SUSTAINABLE CONSTRUCTION

SUPPLEMENTARY PLANNING DOCUMENT

April 2022

EASTSUFFOLK
COUNCIL

How to use this document

The document comprises of 12 chapters with each chapter covering a different topic. The best way to navigate through the document is by using the interactive contents. By clicking on a specific chapter in the contents, it will automatically take you to that part of the document. Moreover, if you want to go to a different section quickly, the easiest way is to click the home symbol  in the top right corner of the page. This will take you back to the contents where you can then select a different chapter. There is also a guide on the right-hand side of each page, this will show you what chapter of the document you are currently in and where that sits within the rest of the document. Throughout the document there are hyperlinks in the text that provide links to further information.

What is a Supplementary Planning Document?

Supplementary Planning Documents expand upon policy and provide further detail to support the implementation of policies in Local Plans. Whilst not a part of the development plan, they are a material consideration in the determination of planning applications. The Local Plan policies, which this SPD provides guidance on, can be viewed on the Council's website: www.eastsuffolk.gov.uk/localplan

Contents

1 Introduction

Context

East Suffolk Council's commitment to mitigating and adapting to climate change

1.1 East Suffolk Council has two Local Plans, the Suffolk Coastal Local Plan (2020) and the Waveney Local Plan (2019), which both have policies intended to help development adapt to and mitigate the effects of climate change on people and wildlife. East Suffolk Council has a Strategic Plan (2020-2024) and one of the key themes of the Strategic Plan is 'Caring for the Environment'. This includes becoming carbon neutral by 2030, minimising waste throughout the district, using renewable energy and using the Council's influence to protect the natural environment to create a cleaner, quieter and healthier environment.

1.2 The vision for the Suffolk Coastal Local Plan area includes a "healthy economy, healthy population and healthy environment" with a plan that will address climate change "issues relating to flood risk, coastal erosion and wider coastal management and adaptation, as well as ensuring that human impact is reduced and mitigated accordingly." The vision for the Waveney Local Plan area includes a "stronger, more diverse economy benefiting from the growth of offshore renewable energy" with climate change emissions reducing as "people choose more sustainable methods to commute to work and for leisure purposes due to the district's settlements becoming more self-sufficient" and more properties benefiting from flood protection and adapting to coastal change.

1.3 The two Local Plans have planned for sustainable growth that addresses the need for new homes and employment. The two Local Plans contain planning policies that support sustainable development, sustainable construction and contribute towards the mitigation of climate change and reduction in energy use. The planning system is distinct from but acts alongside Building Control; this relationship is explained in more detail later in this chapter.

1.4 The two Local Plans also form part of the Council's wider corporate ambition to mitigate the effects of climate change that are embedded in the Strategic Plan. East Suffolk Council recognises we are in a climate emergency and is committed to supporting sustainable development, doing more to reduce its own carbon emissions, and to encourage and encourage communities to help fight climate change[1].

1.5 East Suffolk Council unanimously voted on 24th July 2019 to declare a recognition of the climate emergency[2]. The Motion also pledged to set up a Cross Party Task Force and the Environmental Task Group was subsequently established in October 2019. The Group aims to investigate ways to cut East Suffolk Council's greenhouse gas emissions, and reports on progress on this and other environmental initiatives to Cabinet on a quarterly basis. East Suffolk Council has pledged to work with Suffolk County Council and other partners across the county and region towards making the county of Suffolk carbon neutral by 2030 (as set out in the Suffolk Climate Emergency Plan[3]), to work with Government to deliver its 25 year Environmental Plan, and to also work with Government to increase the

[1] https://www.eastsuffolk.gov.uk/2019/east-suffolk-to-battle-climate-change/
[2] www.eastsuffolk.gov.uk/environment/climate-change/our-climate-commitment/
[3] www.greensuffolk.org/about/suffolk-climate-change-partnership/

powers and resource available to local authorities in order to make the 2030 target easier to achieve[4].

1.6 There is evidence that the gradual impacts of climate change are already being experienced in Suffolk. Suffolk can expect to experience increased summer droughts with crops requiring more irrigation, increased rainfall causing surface water flooding that disrupts travel, and increased storm events including tidal surges and coastal erosion. Climate change, particularly the impacts of flooding and coastal erosion pose a serious risk of damage to residential and non-residential properties and the operation of businesses.

1.7 It is well documented that climate change - particularly extreme temperatures and weather events - will affect the health of people, animals and aquatic and plant life. The impact may in some cases be as catastrophic to the built environment too. Floods and droughts will impact on habitats and availability of food for animals and ground conditions. Saltwater inundation from coasts and estuaries can also damage farmland. Floods, drought and saltwater inundation can seriously damage the important green (e.g. woodlands) and blue (e.g. rivers) infrastructure that human health, wellbeing and ways of life depend on.

