the importance for proposals to consider the social, economic and environmental change and expect a continuing change as a consequence of climate change. Proposals should create well-designed places that are resilient to the impacts of climate change such as more extreme weather events and higher temperatures.

8.3. The natural environment contributes to the economy, health and wellbeing and it enriches our lives. Humanity relies on the natural environment for food, clean water, medicine, and to absorb the greenhouse gasses that are driving climate change. These benefits that humans gain from a biodiverse natural environment are called ecosystem services. Proposals should identify nature-based solutions that contribute towards reducing emissions, incorporate green infrastructure that is well integrated with the surrounding area and protects and enhances biodiversity.

No Man's Meadow tree planting

## West Suffolk Local Plan Policies

8.4. The following policies are relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy SP5 Green Infrastructure.
- Policy SP7 Landscape.
- Policy SP8 Biodiversity net gain and enhancements.
- Policy SP9 protected sites, habitats and features.
- Policy LP1 Sustainable design and construction.
- Policy LP5 Water quality and resources.
- Policy LP7 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards.
- Policy LP12 Trees.
- Policy LP13 Protected species.
- Policy LP21 Open space, sport, play and recreation facilities.

## Incorporating green infrastructure

8.5. Green infrastructure (GI) is defined in the National Planning Policy Framework (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."

8.6. The West Suffolk Green Infrastructure Study (2022) (GI) sets out the overarching aim for GI in West Suffolk, which is to provide

> "An integrated, multifunctional and resilient network of natural and semi-natural green spaces which support West Suffolk's communities for the benefit of present and future generations."

Brandon compost giveaway

8.7. Well-designed green infrastructure can contribute towards climate change mitigation and adaption and the following requirements are embedded in policy:

- Provides good access to the natural environment
- Creates active and healthy places for communities
- Protects and enhances the local landscape character
- Extend coverage and connectivity of nearby strategic green infrastructure
- Prioritises conserving and enhancing existing geodiversity and biodiversity on-site
- Reduces emissions through nature-based solutions
- Delivers environmental, economic and social benefits for the development's lifetime
- Integrates Sustainable drainage into the wider blue infrastructure
- Provides buffers to existing water courses
- Minimises the impact to air, land and water quality

8.8. The GI study provides an assessment of the existing green infrastructure network across a number of themes. The climate emergency was an overarching theme throughout the study, signalling its importance as a driver of the study. Links to climate change are referred to throughout, but the key emphasis in the study relates to:

- The role of woodland and trees in sequestering carbon, improving air quality, alleviating flooding and providing shade.
- Ensuring habitats (and associated wildlife) are resilient to the impacts of climate change, and restoring habitats to help adapt (for example wetland restoration).
- Enhancing the water environment – water quantity and quality, as well as mitigating flood and drought risk, and the associated impacts on agriculture.
- Urban greening to help settlements store carbon and adapt (for example providing shade, sustainable drainage systems to reduce surface water flooding).
- Reducing transport emissions by encouraging sustainable active travel.

8.9. The study went on to identify priority areas for actions which are aligned to the main settlement areas where people live and work and where growth will take place. Deliverable opportunities for enhancement of green infrastructure were also identified.

8.10. Policy SP5 Green Infrastructure encourages opportunities to extend the coverage and connectivity of the strategic green infrastructure network including within and next to the priority areas as set out in the West Suffolk Green Infrastructure Study 2022.

8.11. Policy SP5 also requires proposals to demonstrate a green infrastructure led design approach. A number of options are available including using:

- A dedicated green infrastructure design code.
- Green infrastructure modelling toolkit.
- Implementing green infrastructure principles such as those set out by Natural England.

8.12. The policy sets the expectation for the level of green infrastructure (GI) to be delivered within new developments. Major residential development of 50 homes or more on greenfield land should provide around 40 per cent green infrastructure within the site (including the retention of existing features). These are the developments that are most able to deliver GI and where GI will be most effective in delivering access to nature for the residents of West Suffolk. All other major development should retain existing green infrastructure and deliver new green infrastructure. Examples of green infrastructure features that could be delivered through development proposals include:

### Managed and natural green spaces

- Public parks and gardens.
- Formal and informal open space, including churchyards, amenity green space, play space, allotments, community gardens and sporting facilities.
- Wildlife areas.

### Linear linkages

- Public rights of way (PRoW), promoted routes and cycle infrastructure.
- Disused railway lines.
- River corridors.

### Elements of the built environment

- Road verges and street trees.
- Private gardens.
- Urban greening features, including green walls, roofs and sustainable drainage systems (SuDS).

### Aspects of the wider landscape

- Floodplains, wetlands, forestry and woodland.

## Multifunctional open space

8.13. Policy LP21 supports the provision of open spaces and requires development proposals to provide accessible open space. The quantity, quality and accessibility standards are set out in the accompanying appendix I of the West Suffolk Local Plan.

8.14. Impacts of climate change will be particularly strong in urban areas. A greater proportion of hard surfacing in urban areas which increases the chances of flooding, and the urban heat island effect will increase warming in urban areas.

8.15. Multifunctional green spaces and open spaces can be made effective in providing space not only for recreation but also for interventions to mitigate and adapt to climate change. Acting as vital green spaces in built-up areas, they are often suitable sites for tree planting, urban greening and flood risk mitigation. However, it is important to strike the right balance between delivering ecosystem services and retaining the primary function of open spaces which is to provide recreation.

## Protection and enhancement of biodiversity

8.16. Habitats and species are protected in the suite of biodiversity and geodiversity policies, in particular policy SP9 Protected sites, habitats, and features and policy LP13 protected species.

8.17. However, species and habitats will need to adapt to climate change over time. Central to this is the development of ecological networks across the district, Suffolk and beyond, ensuring that wildlife is not fixed and restricted to a series of unconnected wildlife sites. Nature recovery is the creation and restoration of habitats and biodiversity for example wildlife-rich places, corridors and stepping-stones that help populations to recover, grow, move, thrive and adapt to a changing climate.

8.18. The Local Nature Recovery Strategy (LNRS) for Suffolk has been developed by Suffolk County Council working with stakeholders like nature specialists, community groups, landowners and local councils. LNRSs are part of a national push to give nature more room to grow. They are a requirement of the Environment Act of 2021. The Local Nature Recovery Strategy will help create and or improve habitats most likely to provide the greatest benefit for nature and wider environment. It will also identify where action to achieve net gain will have the most impact and encourage action in these locations.

8.19. Policy SP8 Biodiversity net gain and enhancements supports mandatory biodiversity net gain (BNG) and also requires all development proposals provide proportionate enhancements. This requirement is re-iterated in policies SP9 and LP13 "Any enhancement measures should be informed by the relevant nature recovery priorities (if any) set out in the Suffolk Local Nature Recovery Strategy when completed".

8.20. Policy SP7 Landscape requires that **"Soft landscaping proposals must respond to the challenge of biodiversity loss and climate change. Species diversity is important as a diverse range of plants can help cope with warmer climates and limit the damage caused by pest and disease outbreaks, enhancing biosecurity, and providing resilience. Wherever appropriate native species should be included within planting mixes, and species rich grassland proposed"**. Taking cues from local landscape character and the species that naturally occur is likely to lead to resilient habitats.

Aspal Close Nature Reserve

## Increasing canopy cover

8.21. Policy LP12 trees includes measures to protect existing trees including within development sites unless it is unavoidable, and to compensate for any losses. The policy specifically aims to support increased canopy cover within the district where appropriate. It states that "sufficient space within developments must be reserved for the planting of new trees and the sustainable growth of existing and new trees to retain and improve tree canopy cover in the district as a whole".

8.22. Contributing to a significant part of the district's identity, woodland and tree cover will be essential in providing opportunities for carbon sequestration to achieve the district's objective of delivering a one per cent increase in forest area cover to achieve carbon storage, as well as delivering air quality enhancement, natural flood alleviation and multiple other ecosystem services.

8.23. Additional tree planting, if not done sensitively, could impact landscapes, and cultural heritage features by reducing many of the open views and screening historic landmarks. Furthermore, afforestation, particularly using novel or inappropriate species, can have a significant impact on landscape character and on certain habitats and species such as those in the open landscapes of the Brecks. However, if locations for tree planting are selected appropriately, there are opportunities to help combat the climate emergency.

8.24. Street trees can provide shading, ameliorating some of the effects of warming. These are more pronounced in urban areas due to the urban heat island effect. All tree planting should be based on the principle of the right tree in the right place and designed to minimise impacts on other infrastructure.

Brandon Country Park

## Resources

8.25. For further information and guidance see below for a range of resources and examples of good practice.

- Building with Nature website – Building with Nature
- Fields in Trust – Fields in Trust open space standards
- Natural England – Climate Change Adaptation Manual: Part 4 Green infrastructure and climate change
- Natural England – Green Infrastructure Homepage
- Natural England – Green infrastructure principles
- Nature Towns and Cities – About – Nature Towns & Cities
- Royal Horticultural Society (RHS) – RHS Plants for Pollinators
- Suffolk County Council – Suffolk Local Nature Recovery Strategy (LNRS)
- Trees and Design Action Group – Tree selection guide for green infrastructure: A guide for specifiers
- West Suffolk – Developer green infrastructure checklist: Appendix E
- West Suffolk – Green Infrastructure Study
- West Suffolk – West Suffolk Local Plan : Appendix I

## Creating climate resilience

8.26. A climate resilient development will be able to withstand the impacts arising from future changes to the climate. The Met Office predicts the following changes to West Suffolk's climate if global temperatures increase by 2°C from the baseline (1981 to 2000):

- 1.7°C rise in average annual temperature
- 2.2°C rise in average summer temperature
- 1.4°C rise in average winter temperature
- Maximum summer temperatures to rise by 3.3°C
- Minimum winter temperatures to rise by 2.4°C

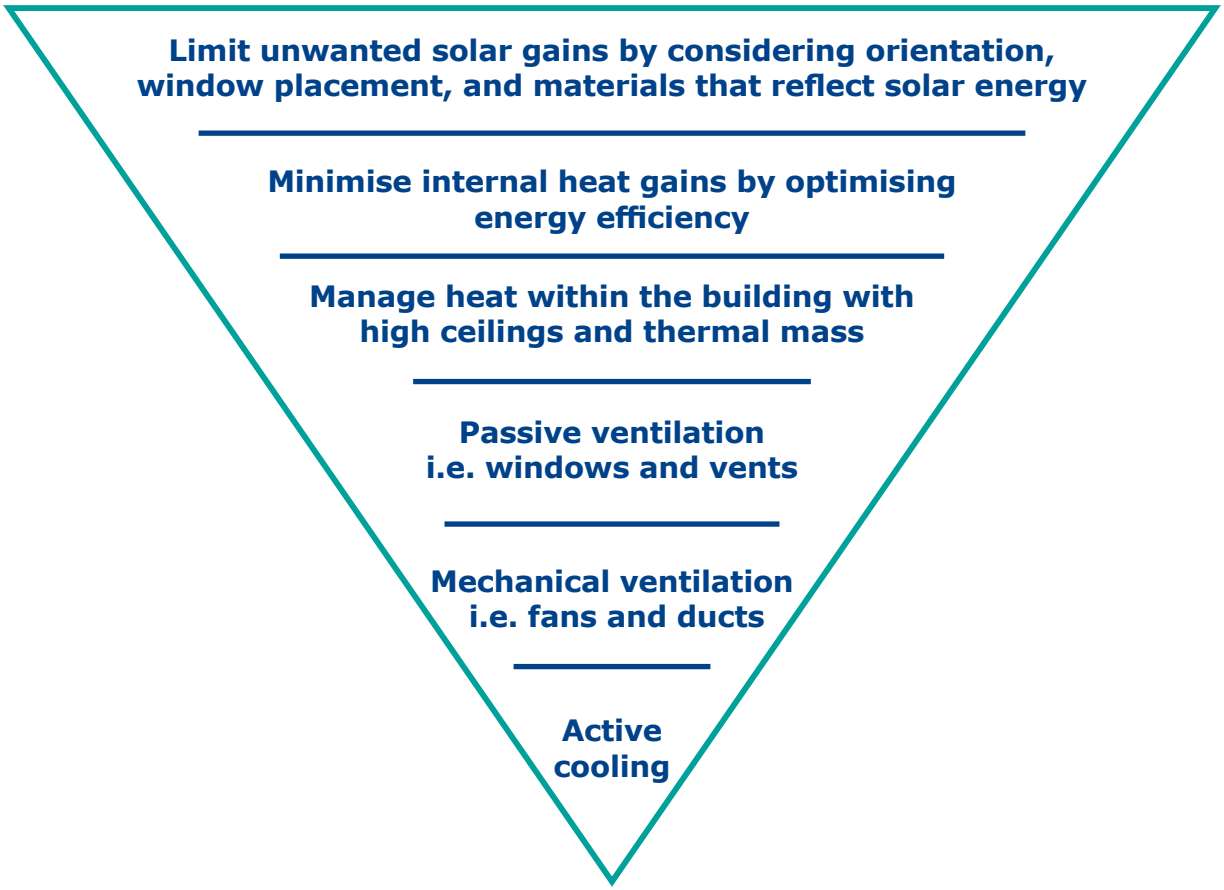
- Increased precipitation in winter and decreased precipitation in summer
- Increases in the intensity of summer rainfall events

- Number of days when the temperature drops below 0°C to almost half
- Number of days when the temperature surpasses 25°C to double

8.27. These changes to the climate could result in the following negative impacts:

- Increased energy demand for summer cooling.
- Increased risk of drought.
- Increased risk to biodiversity.
- Increased risk of flooding.