1.8 Futher information on climate change in Suffolk is avilable on the Green Suffolk[5] website.

What is Sustainable Construction?

1.9 'Sustainable construction' is a part of 'sustainable development'. 'Sustainable development' includes three overarching objectives as identified in the NPPF: development that is environmentally, economically and socially sustainable. Though all three objectives are of importance in achieving sustainable development, the Sustainable Construction policies of the Local Plans focus on delivering a more environmentally sustainable built environment for the district.

1.10 Reflecting the sustainable construction policies in the Local Plans, in this document, the term 'sustainable construction' therefore focuses largely on environmental sustainability, through construction methods, materials and technologies that provide developments which:

- reduce demand and use of finite resources and which result in lower carbon emissions or are 'zero carbon'.
- avoid or reduce unnecessary harm to the natural environment and wildlife and which support people's good health and wellbeing; and
- adapt the built environment to the impact of climate change through design.

1.11 'Sustainable construction' in this document also means buildings that, through the quality of their design, are built to last a long time, including buildings that are flexible and adaptable.

Sustainable Construction in East Suffolk

1.12 Reducing contributions to climate change and mitigating the impact on the environment are strategic priorities and the objectives of policies in both

[4] https://www.eastsuffolk.gov.uk/2019/east-suffolk-to-battle-climate-change/

[5] www.greensuffolk.org/about/suffolk-climate-change-partnership/

the Suffolk Coastal Local Plan[6] and the Waveney Local Plan[7]. Whilst the planning system provides limited scope to improve the performance of existing buildings, a significant amount of new development is planned to come forward over the plan periods, including non-residential development, and therefore reducing the environmental impact of this development is important.

1.13 East Suffolk Council's Strategic Plan 2020-2024[8] aims to deliver the highest quality of life for everyone who lives, works and visits East Suffolk. It sets the Council's corporate objectives of: growing our economy, enabling our communities, remaining financially sustainable, delivering digital transformation, and caring for our environment. The priorities set out under the 'Caring for our Environment' section include: to lead by example in shrinking our carbon footprint; increase our biodiversity sites; minimise waste; increase recycling and reuse of materials; invest in and support renewable energy; protect our natural environment; and educate and influence our communities to help us achieve a healthier environment for people and wildlife. The Council has also adopted a Housing Enabling Strategy[9] in which sustainable housebuilding is a key strategy.

1.14 The Council is seeking to improve its own buildings and ensure new build housing stock contributes to the Council's aim to become carbon neutral by 2030. The Council is also exploring new ways to encourage and invest in the use of renewable energy through the Council's own consumption and support to residents and businesses.

1.15 An Environmental Guidance Note[10] has been produced to offer clear, concise information on a range of key environmental issues relating to the building industry, assisting those seeking to mitigate the contribution of construction to climate change and its impact on the environment by offering support and advice. It was endorsed by the Council in November 2020. In addition, a Sustainable Business Toolkit[11] was published in 2019 to help businesses reduce their environmental impact.

1.16 As part of the Suffolk Climate Change Partnership[12], East Suffolk is helping businesses and residents to reduce their energy bills through free advice and improvement grants. The Suffolk Climate Change Partnership has published the Climate Emergency Plan for Suffolk, setting out how the public sector will work together with other stakeholders to support and guide our residents, communities and businesses to make the changes required to best set Suffolk on the path for carbon neutrality across its domestic, industrial, transport and energy sectors by 2030.

East Suffolk Council's Environmental Task Group

1.17 The Environmental Task Group was established as a cross party task group in October 2019 with the purpose of analysing the policies East Suffolk Council inherited from its predecessor's Suffolk Coastal and Waveney district councils, to ensure policies are fit for purpose and identify areas for improvement. The Task Group is committed to ensuring that the environment informs all the Council's decisions, choices, and policies.

[6] www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Suffolk-Coastal-Local-Plan/Adopted-Suffolk-Coastal-Local-Plan/East-Suffolk-Council-Suffolk-Coastal-Local-Plan.pdf
[7] www.eastsuffolk.gov.uk/assets/Planning/Waveney-Local-Plan/Adopted-Waveney-Local-Plan-including-Erratum.pdf
[8] www.paperturn-view.com/uk/east-suffolk/strategic-plan-2020-2024?pid=Nzg78875&p=3&v=1.1
[9] www.eastsuffolk.gov.uk/assets/Housing/Housing-Enabling-Strategy.pdf
[10] www.eastsuffolk.gov.uk/assets/Environment/Environment-Guidance/Environmental-Guidance-Note.pdf
[11] https://eastsuffolkmeansbusiness.co.uk/wp-content/uploads/2019/11/Sustainable-Business-Toolkit.pdf
[12] www.greensuffolk.org/about/suffolk-climate-change-partnership/

1.18 The Environmental Task Group[13] meets quarterly and reports to Cabinet. Details of the work and membership of the Environmental Task Group are available to view on the website.