8.28. Policy SP1 requires all proposals to introduce a climate resilient design that can adapt to the impacts of climate change. Developers should use The Met Office's Local Authority Climate Explorer tool to determine the risk climate change poses to the development. It is advisable to consider the impacts of the most extreme model – a global temperature rise of 4°C – to ensure the development is resilient against a worst-case scenario. To prevent buildings from becoming too hot in the future warmer climate, proposals should follow the overheating and cooling hierarchy as set out below:




8.29. Building materials used in the development should be resistant to frequent severe weather events such as heavy rainfall, high winds, heatwaves, and cold snaps. Designing the development to be climate resilient for a 100-year period is best practice. Appendix four shows examples of climate-resilient building materials that could be considered within a proposal.

## Resources

8.30. For further information and guidance see below for a range of resources and examples of good practice.

- Boston Consulting Group and Temasek – The private equity opportunity in climate adaptation and resilience
- Environment Agency – Climate change: risk assessment and adaptation planning in your management system
- Future Homes Hub UK – Whole life carbon conventions and simple tool
- Global Heat Health Information Network – Heat Resilient Cities Benefits Tool
- Good Homes Alliance – Overheating Risk Tool
- Kent County Council – The Adaptation Catalyst e-tool
- Mayor of London – London Energy Assessment Guidance
- Ministry of Housing, Communities and Local Government – National Design Guide
- Natural England – Green Infrastructure Principles
- RESIN – Climate resilient cities and infrastructure
- UN Environment Programme – A Practical Guide to Climate-resilient Buildings & Communities

# 9. Transport and accessibility

9.1. In 2023, England produced 111.6 million tonnes of carbon dioxide from domestic transport, making up 29.1 per cent of the country's greenhouse gas emissions. Therefore, providing sustainable means of transport plays a key role in sustainable development and reducing emissions. National policy also promotes sustainable transport that reduces the effects of climate change, improve air quality, congestion and improve the public realm.

9.2. The local plan recognises the importance of communities having access to sustainable modes of transport ensuring developments are well connected to the surrounding area and create active travel routes that minimise the reliance on the car. Proposals should promote alternative modes of travel including maximising opportunities for active travel, in and around developments.

9.3. As part of the net zero emissions strategy, the government have committed to transitioning to zero emission cars and vans by 2035. This includes the phasing out of petrol and diesel vehicles to be replaced with electric vehicles (EV). West Suffolk is a rural district with many residents needing to rely on the car as their main means of transport. Residents also have varying access to public transport that is focused towards the district's towns. Therefore as well as promoting sustainable transport and active travel, proposals are also required to provide electric vehicle (EV) charging facilities for plug-in electric vehicles.

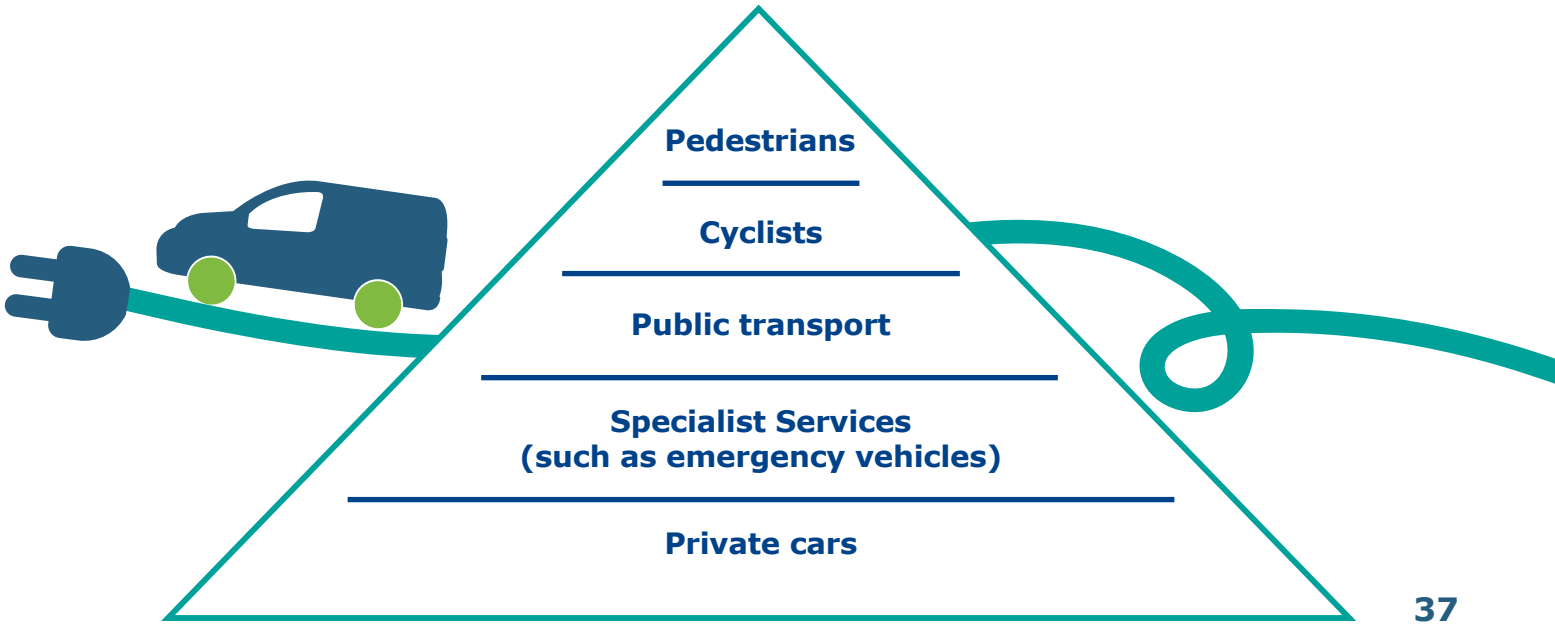
## West Suffolk Local Plan Policies

9.4. The following policies are relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy SP2 Flood risk and sustainable drainage.
- Policy LP1 Sustainable design and construction.
- Policy LP3 Electric vehicle charging points in new development.
- Policy LP41 Active and sustainable travel.

## Active travel

9.5. Policy LP41 requires development to provide for active travel on and off site. Active travel is a journey made in a physically active way. Typically this refers to walking, wheeling (the use of a wheelchair or mobility aid), cycling or scootering. Proposals should introduce a user hierarchy approach when designing the layout of the development. Sustainable transport principles prioritise active travel users within the user hierarchy as shown in the diagram below.



9.6. Proposals should maximise opportunities for walking, wheeling and cycling within the site and provide sustainable links to the surrounding area to ensure users have access to community services and facilities, public transport and green spaces, including access to the countryside. These street designs should also maintain and improve existing travel routes within a site, to prioritise pedestrian and cycle movements and ensure routes are safe and inviting to all users and provide opportunities for active travel for all levels of personal mobility.

9.7. Policy LP41 also requires proposals to promote opportunities for cycling within the development. Proposals should protect and improve existing cycle routes within the site and provide connections to the surrounding cycle network. Proposals should also maximise opportunities to delivering new cycling infrastructure within a development. The new cycling infrastructure should be built to the requirements set out in the Department for Transport's LTN 1/20 Cycle Infrastructure Design. Cycle routes within a proposal should be safe and accessible, preferably forming a segregated cycle network to encourage users regardless of experience to cycle.

9.8. Where proposals include transport hubs and commercial, business and service premises or other destination that users are expected to travel to, policy LP41 requires the proposals to include facilities to allow people to cycle all year around. These include:

- Workplace showers
- covered cycle storage
- changing rooms
- drying rooms
- lockers
- opportunities for bicycle, e-bike and/or e-scooter hire.

9.9. The Suffolk Design Street Guide also provides further detailed guidance for proposed streets and include incorporating sustainable drainage into a streets design. Proposals should consider this guidance at the earliest possible stage, to ensure developments are well connected places that provides safe travel routes for all users.

## Electric vehicle charging points

9.10. To deliver the government's commitment for the UK to transition to zero emission vehicles, the government's climate change committee highlight the need to provide the necessary infrastructure, including sufficient access to charging infrastructure to enable a full transition to electric vehicles (EV). Policy LP3 requires proposals to meet the following EV charging requirements, depending on the scale and nature of the development.

| Type of development | EV charging policy requirement |
|---|---|
| **All development** | Where necessary, provisions for electric bike, buggy and scooter charging. |
| **Residential development** | At least one EV charging point per home with a parking space. |
| **Major development** | EV charging points for visitor parking, having regard to Suffolk parking guidance. |
| **Residential institutions** | Smart EV charging points for visitor parking, having regard to Suffolk parking guidance. |
| **Non-residential development** | Smart EV charging points for visitor parking, having regard to Suffolk parking guidance. |
| **Petrol filling station and charger stations** | Smart rapid EV charging points with a power output of at least 50 kilowatts. |

9.11. EV charging points including homes that rely on shared parking areas should be placed in accessible and convenient locations within the development, with charging points being designed so cables do not obstruct footpaths, driveways or other vehicle access. The British Standards Institution have prepared publicly available specifications for delivering accessible EV charging points for those with disabilities or limited mobility which can be found on the British Standards Institution website. Policy LP3 also supports incorporating photovoltaic panels onto covered parking spaces which provides further opportunities for renewable energy generation from the development.

9.12. EV charging points are often defined by their power output and how quickly they can charge a vehicle. Proposals should specify the type and power output of the charging points provided (in kilowatts or kW) within the development and ensure the EV charging output is proportional to the duration of the stay. The Suffolk Parking Guidance sets out the minimum nominal rated output for EV charging points by the planning use class. Proposals should have regard to this EV charging requirements and power output set out in the Suffolk parking guidance.

9.13. It is also important to note that when considering travel routes and transport links, proposals will also be considered in the wider planning context and provides opportunities to deliver a range of benefits within a development that go beyond the scope of this planning advice note. Proposals will be considered using all policies in the development plan when taken as a whole.

## Resources

9.14. For further information and guidance see below for a range of resources and examples of good practice.

- British Standards Institution – Electric Vehicles Accessible Charging Specification – PAS 1899
- Department for Energy Security and Net Zero – Solar on car parks and electric vehicle charging
- Department for Transport – Cycle Infrastructure Design Local Transport Note 1/20
- Ministry of Housing, Communities and Local Government – National design guide
- Suffolk County Council – Parking guidance
- Suffolk County Council – Suffolk Design Streets Guide 2022

EV chargers at The Guineas

# 10. Embodied carbon, the circular economy and waste

10.1. At the individual household level separating waste has become the norm, with a range of bins available within the home and separate bins and collection organised by the council. The household recycling rate in England in 2022 was 43.4 per cent. In 2018, the waste sector was responsible for 32.9 million tonnes of carbon dioxide emissions in the UK. Residential development can continue to reduce waste, re-use and recycle through personal actions such as composting waste. On large developments this could be on an individual household basis or a community facility. Advice and purchase of composting bins for Suffolk residents (at subsidised cost) and advice on reducing, re-using and recycling plastic is available on the Suffolk recycles website.

10.2. In 2020, England produced 162.8 million tonnes of waste, of which 33.6 million tonnes came from the commercial and industrial sector, and 63 million tonnes came from construction and demolition. Proposals for development should apply circular economy principles which promote developments to minimise waste, re-use and recycle materials throughout the development's lifetime, from its construction to its demolition.

## West Suffolk Local Plan Policies

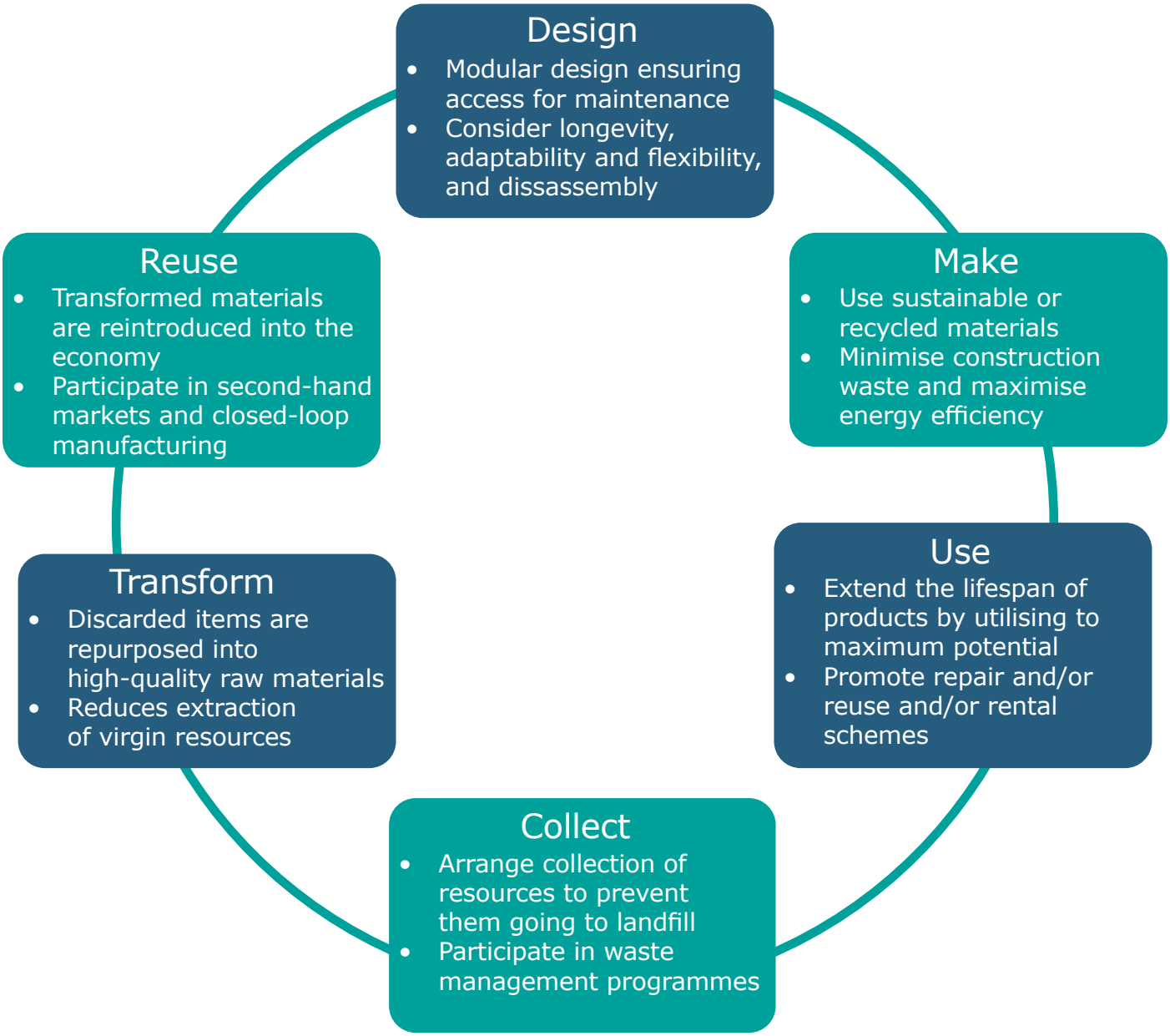
10.3. The following policies are relevant to this section:

- Policy SP1 The climate and environment emergency and sustainable development.
- Policy LP1 Sustainable design and construction.
- Policy LP4 Reducing waste and the circular economy.
- Policy LP7 Protecting and enhancing natural resources, minimising pollution and safeguarding from hazards.

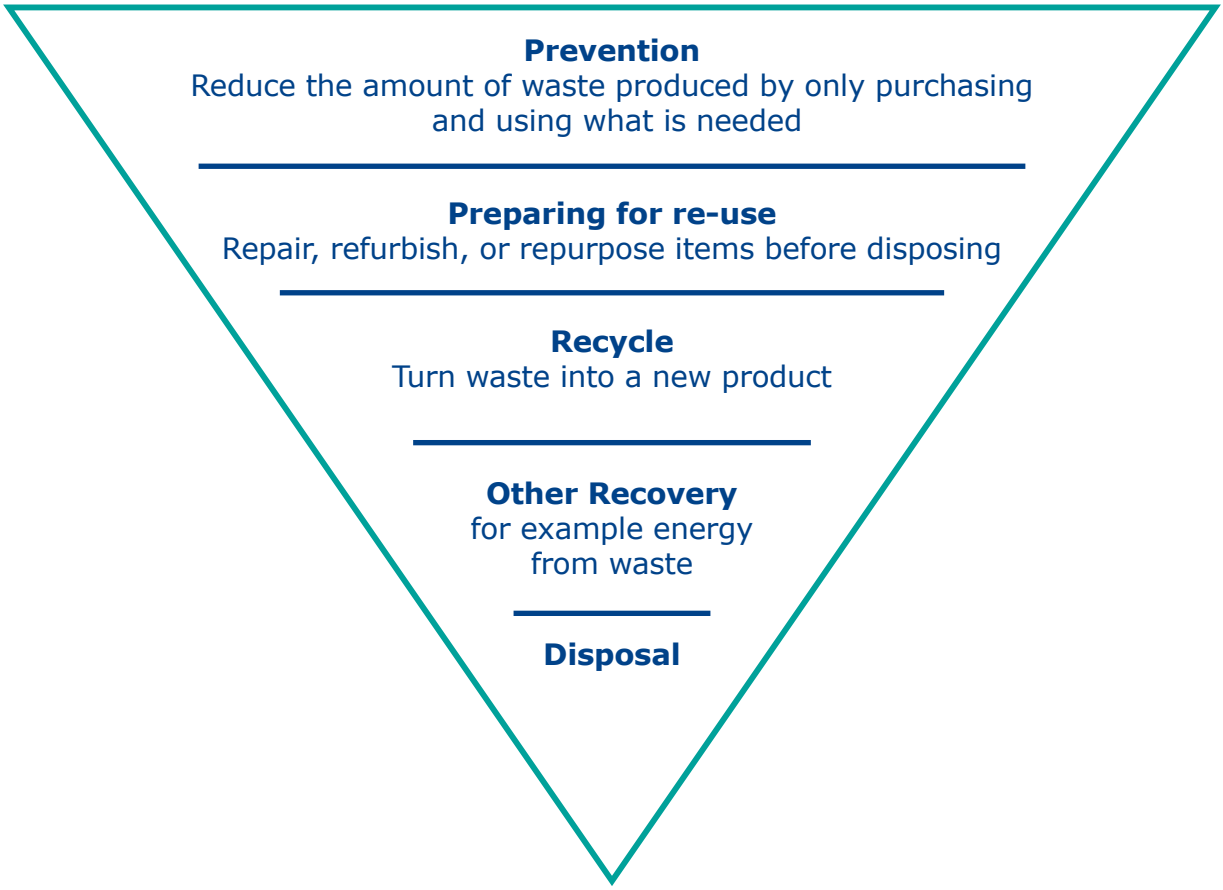
Solar panels and wind turbines

## 10.4. Circular economy principles

The circular economy is a production and consumption model which extends the lifecycle of products, thus keeping waste to a minimum. The circular economy model promotes reusing, refurbishing, repairing, leasing, and sharing materials, compared to the traditional linear economy model which is based on consuming and throwing things away. The below diagram highlights the key principles of a circular economy.



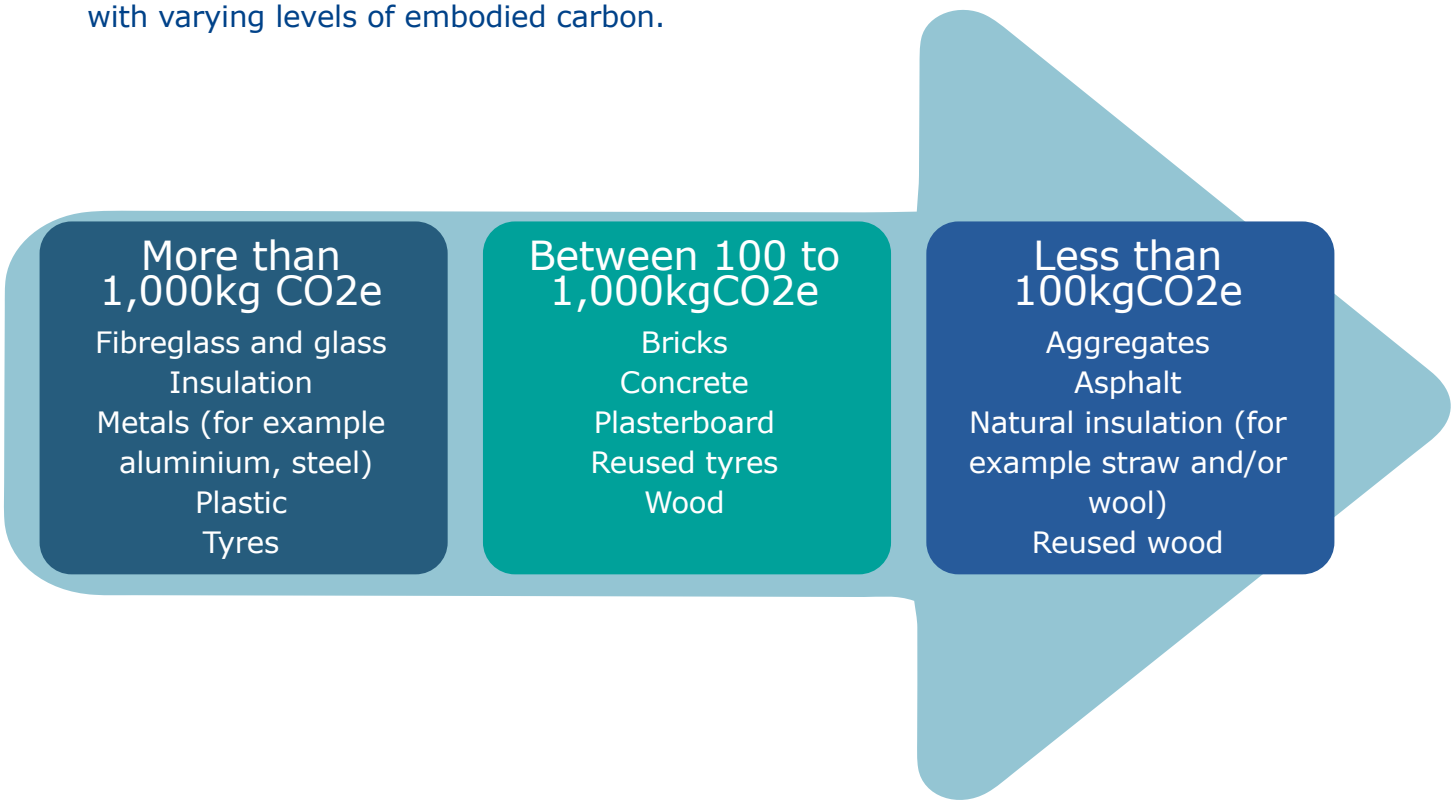
10.5. Policy LP4 requires all major developments proposals to submit a waste reduction and circular economy statement which demonstrates how the proposal has applied circular economy principles. Within this statement, proposals should also demonstrate how material demand and construction waste has been minimised on the site. The circular economy principles should be applied alongside the waste hierarchy to minimise waste created on site.




10.6. Where a proposed site has an existing structure, the proposal should be designed to minimise partial or complete demolition of buildings on site by incorporating the structure into the development where possible. If demolition is unavoidable, the proposal must show how the materials from the existing structure will be managed by applying the waste hierarchy above to reduce waste and the loss of embodied carbon.

## Embodied carbon

10.7. Embodied carbon refers to the amount of carbon released throughout the whole lifecycle of a product. This includes any carbon dioxide emissions created from raw material extraction and manufacturing, through to transportation and disposal of the product at end-of-life. The below diagram provides examples of construction materials with varying levels of embodied carbon.




10.8. Policies SP1 and LP1 set out that proposals should source sustainable, low carbon building materials, and show how the choice of building material have been considered, including the use of biogenic building materials as alternatives to high carbon materials. The Building Research Establishment's website includes a list of carbon management toolkits for measuring the expected carbon emissions across the lifetime of the development to help understand where embodied carbon can be reduced within the proposal.

10.9. Proposals should consider how design of the proposal and its implementation can contribute to reducing carbon emissions through sourcing local materials, re-using and recycling construction materials, and managing construction waste through the project at the earliest stage. This can include an embodied carbon assessment to show how low carbon building materials have been considered and the expected embodied carbon of the proposal for its lifetime. Green Suffolk's net zero carbon toolkit provides further guidance for considering embodied carbon within a proposal for new development and retrofitting.

## Site-specific construction environmental management plan

10.10. Proposals should minimise all emissions and other forms of pollution. Policy LP7 requires all proposals for development where the existence of or potential creation of pollution is suspected, both on and off site, to prepare a full assessment of the impacts of potential hazards and set out mitigation measures where necessary. This can include preparing a site-specific construction environmental management plan (CEMP) for the proposal.

10.11. A construction environmental management plan (CEMP) sets out which measures will be implemented when delivering the proposed development, and details how the development will minimise its environmental impact during the construction stage. This should include setting out the key activities in the construction process, identifying specific risks and pollution that is expected to be generated, detailing measures to minimise these risks, safeguard hazards and reduce pollution generated on site and making references to any forms or registers associated with the activities identified.

10.12. Proposals should also demonstrate that the development is unlikely to result in significant impact on the following:

- The natural environment
- General amenities that are intrinsic to the character of the surrounding area
- Impacts from light, noise, smell, dust and vibrations on the surrounding area
- Health and safety of the public
- Air quality, both onsite and the surrounding area
- Surface and groundwater quality
- Land quality or conditions

10.13. Where proposals are on or adjacent to known or potentially affected by contamination, the development includes a particularly sensitive end use or involves storing and/or use of hazardous substances, policy LP7 requires an appropriate assessment of risk to be undertaken. As a minimum, these proposals should undertake a tier one land contamination preliminary risk assessment. Where it is necessary to further understand the impacts of potential hazards a tier two generic quantitative risk assessment and tier three detailed quantitative risk assessment based on suitable intrusive investigations together with options appraisals, remediation proposals and verification reports may also be required.

## Resources

10.14. For further information and guidance see below for a range of resources and examples of good practice.

- AECOM and Ministry of Housing Communities and Local Government – The Practical, Technical and Economic Impacts of Measuring and Reducing Embodied Carbon in New Buildings
- Building Research Establishment – IMPACT compliant tools and assessments
- Department for Energy Security and Net Zero – Greenhouse gas reporting: conversion factors 2024
- Department for Environment Food and Rural Areas – Waste hierarchy guidance
- Green Suffolk – Net Zero Carbon Toolkit
- London Energy Transformation Initiative – LETI Embodied Carbon Primer
- Mayor of London – London Plan Guidance Circular Economy Statements
- Suffolk County Council – Air Quality Strategy and Action Plan
- UK Green Building Council – Circular Economy guidance for construction clients
- UN Environment Programme – Building materials and the climate: Constructing a new future

# Appendix one: Glossary

**Active travel:** active travel refers to making journeys in physically active ways. Active Travel England is a government executive agency responsible for making walking, wheeling and cycling the preferred choice for people to get around.

**Biodiversity:** biodiversity or biological diversity is the variety and variability of life on Earth

**Biodiversity net gain (BNG):** biodiversity net gain (BNG) is a way of creating and improving natural habitats that has a positive impact on biodiversity.

**Biogenic material:** used as a term in construction means the material is from a biological source or derived from living matter such as timber. The term includes building materials such as glued laminated timber, known as Glulam, straw bale construction and hempcrete.

**Building Research Establishment Environmental Assessment Method (BREEAM):** BREEAM sets the standard for best practice in sustainable building design, construction and operation. A BREEAM assessment uses recognised measures of performance, which are set against established benchmarks, to evaluate a building's specification, design, construction and use.

**Carbon neutral:** carbon neutral refers to a policy of not increasing carbon emissions and of achieving carbon reduction through offsets.

**Climate change adaptation:** adjustments made to natural or human systems in response to the actual or anticipated impacts of climate change, to mitigate harm or exploit beneficial opportunities.

**Climate change mitigation:** action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions.

**Climate resilience:** the ability of an area to respond to and withstand changes brought about by climate change.

**Decentralised energy:** local renewable and local low carbon energy sources.

**Energy hierarchy:** the energy hierarchy is a classification of energy options which is often illustrated as a pyramid or triangle with the best, most sustainable approach at the base of the diagram, and least sustainable approach at the top of the diagram.

**Flood risk assessment (FRA):** an assessment of the risk of flooding, particularly in relation to residential, commercial and industrial land uses. The Environment Agency requires a flood risk assessment to be submitted alongside planning applications in areas that are known to be at risk of flooding (within flood zones 2 or 3) and/or are greater than one hectare.

**Flood zones:** flood zones refer to the probability of a river or the sea flooding, ignoring the presence of defences. The zones are shown on the Environment Agency's Flood Map available to view via their webpage.

**Geodiversity:** the range of rocks, minerals, fossils, soils and landforms.

**Green infrastructure:** 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.

**Greenhouse gas:** greenhouse gases contribute to the greenhouse effect – a process that occurs when gases in the Earth's atmosphere trap the heat of the sun. The gases that contribute most to the Earth's greenhouse effect are water vapour (H2O), carbon dioxide (CO2), nitrous oxide(N2O), methane (CH4) and ozone (O3).

**Greywater, greywater recycling:** greywater is the water used within a home, for example in sinks, showers, baths and dishwashers. Greywater recycling is when this water is cleaned and returned to the plumbing system for use in toilets, washing machines and outside taps.

**Householder development:** The alteration or enlargement a single dwelling, including works within the boundary and/or garden such as extensions, conservatories, loft conversions, dormer windows, garages, car ports and outbuildings. Please note that planning permission is not needed for all household building work. Under permitted development rules a number of household building work projects are permitted provided they meet certain limits and conditions. Please visit the Planning Portal to find out whether planning permission is needed.

**Local nature recovery strategy:** strategies that propose how and where to recover nature and improve the wider environment across England.

**Major development:** for housing, development where 10 or more homes will be provided, or the site has an area of 0.5 hectares or more. For non-residential development it means additional floorspace of 1,000 square metres or more, or a site of one hectare or more, or as otherwise provided in the Town and Country Planning (Development Management Procedure) (England) Order 2015.

**Nature-based solutions:** ways of working with natural processes to provide benefits to both people and nature.

**Net zero:** "A person, company or country is carbon neutral if they balance the carbon dioxide they release into the atmosphere through their everyday activities with the amount they absorb or remove from the atmosphere. This is also called net zero carbon emissions or net zero carbon, because overall no carbon dioxide is added to the atmosphere." Natural History Museum

**Non-major development:** Non-major proposals are for development that does not meet the definition of a major development. This includes residential developments of less than 10 dwellings or on sites of less than 0.5 hectare, non-residential developments of less than 1,000m2 or on sites of less than one hectare.

**Open space:** all open space of public value, including not just land, but also areas of water (such as rivers, canals, lakes and reservoirs) which offer important opportunities for sport and recreation and can act as a visual amenity.

**Passivhaus, Passivhaus principles:** Passivhaus adopts a whole-building approach with clear, measured targets, focused on high-quality construction, certified through an exacting quality assurance process. Buildings created to rigorous energy efficiency standards so that they maintain an almost constant temperature and require very little heating or cooling no matter what the outside temperature.

**Photovoltaics (PV) panels:** photovoltaics (PV), also known as solar panels, use the sun's energy and convert it into electricity that can be used in homes and businesses.

**Renewable and low carbon energy:** includes energy for heating and cooling as well as generating electricity. Renewable energy covers those energy flows that occur naturally and repeatedly in the environment – from the wind, the fall of water, the movement of the oceans, from the sun and also from biomass and deep geothermal heat. Low carbon technologies are those that can help reduce emissions (compared to conventional use of fossil fuels).

**Recycled aggregates:** aggregates resulting from the processing of inorganic materials previously used in construction, for example construction and demolition waste.

**Smart charging:** smart charging is a safe and convenient way of charging your electric vehicle (EV) at times when demand for electricity is lower, for example at night, or when there is lots of renewable energy on the grid.

Charging during these off-peak times not only reduces costs for EV drivers by using cheaper energy rates but also helps to prevent unwanted intervals of really high demand for electricity from the grid.

**Solar panels:** see photovoltaic panels.

**Source protection zone:** A source of groundwater used to supply drinking water identified by the Environment Agency from pollution. The source protection zones show the level of risk to the source from contamination.

**Sustainable development:** whilst the National Planning Policy Framework (NPPF) does not include a definition of sustainable development it does summarise the objective of sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Resolution 42/187 of the United Nations General Assembly).

**Transport assessment:** a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies measures required to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport, and measures that will be needed deal with the anticipated transport impacts of the development.

**Transport statement:** a simplified version of a transport assessment where it is agreed the transport issues arising from development proposals are limited and a full transport assessment is not required.

**Travel plan:** a long-term management strategy for an organisation or site that seeks to deliver sustainable transport objectives and is regularly reviewed.

**Waste hierarchy:** The waste hierarchy is a simple approach that progresses from the most favourable and sustainable approach to the least sustainable. There are five stages: prevention, re-use, recycling, recovery, and finally disposal.

**Water Stress:** water stress is a result of water being a scarce resource. This is especially applicable to the east of England as it is the driest region in the country.

**Water supply management statement:** A statement that demonstrates that sufficient water capacity will be available to meet the predicted demand from development.

**Wildlife corridor:** areas of habitat connecting wildlife populations.

**Zero-carbon:** means that no carbon emissions are being produced from a product or service.

# Appendix two: Sustainable development toolkit

This toolkit is set out as a series of questions to enable an assessment of whether the proposal meets the requirements of the West Suffolk Local Plan climate change policies. The toolkit is set out in four parts and outlines the policy requirements depending on the scale of the proposal. With the level of detail and requirements increasing with the scale of the proposal. For householder applications part one only applies, for non-major proposals part one and two applies and for major proposals all three parts apply. Part four sets out additional sustainable development features that are supported or encouraged by the West Suffolk Local Plan.

- Householder development proposals – Part one of the toolkit sets out the policy requirements applicable for householder applications.
- Non-major development proposals – Part one and two of the toolkit sets out the policy requirements applicable for non-major applications.
- Major development proposals – Part one, two and three of the toolkit sets out the policy requirements applicable for non-major applications.
- All development proposals – Part four of the toolkit sets out sustainable and low carbon features that are encouraged within the West Suffolk Local Plan.

The definitions of householder, non-major and major developments can be found in the glossary appendix 1.

**Applicants are strongly encouraged to complete the respective part(s) one, two and three in full as relevant to nature and scale of the planning application proposal to demonstrate they have considered the requirements set out in the local plan policies at the earliest stages when drawing up proposals. Part four of the toolkit sets out sustainable development features that are supported or encouraged within the West Suffolk Local Plan. It is also recommended that part four is completed to highlight additional sustainable and low carbon features included in the proposal.**

**Completion of the toolkit will enable planning officers to assess whether the proposal is compliant with local plan policies demonstrating how the proposal has prioritised climate resilience, mitigation and adaptation.**

Please use the table format below noting that the size of the response box does not indicate the length of response required. If you wish to submit as a separate document, please follow the format as set out and cross-reference other documents submitted.

Proposals for outline planning permission with some or all matters reserved are expected to complete the relevant toolkit with a proportionate level of detail to the proposal. The local authority may request any further details if it considers the application cannot be determined without such detail. It is important to note that whilst further details can and will be agreed at a later stage through the submission of a reserved matters application, many of the measures and principles described in the planning advice note should be considered at the earliest possible stage to maximise the opportunities to include these benefits into the development and reduce the risk of needing to retrospectively add these measures into the proposal.

For further advice and support please refer to our Environment page of the West Suffolk website or the Green Suffolk pages of Suffolk County Council's website.

Once completed by the applicant the toolkit will assist planning officers in assessing the development proposal against these local plan policies and national planning policy in relation to meeting the challenge of climate change.

# Part one - policy requirements for householder, non-major development and major development proposals

Part one should be completed by the applicants for all householder, non-major development and major development proposals as defined in the glossary.

Part one should be completed in full or alternatively information should be provided in a separate document following the format below and cross-reference other documents submitted where appropriate. Where a question is not applicable to the application proposal, the applicant can specify this in the toolkit.

| | **Question** | **Answer (with explanation or reference to where the required information can be found in the planning application)** |
|---|---|---|
| **1** | **Reducing operational energy demand** | **(Policies SP1, LP1 and LP2)** |
| 1.1 | Does the sustainability statement demonstrate how the design has utilised a fabric first approach to maximise energy efficiency? | |
| 1.2 | How has the proposal been designed to minimise energy consumption through the layout and orientation of the building, location of the windows, thermal mass and shading design, materials, insulation, and how has the design has balanced solar gains and shading? | |
| 1.3 | What specific measures are proposed to achieve energy efficiency? Do these measures go above development plan and building regulations requirements? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **2** | **On-site renewable energy generation** | **(Policies SP1, LP1 and LP6)** |
| 2.1 | What specific renewable and low or zero carbon energy sources have been considered for the proposal? Please provide the renewable and low or zero carbon energy sources considered within your sustainability statement including reasoning for including or not including the technologies within the development.<br><br>For example: solar photovoltaic, solar thermal, air or ground source heat pumps, community or shared energy initiatives. | |
| 2.2 | Does the proposal include photovoltaic panels on the roofs of buildings?<br><br>If not, please specify why it would be impractical to install photovoltaic panels on the roof or specify an alternative renewable energy technology that is being installed onsite. | |
| 2.3 | Has the proposal considered how the orientation of the building and layout of the site can create opportunities for on-site photovoltaic panels and solar thermal heating? | |
| 2.4 | Where a proposal includes renewable energy technology, has the proposal provided information to meet criteria a-e of policy LP6? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **3** | **Flooding and water efficiency** | **(Policies SP1, SP2, LP1, LP2 and LP5)** |
| 3.1 | What specific measures are proposed to maximise water efficiency through the development? | |
| 3.2 | How has the proposal considered integrated water management in the design of the development to increase water efficiency and reduce surface water flooding? | |
| 3.3 | Has rainwater and stormwater harvesting and reuse formed part of the integrated water management of the site? | |
| 3.4 | Does the development re-use rainwater or grey water for external and/or internal use? For example: garden water butts or landscape watering. | |
| 3.5 | What specific measures have been considered to deliver higher water efficiency standards and support more sustainable uses of water? | |
| 3.6 | What measures are incorporated into the development to address historic on-site contamination? | |
| 3.7 | What is the proposal's impact on water quality in the surrounding area through pollution of surface or ground water and how have any negative impacts been addressed? | |
| 3.8 | How does the proposal contribute to improving the water quality of rivers and groundwater? | |
| 3.9 | Has the proposal provided generous setbacks to existing water course and been designed to retain and improve river corridor habitats and features? | |
| 3.10 | Has the proposal been considered against national planning policy and does the development require a sequential and/or exception test to be undertaken? | |
| 3.11 | Where a site-specific flood risk assessment is required, has it demonstrated that the proposal will contribute towards reducing the impact of all forms of flood risk? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 3.12 | Please explain how the proposal has met the following requirements in the design of the sustainable drainage systems (SuDS):<br>• The SuDS to reduce the risk of flooding in the development and provide an overall betterment over the existing flood risk of the area.<br>• The SuDS design has taken the effects of climate change and the residual effects from cumulative flood risk within the proposal's catchment.<br>• The proposal has had regard to the Suffolk Sustainable Drainage Systems Guide as set out in the Suffolk Flood Risk Management Strategy.<br>• The sustainable drainage systems (SuDS) features are well integrated with the ecology and landscape requirements set out in other policies in the development plan.<br>• The SuDS design has incorporated open conveyance and storage of surface water.<br>• Ensure the SuDS form an integral part of the overall provision of green infrastructure.<br>• The four pillars of SuDS have been applied.<br>• The SuDS form part of an integrated water management approach to the design of the whole site.<br>• How the SuDS will be delivered, maintained and managed for the lifetime of the development. | |
| 3.13 | Will the proposed development and drainage infrastructure be safe for its lifetime, including providing safe access and escape routes? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **4** | **Place making and the natural environment** | **(Policies SP1, SP2, SP5, SP7, SP8, SP9, LP1, LP5, LP7, LP12, LP13 and LP21)** |
| 4.1 | What specific measures have been included within the proposal's design to ensure the development will be climate resilient? For example measures that will:<br>• Prevent overheating<br>• Introduce urban cooling<br>• Retain existing landscape features<br>• Provide green infrastructure<br>• Plant trees onsite and increase canopy cover. | |
| 4.2 | What nature-based solutions have been identified within the proposal to contribute towards reducing carbon emissions and mitigating and adapting to climate change? | |
| 4.5 | What are the proposal's individual and cumulative impacts on the following:<br>• Light levels<br>• Noise<br>• Smell<br>• Dust<br>• Vibrations<br>• Air quality<br>• Surface and groundwater quality<br>• Land quality<br>• The natural environment<br>• Other general amenities.<br><br>How have any negative impacts been addressed? | |
| 4.6 | How has the drainage infrastructure introduced green elements into the proposals design? | |
| 4.7 | Following on from questions 3.6, 3.7 and 3.8, Is the proposal within a source protection zone? If so, what measures have been proposed to ensure the proposal will not have any negative impacts on water quality through pollution of surface or ground water or discharge or treatment of water? | |
| 4.8 | How has the mitigation hierarchy been used to conserve and enhance biodiversity and geodiversity of the site and the surrounding area? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 4.9 | Has the proposal identified sites designated for their biodiversity and geodiversity value that could be impacted by the development? | **(Policies SP1, SP2, SP5, SP7, SP8, SP9, LP1, LP5, LP7, LP12, LP13 and LP21)** |
| 4.10 | Have protected species surveys and ecological impact assessments been completed as part of the proposal in accordance with national good practice guidelines? | |
| 4.11 | How does the development effectively protect and enhance the ecology, biodiversity and geodiversity within and nearby the site? For example: enhancing existing wildlife places onsite. | |
| 4.12 | What specific measures have been proposed as part of the soft landscaping? How will these measures respond to the challenge of biodiversity loss and the impacts of climate change? | |
| 4.13 | How does the proposal conserve and enhance local distinctiveness? Does the proposal retain existing landscapes, trees woodland and hedgerows within the layout of the site? | |
| 4.14 | If the proposal includes the removal of a tree, has the proposal demonstrated why this is unavoidable? How will the loss of the tree be appropriately compensated? Please note: the removal of large mature trees and their replacement with smaller shorter-lived species will not be acceptable. | |
| 4.15 | How has the proposal been informed by the Suffolk Local Nature Recovery Strategy to set out relevant nature recovery priorities? | |

| | | |
|---|---|---|
| **5** | **Transport and accessibility** | **(Policies SP1, SP2, LP1, LP3 and LP41)** |
| | **Question** | **Answer (with explanation or reference to where the required information can be found in the planning application)** |
| 5.1 | If the proposal includes the installation of electric vehicle charging points, how has the proposal considered the Suffolk guidance for parking (or successor documents) within the design? | |
| 5.2 | Please specify the type and output power rating of all charging points which will be installed as part of the proposal. | |
| 5.3 | Has the proposal included accessible charging facilities for electric bicycles, buggies and scooters? | |
| **6** | **Embodied carbon, the circular economy and waste** | **(Policies SP1, LP1, LP4 and LP7)** |
| 6.1 | What specific measures have been introduced to reduce waste, promote recycling, and source sustainable and low carbon building materials?<br><br>How will these measures be implement-ed from the construction of the proposal through to the end user? | |
| 6.2 | Does the proposal include a full assessment of the impacts of pollution and potential hazards on the site? For example: A site-specific construction environment management plan.<br><br>What mitigation measures are proposed to minimise these impacts? | |
| 6.3 | What are the proposal's individual and cumulative impacts on the following:<br><br>• Light levels<br>• Noise<br>• Smell<br>• Dust<br>• Vibrations<br>• Air quality<br>• Surface and groundwater quality<br>• Land quality<br>• The natural environment<br>• Other general amenities.<br><br>How have any negative impacts been addressed? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 6.4 | Is the proposed site within or adjacent to contaminated land or have a particular sensitive end use?<br><br>If so, please provide an appropriate risk assessment as part of the proposal. This should take a tiered approach with a minimum of a tier one land contamination preliminary risk assessment and where necessary further technical reports. | |
| 6.5 | Please provide a schedule of the materials and construction technologies proposed to be used (if known), with details of:<br>• provenance (where they are to be sourced from)<br>• sustainability credentials (for example: Forest Stewardship Council (FSC) approved timber)<br>• confirmation that it was not possible or feasible to re-use or recycle existing materials from the development site (where relevant)<br>• relevance of selected materials for potential future re-use and recycling<br>• relevant energy use of construction technologies. | |
| 6.6 | Will the development include sufficient external and/or internal storage to enable separation and storage of materials for recycling and/or composting and is this indicated on the layout plans, block plans or floor plans? | |

# Part two - policy requirements for non-major development and major development proposals

Part two should be completed by the applicants for all non-major development and major development proposals as defined in the glossary.

Part two should be completed in full or alternatively information should be provided in a separate document following the format below and cross-reference other documents submitted where appropriate.

| | **Question** | **Answer (with explanation or reference to where the required information can be found in the planning application)** |
|---|---|---|
| **1** | **Reducing operational energy demand** | **(Policies SP1, LP1 and LP2)** |
| 1.4 | If the proposal is for 500 square metres or more of floorspace for non-residential or residential institutions (for example a care homes). Please provide a Building Research Establishment Environmental Assessment Methodology (BREEAM) assessment for your development that achieves 'Excellent' standard. | |
| **2** | **On-site renewable energy generation** | **(Policies SP1, LP1 and LP6)** |
| 2.5 | Where the proposal includes the provision of wind energy generation, does the proposal include:<br><br>• a residential visual amenity assessment,<br>• a statement demonstrating how the development mitigates for air traffic operations and<br>• An appraisal showing the impacts of the wind turbine(s) on bats, migrating birds and bird strikes.<br><br>What mitigation measures will be introduced to address the impacts identified? | |
| 2.6 | Where the proposal includes energy storage, does the proposal include a site management plan to demonstrate how fire safety measures have been addressed? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **3** | **Flooding and water efficiency** | **(Policies SP1, SP2, LP1, LP2 and LP5)** |
| 3.14 | Has the proposal set aside around 15 per cent of the site for sustainable drainage systems (SuDS)? | |
| 3.15 | If the proposal is for residential development, does the proposal limit water consumption to 110 litres per person per day (including external water use) per home? | |
| 3.16 | If the proposal is for residential development, have water butts been provided for all new homes? If not, please explain why it would be impractical to do so. | |
| 3.17 | If the proposal is for non-residential development, how has the proposal sought to minimise water use within the development? | |
| 3.18 | If the proposal is for non-residential development and requires significant non-domestic water use, please submit a water supply management statement as part of the proposal to demonstrate that sufficient water capacity is available. | |
| 3.19 | If the proposal cannot connect to a public sewer, please submit a foul drainage assessment as part of the proposal. | |
| 3.20 | Is the proposal located in an area that is at the lowest risk of all forms of flooding taking the long-term impacts of climate change into account? This should also consider the current and future available sites appropriate for the proposed development in areas with a lower risk of flooding using the most up-to-date Environment Agency flood risk maps and the West Suffolk Strategic Flood Risk Assessment maps. | |
| 3.21 | Will the proposed drainage infrastructure for roads introduce green elements to the highways? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 3.22 | If the proposal includes a relief, distributor or spine road or another primary road, have swales been incorporated into the design of these roads to manage drainage?<br>How will the road runoff be treated from the potential pollution generated from these roads? | |
| 3.23 | Have the design of the other roads in the proposal incorporated sustainable drainage systems (SuDS) and how has the Suffolk Streets Design Guide been considered within the proposal? | |
| 3.24 | If the proposal is located near an airbase or beneath, within or close to flight paths or other designated air manoeuvring areas, how have the SuDS been designed to minimise opportunities for bird strikes? | |
| **4** | **Place making and the natural environment** | **(Policies SP1, SP2, SP5, SP7, SP8, SP9, LP1, LP5, LP7, LP12, LP13 and LP21)** |
| 4.16 | How has the proposal introduced a green infrastructure led design approach to integrate green and blue infrastructure into the design? Please provide evidence such as the following that has been used during the design of the proposal:<br><br>• Green infrastructure design code.<br>• Green infrastructure design toolkit.<br>• Green infrastructure plan.<br>• A checklist or set of principles used to introduce green infrastructure into the development. | |
| 4.17 | How has existing green infrastructure, including its integrity and connectivity, been retained, restored, protected and enhanced onsite? What specific features are proposed to improve the quantity and quality of the existing green infrastructure network? | |
| 4.18 | If the proposal is expected to negatively impact the existing green infrastructure network, what steps have been taken to demonstrate it cannot be avoided?<br><br>Does the proposal also provide alternative green infrastructure provision of equivalent benefit? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 4.19 | Does the design of the proposal's sustainable drainage systems (SuDS) form an integral part of the overall provision of green infrastructure onsite and are well integrated with the ecology and landscape requirements set out in the West Suffolk Local Plan? | |
| 4.20 | Do the proposed green elements within the drainage infrastructure for roads separate walking, wheeling and cycling from vehicles? | |
| 4.21 | Does the proposal include accessible green spaces to meet the requirements of appendix I of the West Suffolk Local Plan? | |
| 4.22 | Does the proposal include the planting of new trees and hedgerows? Does the proposal include planting native species within the planting mix? Please provide details. | |
| 4.23 | Has sufficient space been reserved for the planting of new trees and sustainable growth of new and existing trees and improve tree canopy coverage? | |
| **5** | **Transport and accessibility** | **(Policies SP1, SP2, LP1, LP3 and LP41)** |
| 5.4 | What electric vehicle charging infrastructure is proposed as part of the development and where is this to be provided (please illustrate on a plan if necessary)? Does proposal provide sufficient electric vehicle charging points to meet the requirements set out in policy LP3? | |
| 5.5 | Where homes rely on shared parking areas, does the design of the parking area ensure that electric vehicle (EV) cables will not obstruct footpaths, vehicle access or driveways? | |
| 5.6 | How has the proposal considered the Suffolk guidance for parking (or successor documents) when designing the installation of electric vehicle charging points onsite. | |
| 5.7 | How does the proposal maximise opportunities for walking, wheeling and cycling both on and off site?<br><br>How have new routes been designed to be safe and accessible to all users regardless of physical ability? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 5.8 | How will the location, layout, design and infrastructure of the development encourage residents, occupiers, visitors, customers, employees, to travel sustainably, having regard to the sustainable transport hierarchy:<br><br>1. Active modes<br>2. public, shared, community transport<br>3. personal electric vehicles<br>4. personal internal combustion and hybrid engine vehicles. | |
| 5.9 | Does the development provide suitable connections to existing walking and cycling routes to ensure connectivity to local amenities including schools, shops play area, open space and other local facilities?<br><br>Please provide a local connectivity plan showing the development in relation to these key destinations. | |
| 5.10 | In what other ways does the design of the development reduce the need to travel (for example through digital connectivity or the inclusion of flexible home working space)? | |
| 5.11 | Does the development incorporate visible and secure cycle storage where it is needed for shared use and secure, practical cycle storage for private use (please indicate on a plan and provide specification details)? | |
| 5.12 | Has the design of the drainage infrastructure on the roads introduced green elements to separate walking and wheeling or cycling from car movements? | |
| 5.13 | How has the proposal maximised opportunities for accessible, safe and segregated cycling networks? Does this cycling infrastructure meet the requirements of the Gear Change and Cycle Infrastructure Design Local Transport Note 1/20 or any successor documents? | |
| 5.14 | Does the proposal include safe and suitable access to public transport that are reasonable walking distances from homes? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 5.15 | Has the design of the drainage infrastructure on the roads introduced green elements to separate walking and wheeling or cycling from car movements? | |
| 5.16 | What other measures are proposed for the development to reduce the length and number of car journeys and traffic levels (for example: green travel plan)? | |
| **6** | **Embodied carbon, the circular economy and waste** | **(Policies SP1, LP1, LP4 and LP7)** |
| 6.6 | Please provide a schedule of the materials and construction technologies proposed to be used (if known), with details of:<br>• Provenance (where they are to be sourced from).<br>• Sustainability credentials (for example: Forest Stewardship Council (FSC) approved timber).<br>• Confirmation that it was not possible or feasible to re-use or recycle existing materials from the development site (where relevant).<br>• Relevance of selected materials for potential future re-use and recycling.<br>• Relevant energy use of construction technologies. | |
| 6.7 | If the proposals include areas for public open space are dog waste or general litter bins included. If yes, please indicate locations (or provisional locations) and explain how these will be managed and maintained in perpetuity. | |

# Part three – policy requirements for major development proposals

Part three should be completed by the applicants for all major development proposals as defined in the glossary.

Part three should be completed in full or alternatively information should be provided in a separate document following the format below and cross-reference other documents submitted where appropriate.

| | **Question** | **Answer (with explanation or reference to where the required information can be found in the planning application)** |
|---|---|---|
| **1** | **Reducing operational energy demand** | **(Policies SP1, LP1 and LP2)** |
| 1.5 | If the proposal is for 100 homes or more and will have one or more show homes or marketing suites, what are the provisions set out in the sustainability statement to explain how at least one show home or marketing suite will be equipped with products to demonstrate sustainable energy alternatives, options or extras to buyers? | |
| 1.6 | Following on from question 1.5, does the sustainability statement also set out what educational and/or explanatory materials will be provided to demonstrate the additional energy and water efficient items and/or fittings that will be available to purchase?<br><br>Does this include explaining the price of these products and showing how the product prices will reflect the same profit margin to the developer as other standard buyer's options or extras? | |
| **2** | **On-site renewable energy generation** | **(Policies SP1, LP1 and LP6)** |
| 2.7 | Where the proposal includes a solar farm, does the proposal include:<br>• An ecology statement<br>• A nature conservation statement and<br>• A mitigation statement.<br><br>Have these statements demonstrated the potential impacts of the development and how they will be mitigated? | |
| 2.8 | Where the proposal includes a solar farm, has the proposal considered the impact of potential glint and glare and its effects on biodiversity? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 2.9 | Where the proposal includes an anaerobic digestion or energy from waste development, does the proposal include a statement to demonstrate:<br>• The nature of the waste and origin(s) of the fuel.<br>• The distances from the proposed plant, the proposed transport routes and frequency of delivery.<br>• How the waste product(s) comprising the fuel would be disposed of or used. | |
| **3** | **Flooding and water efficiency** | **(Policies SP1, SP2, LP1, LP2 and LP5)** |
| 3.25 | If the proposal is for over 1,000 square metres of non-residential development, please provide evidence to show that the development will achieve full water credits on the Building Research Establishment Environmental Assessment Methodology (BREEAM) water calculator. | |
| 3.26 | If the proposal is for 100 homes or more that have one or more show home or marketing suites, what are the provisions set out in the sustainability statement to explain how at least one show homes or marketing suite will be equipped with products to demonstrate sustainable water alternatives, options or extras to buyers? | |
| 3.27 | Following on from question 3.26, does the sustainability statement also set out what educational and/or explanatory materials will be provided to demonstrate the additional energy and water efficient items and/or fittings that will be available to purchase?<br><br>Does this include explaining the price of these products and showing how the products price will reflects the same profit margin to the developer as other standard buyer's options or extras? | |
| 3.28 | Will the proposed development and drainage infrastructure be safe for its lifetime, including providing safe access and escape routes? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **4** | **Place making and the natural environment** | **(Policies SP1, SP2, SP5, SP7, SP8, SP9, LP1, LP5, LP7, LP12, LP13 and LP21)** |
| 4.24 | Has the proposal considered the following sustainability features within the green infrastructure, building design and landscaping of the proposal?<br>• Nest boxes<br>• Hedgehog gaps<br>• Wildlife corridors (including providing routes under busy roads where appropriate)<br>• Green roofs<br>• Green bus shelters<br>• Living walls on flats<br>• Community buildings and business premises. | |
| 4.25 | If the proposal includes 50 homes or more on greenfield land, Has 40 per cent of the site been set aside for green infrastructure? This can include:<br><br>• Public open space<br>• sustainable drainage systems features including swales, basins and rain gardens<br>• allotments<br>• burial grounds<br>• strategic landscaping<br>• new and retained habitats including woodland, trees and hedgerows<br>• green and blue corridors<br>• suitable alternative natural greenspace (SANG)<br>• recreational access routes. | |
| 4.26 | For all other major development proposals, including those on previously developed land, has sufficient land been set aside for green infrastructure to be provided onsite? This should include land to retain existing features and deliver new green infrastructure onsite. | |
| | | |
| | | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **5** | **Transport and accessibility** | **(Policies SP1, SP2, LP1, LP3 and LP41)** |
| **5.17** | If the proposal includes a new petrol filling station (or a rapid charging station), Does the proposal provide smart rapid electric vehicle charging points with a minimum of 50kW output? | |
| **6** | **Embodied carbon, the circular economy and waste** | **(Policies SP1, LP1, LP4 and LP7)** |
| 6.8 | How has the proposal applied circular economy principles into the design? Please provide a waste reduction and circular economy statement which demonstrates how:<br>• Circular economy principles have informed the design of the building(s) and site layout.<br>• Materials demand have been minimised and on-site reuse and recycling has been maximised.<br>• The local sourcing of materials has been considered and the steps taken to secure local materials and components.<br>• Construction waste is to be reduced, treated as a resource and managed on site.<br>• The scheme has been designed to minimise partial or complete demolition of any buildings or structure on sites.<br>• Where demolition is unavoidable, how materials will be managed by considering the implications of the loss of embodied carbon including:<br>  • An assessment of whether the materials are suitable for reclamation, with targets for reclamation and reuse, and<br>  • How building materials, components and products are to be disassembled, are to be stored, re-used and recycled. | |

# Part four – Sustainable and low carbon features that are supported within the West Suffolk Local Plan

Part four sets out additional sustainable development features that are supported or encouraged within the West Suffolk Local Plan. **We would strongly encourage applicants to complete part four for all proposals**. This is to highlight additional sustainable and low carbon features included in the proposal that are supported by the West Suffolk Local Plan and demonstrate your development helps meet the broader climate change challenges and the move towards net zero.

| | **Question** | **Answer (with explanation or reference to where the required information can be found in the planning application)** |
|---|---|---|
| **1** | **Reducing operational energy demand** | **(Policies SP1, LP1 and LP2)** |
| 1.7 | Does the proposal go above the local plan policy requirements and building regulations to provide more sustainable housing?<br><br>If so, please specify the standards and or specific measures that will be introduced into the development. | |
| 1.8 | For residential developments, have you completed a Building Research Establishment Environmental Assessment Methodology (BREEAM) pre-assessment and/or willing to complete a communities assessment Excellent standard (evidenced by a certificate upon completion)? If so please could this be submitted alongside the proposal. | |
| 1.9 | How have buildings been designed to enable low carbon solutions and climate resilience measures to be easily added in the future? (For example: space for battery storage or water tanks for air source heating systems) | |
| | **Additional Energy Information** | |
| 1.10 | If possible, please provide confirmation of the Dwelling Fabric Energy Efficiency (DFEE) rate in comparison to the Target Fabric Energy Efficiency (TFEE) rate as identified through Standard Assessment Procedure (SAP) calculations. Note: residential development only. | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 1.11 | Please provide details of anticipated carbon emissions, with specific reference to percentage improvement reductions over Part L of the Building Regulations 2013.<br><br>Where possible this should be demonstrated through supply of relevant standard assessment procedure (SAP) or simplified building energy model (SBEM) outputs detailing the anticipated percentage reduction of the Dwelling Emission Rate (DER) or Building Emission Rate (BER) over the Target Emission Rate (TER). SAP/ SBEM outputs should be prepared by a suitably qualified individual. | |
| 1.12 | What are the processes and quality controls that will be put in place to monitor building performance to ensure performance is as expected? This may refer to internal processes and quality controls, use of a recognised quality regime, or more specific arrangements. | |
| 1.13 | Are off-site measures proposed to offset the carbon footprint of the development? Please specify. | |
| **2** | **On-site renewable energy generation** | **(Policies SP1, LP1 and LP6)** |
| 2.10 | Please specify the form(s) of energy that will be supplied to the development? | |
| **3** | **Flooding and water efficiency** | **(Policies SP1, SP2, LP1, LP2 and LP5)** |
| 3.29 | Does the proposal go above the local plan policy requirements and building regulations to provide more water efficient homes and/or introducing flood mitigation measures? | |
| 3.30 | If so, please specify the measures that will be introduced into the development. | |
| 3.31 | Has the proposal incorporated an integrated water management to upgrade the existing drainage infrastructure through additional sustainable drainage systems (SuDS) and provide improvements to existing blue infrastructure? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 3.32 | Has the proposal considered the following sustainable drainage systems (SuDS) features within the design of the development?<br><br>• Green roofs<br>• rainwater harvesting systems, such as water butts<br>• rain gardens<br>• tree pits<br>• flood meadows<br>• wetlands<br>• ponds<br>• other grass or woodland habitats.<br><br>Could the proposal include a range of these features to diversify the SuDS on site? | |
| 3.33 | Can the proposal introduce water efficiency features to achieve higher water efficiency standards?<br>For example introducing measures so homes can ensure water consumption is limited to 85 litres per person per day. | |
| 3.34 | Has rainwater and stormwater harvesting and reuse formed part of the integrated water management of the site? | |
| **4** | **Place making and the natural environment** | **(Policies SP1, SP2, SP5, SP7, SP8, SP9, LP1, LP5, LP7, LP12, LP13 and LP21)** |
| 4.27 | For proposals for non-residential development, has the proposal introduced any of the following measures to introduce nature-based sustainable drainage onsite diversifying the types and scale of features that can be incorporated?<br><br>• Green roofs<br>• rainwater harvesting<br>• rain gardens<br>• tree pits<br>• flood meadows<br>• wetlands<br>• ponds<br>  • other<br>• grass or woodland habitats. | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| 4.28 | Has the proposal maximised opportunities to provide green infrastructure onsite? This includes retaining existing features and deliver new green infrastructure onsite. Green infrastructure can include:<br>• Public open space<br>• sustainable drainage systems features including swales, basins and rain gardens<br>• allotments<br>• burial grounds<br>• strategic landscaping<br>• new and retained habitats including woodland, trees and hedgerows<br>• green and blue corridors<br>• suitable alternative natural greenspace (SANG)<br>• Recreational access routes. | |
| 4.29 | Has the proposal explored opportunities to extend the coverage and connectivity of the strategic green infrastructure network including within and next to the priority areas as set out in the West Suffolk Green Infrastructure Study 2022? | |
| 4.30 | Does the development utilise site specific opportunities to mitigate carbon emissions effectively? (For example: maximising natural carbon storage on-site in soils and trees). | |
| **5** | **Transport and accessibility** | **(Policies SP1, SP2, LP1, LP3 and LP41)** |
| 5.18 | Have solar panels been incorporated into any covered parking proposed onsite? | |

| | Question | Answer (with explanation or reference to where the required information can be found in the planning application) |
|---|---|---|
| **6** | **Embodied carbon, the circular economy and waste** | **(Policies SP1, LP1, LP4 and LP7)** |
| 6.9 | Please provide a copy of the Site Waste Management Plan (SWMP) if one has been prepared. | |
| 6.10 | Major developments are required to submit a waste reduction and circular economic statement to demonstrate how the proposal has applied circular economy principles in the development.<br><br>For non-major developments, how has the proposal considered circular economy principles within the design?<br><br>Please provide a waste reduction and circular economy statement how these principles have been applied within the proposal. (This is a requirement for major development proposals in part three question 6.8). | |

# Appendix three: Climate change mitigation measures

## Insulation

High standards of insulation are essential to reduce the amount of energy required to maintain comfortable temperature levels. Insulation measures will retain heat in the winter and reduce overheating in the summer. Insulation can be installed throughout a building. Some materials have an energy intensive production process. The use of zero or low carbon insulation material is encouraged, these include: wood fibre, cellulose (recycled newspaper), wool, hemp, straw.

Insulation increases energy efficiency, improves heat and/or cool air retention, and reduces energy consumption. A survey will be required to assess the suitability of the building for differing types of insulation; some types may not be appropriate in some types of buildings depending upon the construction. In a poorly insulated property, up to 35 per cent of heat can be lost through the walls, up to 25 per cent through the roof, up to 25 per cent through doors and windows, and up to 15 per cent through the floor.

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| **Wall insulation** | | |
| Cavity wall insulation | Most houses constructed in the 20th century have cavity walls which can be filled. Fibre or expanded polystyrene balls are injected into the cavity. | This can be fitted without internal interruption by an installer. Additional insulation may be required around vents and other features. Some highly exposed walls may not be suitable for cavity wall insulation. |
| Internally applied insulation | An insulation board, or a stud wall with insulation behind it, is fitted to the existing wall. Insulation needs to be connected to floor and/or ceiling insulation and into door and/or window reveals to prevent cold spots. | Most effective when applied to solid walls and usually cheaper than external wall insulation. This method will reduce the floor area of the room and can be disruptive as skirting boards and door frames must be removed and then reattached. |
| Externally applied insulation | This involves fitting an insulated layer to the exterior of the building and then covering it with render or cladding. | Gutters and pipes may need to be removed during installation which can make this an expensive solution. This is unlikely to be appropriate in sensitive locations such as conservation areas, on listed buildings or on the front of properties. It can be of benefit where there is no cavity such as park homes or buildings originally intended as temporary. |

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| **Floor and roof insulation** | | |
| Roof insulation | Insulation at roof level is fitted under the roof. It usually consists of mineral or glass wool held in place by battens or polystyrene slabs attached to the roof. | Insulation at roof level is not as simple to install or as effective as loft insulation but is still one of the easier and/or cheaper types of insulation. Roof ventilation will need to be retained, or additional ventilators may be needed to improve air circulation in the roof. |
| Loft insulation | Most buildings have some type of loft insulation, but it is often laid between joists or rafters and is of an inadequate depth. There are two types of loft insulation, a blanket style over the joists which insulates the main house below or at rafter level which also keeps warmth in the attic space. Increasing the depth of insulation above ceiling level to at least 300mm is encouraged to improve heat retention in the winter and keep buildings cool in the summer. Tanks, pipes and other services in the loft should be insulated. Insulation should be extended into the eaves and loft hatches sealed to prevent cold spots. | The building regulations require insulation in the roof space in new buildings. Around 25 per cent of heat can be lost through an uninsulated loft and loft insulation can save up to £395 per year (Energy Savings Trust). Loft insulation can be easily retrofitted. Ceiling level, 'blanket' insulation is the easiest form to DIY install, it is inexpensive and effective. Care should be taken to ensure storage does not squash the insulation and reduce its effectiveness. The floor may need to be raised, and boards fitted if you wish to use the loft for storage. |
| Floor insulation | Hardboard coverings and underlays beneath with thick carpets can reduce draughts and contain heat within a room. Larger gaps and voids under the floorboards can be filled with compacted compressible insulation such as mineral or sheep's wool. | Measures should be included in new buildings and can be retrofitted in homes and businesses. Care must be taken to prevent the loss of necessary ventilation, air bricks should remain open, and they prevent damp. Possible to DIY and can achieve savings of £70 per year (Energy Saving Trust). |

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| **Window insulation** | | |
| Single glazing or secondary glazing | The retention of single glazed windows, maintenance and draught proofing will reduce the energy needed to process new glass and frames.<br>The maintenance and repair of historic windows will sustainably prolong the life, retaining the historic material and improving insulation. Secondary glazing involves installing a second window inside the existing frame to create an air gap that reduces heat loss. | Where single glazed windows are retained, the addition of secondary glazing in these circumstances can reduce heat loss by up to 60 per cent.<br>Secondary glazing, when combined with shutters or heavy curtains can be as effective as modern windows. Subject to the use of appropriate designs and fittings, secondary glazing is usually acceptable in listed buildings. |
| Double and Triple glazing | New double or triple glazed windows using wooden frames sourced from a certified sustainable supplier will minimise the carbon emitted during construction.<br>Unplasticized polyvinyl chloride (uPVC) double or triple glazed windows are a more carbon-intensive option due to the production process for glass and uPVC being energy intensive. These windows have two or three panes of glass with insulating space between each pane. | New windows have a high initial cost, but double and/or triple glaze will pay for themselves and once installed, double or triple glazing will be efficient. Wooden windows will require regular maintenance to protect them from water damage but when maintained have a long life. Double glazing may not be appropriate in listed buildings.<br>uPVC is not as expensive as wood and is low maintenance, some frames are insulated which improves thermal efficiency. uPVC will not be appropriate in listed buildings or conservation areas. |
| Low-E windows | Low emissivity (low-E) windows have a clear coating of metallic oxide which keeps heat inside in the winter and outside in the summer by minimising the amount of infrared and ultraviolet light that enters the building. | In many cases, Low-E glass can be fitted within existing frames, making this a cost-effective option |

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| **Draught proofing** | | |
| Windows and/or doors | Install thick or thermal curtains and blinds across windows and doors. | Easy to install, inexpensive and cost effective. Can reduce heat loss by up to 14 per cent (also see insulation and/or windows above). |
| Chimney balloon | If the fireplace is not in use, capping the chimney pot or installing a chimney balloon can reduce draughts. Chimney balloons consist of a simple plastic 'airbag' filled with air to create a snug barrier in either a chimney or flue. A balloon can be removed in summer to allow the flue to provide ventilation and cooling. | Easy to install, inexpensive and cost effective. Need to ensure necessary ventilation is retained to avoid damp issues. |
| Chimney register plate | A chimney register plate can be fitted in a functioning fireplace. It closes to prevent draughts when the chimney and/or flue is not in use and opens to allow smoke to pass through when in use. A chimney register plate can be opened in summer to allow the flue to provide ventilation and cooling. | As a chimney register plate is a permanent fixture, it requires fitting. Costs vary with the size and complexity of the chimney and/or flue. |
| Sealing holes and/or cracks | Heat can be lost through holes or openings in a building, such as where an aerial wire has been installed. This heat loss can easily be prevented by ensuring any holes are filled. Sealing skirting boards, loft hatches, windows and/or doors, letter box and/or keyhole covers, and between floorboards will prevent heat loss. | Sealing materials such as decorators caulking, mastic sealing tapes and/or beading, compression and wiping seals, and brush seals are inexpensive, easy to DIY install, and cost effective, however care must be taken to prevent loss of necessary ventilation. |

## Energy efficiency

Energy efficiency measures will reduce the amount of energy consumed and reduce bills and carbon emissions. Measures as simple as changing behaviour can be easy, cost effective and efficient.

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| LED lighting | An electrical current is passed through a microchip to illuminate light-emitting diodes (LEDs). LEDs produce the same amount of light, or more, than traditional incandescent light bulbs whilst using significantly less power. | LED lighting is one of the easiest and most cost-effective efficiency measures. LEDs cut lighting costs, can last up to 40 times longer than typical lightbulbs, and are suitable for most existing fittings. Take care to buy high quality bulbs as cheaper ones sometimes use a low-quality chip and do not last. |
| Sun pipes and/or tunnels | Install sun pipes to capture and focus sunlight into rooms. Sun pipes work by collecting sunlight at roof level, reflecting it along aluminium tubes and diffusing it into rooms. | Sun pipes bring natural daylight into rooms and therefore reduce the cost of lighting. They can be installed in new builds and retrofitted. As they use sunlight, they are only effective during the day, but they are particularly useful in rooms without windows or to enhance natural daylight. |
| Thermostatic radiator valves | The installation of programmable thermostatic radiator valves (TRVs) will allow temperatures to be controlled depending upon the use of a room. | The addition of controls to an existing system are inexpensive and effective. |
| Radiator replacement | Replacement of radiators with larger modern versions which work at lower temperatures. | Modern radiators are more efficient will reduce energy use but can be expensive. |
| Appliances | Ensure that new appliances are the highest energy efficiency rating possible. The scale ranges from A+++ (the best) to D (the least efficient). | A new A+++ appliance will reduce energy use, but the production of new appliances uses carbon.<br>It may be more sustainable to continue to run an older appliance until it needs replacing. |
| Cooking | Replace gas cookers and hobs with an electric appliance.<br>These need to be combined with renewable energy use to reduce carbon emissions. Microwaves or air fryers are generally the most efficient way to cook and heat food. | Electric cooking is currently more expensive than gas but when combined with renewable energy can have zero carbon emissions. Induction hobs are efficient but expensive. |

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| Ventilation | The design and internal layout of a house can improve natural ventilation. Design guidelines include good room heights, appropriate room depths depend upon whether rooms have single sided ventilation (2.5 times room height) or cross ventilation (five times room height). Natural ventilation should allow cool air to enter at low level and warm air to escape at a higher level, use clerestory or ventilated sky lights to provide for stale air to escape. | New buildings should be orientated to maximise the use of natural ventilation and reduce the need for power using mechanical means. Ensuring natural ventilation is available should be considered when replacing windows. |
| Smart meters | The installation of smart meters allows the user to monitor how much energy they are using and automatically sends readings back to the supplier to reduce the need for manual readings and produce accurate energy bills. | There is no extra cost, smart meters are installed by the supplier. The effectiveness of a smart meter in reducing carbon emissions and costs is dependent upon action being taken to reduce energy consumption. |

## Energy generation

Generating your own renewable energy is the most effective way of reducing the carbon footprint of your building. The Smart Export Guarantee obliges licensed electricity suppliers to offer a tariff to small scale low carbon generators. This is available for anyone who has installed solar photovoltaic (PV), wind, micro combined heat and power, hydro or anaerobic digestion with a capacity of up to 5MW or 50MW for Micro-CHP.

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| Solar power provides electricity or hot water using the sun's energy. There are many different types and designs of solar panels available that should suit most roof types and locations. To provide optimal benefits, panels should be located on a south, east, or west facing roof or wall with minimal shading. The orientation of new dwellings should ensure that pitched roofs are south, east, or west facing. | | |
| Solar photovoltaic panels (PV) | Solar photovoltaic (PV) systems convert sunlight into electricity. The solar cells produce a direct current (DC) which is converted to alternating current (AC) by an inverter. PV panels can be located on roofs or freestanding frames on the ground provided they are not shaded. | Whilst there is a high initial cost, solar PV can generate large savings and can also provide an income if excess electricity is sold back to the grid. Solar panels often come with long warranties. An average household in England could save up to £500 per year with a solar PV installation. |
| Solar thermal | Solar thermal systems convert sunlight into heat. The heat is transferred to heat-transfer fluid which is used to heat water. | Solar thermal may require some back up in the winter but over the year it can significantly reduce the energy needed for hot water. Most systems work with an existing boiler and infrastructure which can reduce costs. |
| Wind turbines | Wind causes the turbine's blades to spin, which turns a rotor connected to a generator which converts mechanical energy to electricity. Wind farms can be on shore or offshore, and there are opportunities for smaller scale schemes to serve businesses or residential development. | In 2024, wind generated 29 per cent of the UK's power demand. Wind turbines are high power generators, they produce energy during the day and night which can be stored in a battery and any excess can be sold back to the national grid. Turbines can be noisy, produce vibration, light flicker and disruption to signal. They are less suitable in an urban setting or close to neighbouring properties and the suitability is dependent upon location and landscape and/or visual impact. |
| Water turbines | Hydroelectric power is generated by water flowing over and rotating a turbine to generate electricity. The water can either be stored and fed though a turbine and generator, or it can be taken from a river. Water can also be run from an upper storage area to a lower area and pumped back at times of low electricity demand. | Micro-hydro schemes can be installed for individual properties or small communities where there is access to flowing water. Upfront costs are high but once installed a system will generate power for decades. Planning permission and permits will be required from the Environment Agency. Schemes will be required to ensure that they do not adversely affect biodiversity. |

## Heat pumps

Heat pumps harvest the sun and earth's energy to provide low carbon space and water heating. The systems work best with large radiators or under floor heating. As electricity is required to run the system, it should be combined with renewable energy to be carbon neutral.

Heat pumps can be easily incorporated into new builds along with heating and hot water systems. They can also be retrofitted. Heat pumps are most efficient in well insulated buildings with access to outdoor walls or space. They are an efficient means of way of heating a building. Once fitted they are cheaper to run and maintain than combustion heating systems such as oil or gas and they have a long lifespan.

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| Air source heat pumps (air-to-water) | Air source heat pumps absorb heat from the air outside to heat refrigerant fluid. The heat is then distributed throughout the wet heating system i.e. radiators or underfloor heating circuits and any excess is stored in a hot water tank. | Air source heat pumps can be fitted easily in a small space by an installer. Suitability will depend upon the location and building type. Upgrades to pipes, tanks and radiators might be necessary. The impact on the character of a building and the noise may be issues. |
| Air source heat pumps (air-to-air) | Air-to-air heat pumps feed heat from the outside air into a building through fans. They can also work as a cooling system in the summer. Air-to-air heat pumps cannot produce hot water. | These heat pumps are more suitable for heating smaller spaces or to replace storage or panel heaters, because they are not compatible with a wet heating system. |
| Ground source heat pumps | Ground source heat pumps use heat from the ground to warm a building. A pipe is laid either in shallow trenches or in a deep bore hole.<br>A refrigerant is passed through the pipes which collects heat from the ground. The pipes feed into a heat exchanger in the house, which is usually a similar size to a washing machine or dishwasher, or floor mounted boiler. | Ground source heat pumps can connect to existing systems, including other low carbon technologies, and are effective all year round. The equipment is simple and well established but can be difficult to install retrospectively. No visible external changes or nuisance issues but underground works can damage archaeology. In areas where archaeology may be present advice should be sought. |
| Exhaust air heat pump | This type of heat pump transfers heat from a ventilation system (internal air) to warm air to heat a building. It can also be used to heat water. | These are not suitable for small buildings with low energy consumption, and they are difficult to retrofit so are most suited for new build. |
| Photovoltaic-thermal | Photovoltaic-thermal (PV-T) collectors sit between solar panels and the roof. They produce electrical energy which can be used to operate a ground source heat pump without the requirement for any below-ground installation (pipes, trenches, borehole). | Only compatible with an internal ground source heat pump and solar panels. PV-T keeps solar panels cool which boosts generation efficiency. |

## Water efficiency

Water efficiency measures will reduce the amount of water consumed and reduce bills and carbon emissions.

| Measure | How it works | Effectiveness and suitability |
|---|---|---|
| Grey water recycling | Grey water recycling systems collect water from the sink or shower (excluding kitchen sink) for flushing the toilet, irrigation and use in the washing machine. | Installation provides an immediate reduction in mains water use and bills. The installation of tanks is easier with new build but also effective as retrofit in existing buildings. A small storage tank must be installed which can be internal or external and buried. Detergents may have environmental implications, so it is recommended that grey water is not used for watering gardens. |
| Rainwater harvesting | Rainwater harvesting collects and filters rainwater for non-potable use, such as flushing the toilet, cleaning, and watering the garden. Additional filters can be added to provide drinking water but these can be expensive. | Systems are easy to fit when constructing a new building or undertaking extensive renovation. External storage tanks can be buried. |
| Tap aerators | Aerator or spray taps mix water with air to reduce the flow resulting in water savings. | They are low cost and easy to install. As the water pressure is retained the difference is not usually noticed. |
| Low flush and dual flush toilets | Low flush toilets use less water than conventional toilets. Dual flush toilets provide both a solid waste and liquid waste flushing option, with less water required for a liquid waste flush. | This measure is inexpensive and water consumption can decrease by 67 per cent compared to a traditional flush toilet. |

This appendix has been adapted from the Lancaster District Council PAN9 – Energy Efficiency in New Development Planning Advisory Note.

# Appendix four: Examples of climate resilient building materials

## Climate-resilient building materials can be segmented by the types of materials they use

Non-exhaustive

| Material Segment | | Types of Climate-Resilient Construction Materials | Tech Maturity | Climate Hazard Resilience: Cyclones, Hurricanes, Wind | Wild-fires | Fluvial/ Coastal Floods | Extreme Heat |
|---|---|---|---|---|---|---|---|
| Structural Materials | Enhanced Concrete | Self-healing concrete: Concrete that produces limestone when cracks form to increase resilience against weathering that occurs with increased extreme weather conditions | Low – Limited use/used in small-scale developments | ✓ | | ✓ | |
| | | Ultra-high-performance concrete (UHPC): With additives to increase density and resistance to weathering to increase resilience against harsh weather conditions | Medium – Emerging use, accredited by industry guidelines | ✓ | | ✓ | |
| | | Permeable concrete: Concrete that allows water to pass through to reduce flood risks in residential areas | High – Widely applied, industry-standard solutions | | | ✓ | |
| | Enhanced Steel | Ductile steel: Steel with high tensile strength and flexibility to allow structures to handle strong winds | Medium – Emerging use, accredited by industry guidelines | ✓ | | | |
| | | Weathering steel: Steel that forms a protective rust layer on its surface to prevent further corrosion | High – Widely applied, industry-standard solutions | | | ✓ | |
| | | Shape memory alloys: Steel that can return to its original shape after deformation, deployed in earthquake-prone areas | Low – Limited use/used in small-scale developments | ✓ | ✓ | | |
| | Emerging Materials | Cross-laminated timber: Weight-bearing material made by compressing and gluing wood layers together | Low – Limited use/used in small-scale developments | | | | ✓ |
| Façade Materials | Fire-resistant Façades | Fire-resistant cladding panels: External wall panels engineered with fire-resistant materials to prevent spread of fire | High – Widely applied, industry-standard solutions | | ✓ | | |
| | | Fire-resistant coating: Paints or coatings that are applied directly on building materials to form a heat-insulating layer when exposed to higher temperatures | High – Widely applied, industry-standard solutions | | ✓ | | |
| | Glass & Windows | Impact-resistant glass: Laminated or tempered glass to reinforce windows against forceful impacts and winds | High – Widely applied, industry-standard solutions | ✓ | | | |
| | | Solar control glass: Window with a coating to reflect solar radiation to limit heat entering a building to maintain indoor temperatures | Medium – Emerging use, accredited by industry guidelines | | | | ✓ |
| Insulation Materials | Conventional Application[1] | Spray foam insulation: Expanding foam that provides airtight seal to provide high insulation | High – Widely applied, industry-standard solutions | | | ✓ | ✓ |
| | | Cellulose insulation: Insulation made from recycled cardboard and/or paper, a more sustainable alternative with additional fire-resistant properties | High – Widely applied, industry-standard solutions | | ✓ | | ✓ |
| | | Mineral wool insulation: Insulation made from recycled glass, rock wool, or slag wool, with additional fire resistance | High – Widely applied, industry-standard solutions | | ✓ | | ✓ |
| | Specialized Application[2] | Aerogels: Highly porous and lightweight insulation material with high thermal insulation and minimal thickness | Medium – Emerging use, accredited by industry guidelines | | ✓ | | ✓ |
| | | Vacuum-insulated panels: Panels with vacuum-sealed cores that provide high thermal resistance in ultra-thin applications | Medium – Emerging use, accredited by industry guidelines | | ✓ | | ✓ |
| Water-proofing Materials | Sealant | Epoxy sealant: Sealant made from epoxy to cover up spaces | High – Widely applied, industry-standard solutions | | | ✓ | |
| | Waterproof Membranes | Roofing membranes: Applied over roofs to provide waterproofing | High – Widely applied, industry-standard solutions | | | ✓ | |
| | | Foundation membranes: Applied on foundations to prevent ingress of water | High – Widely applied, industry-standard solutions | | | ✓ | |

Tech Maturity: High – Widely applied, industry-standard solutions; Medium – Emerging use, accredited by industry guidelines; Low – Limited use/used in small-scale developments

[1]Insulation material that is compliant to regulatory guidelines and is broadly applicable in construction.
[2]High-performance insulation with specific use in high thermal management requirement (e.g., data center, pharmaceutical manufacturing environments).

Boston Consulting Group, Temasek and Ecosperity: The private equity opportunity in climate adaptation and resilience – Exhibition 8

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