Greenprint Forum

1.19 The East Suffolk Greenprint Forum[14] is a voluntary network facilitated by the Council which works to progress environmental issues in East Suffolk, open to anyone who wishes to join. Anyone, from the community, business, or public sectors, and individuals, can join for free and be involved in informing and learning from the group. The Greenprint Forum's vision is of an East Suffolk where significant progress is made by 2030 towards each of its nine goals: includes improving and supporting active travel, eco-friendly development, energy generating homes, environmentally beneficial employment, putting nature first, pollution free environment, quality food and the upcycling culture. With particular regard to its goal of Eco-Friendly Development, the Greenprint Forum's vision is for development that is designed to limit environmental harm, meets changing needs of occupants, copes with changes to the climate and feels part of the wider natural environment.

Purpose of the Sustainable Construction SPD

1.20 This Sustainable Construction Supplementary Planning Document (SPD) provides guidance to assist in the interpretation and implementation of planning policies contained in the Council's two Local Plans; the Suffolk Coastal Local Plan, adopted in September 2020, and the Waveney Local Plan, adopted in March 2019.

1.21 This guidance includes information about how sustainable construction methods and materials used in new development can reduce the construction and operational impact on our environment, wildlife, climate change and health and wellbeing. It also provides guidance on how the operating efficiency of existing buildings can be improved through retrofitting. This document therefore focuses on providing guidance on increasing energy efficiency, water efficiency, the use of sustainable materials, renewable and low carbon energy generation, reducing waste and carbon emissions, nature-based solutions for sustainable drainage systems, designing for future challenges, and designing homes and workplaces that support good health.

1.22 The Sustainable Construction SPD will not set building standards. The energy efficiency of all new and renovated buildings for residential and non-residential use is covered by Building Regulations and all developers must build and renovate to current Building Regulation standards. The setting of Building Regulations is carried out by Government and is not within the control of the Council. The Government permits Local Planning Authorities, through planning policy in Local Plans, to set energy performance standards for new housing that are higher than Building Regulations, but only up to the equivalent of Level 4 of the, now withdrawn, Code for Sustainable Homes (approximately 20% above current Building Regulations), as has been undertaken in the Suffolk Coastal Local Plan.

1.23 This SPD replaces the following Supplementary Planning Document and guidance:

- Renewable Energy and Sustainable Construction (2013) (this relates to the former Waveney area)

[13] www.eastsuffolk.gov.uk/environment/climate-change/east-suffolk-environment-task-group/

[14] www.eastsuffolk.gov.uk/environment/east-suffolk-greenprint-forum/

1.24 This SPD includes best practice guidance on providing an adequate and complete evidence base for meeting the policy criteria of the key sustainable construction policies of the two Local Plans. As an SPD this document is a material consideration when determining planning applications. The SPD covers the whole of the administrative area of East Suffolk except that part lying within the Broads Authority Executive Area.

Preparation of the SPD

1.25 There have been two rounds of public consultation during the drafting of the SPD. An Initial Consultation was held in March and April 2021 which through a questionnaire sought views on the scope and content of the SPD, and to which we received 75 comments from 26 individuals and organisations. Consultation on the draft SPD was subsequently held between November and December 2021, to which we received 52 comments from 24 individuals and organisations. The comments received during the consultations have informed the final content of the SPD.

1.26 The preparation of the SPD has been supported by Strategic Environmental Assessment, Habitats Regulations Assessment and Equality Impact Assessment screening opinions.

National Climate Policy

1.27 The UK Government has been working to address climate change through a range of actions, some of the key strategies of which are listed below:

- Climate Change Act (2008)
- Signee of UN Paris Climate Change Agreement (2016)
- Intergovernmental Panel on Climate Change Report (2018)
- 25 Year Environment Plan (2018)
- National Planning Policy Framework (2021)
- Parliamentary Declaration of Climate Emergency (2019)
- Energy White Paper: Powering our Net Zero Future (2020)[15]
- The Ten Point Plan for a Green Industrial Revolution (2020)
- The Future Homes Standard (expected 2022)

1.28 The Government aims to lead the way in tacking climate change globally with plans to reduce greenhouse gas emissions by 2030 by 68% compared to 1990 levels and achieving net zero by 2050.[16] Details on how to achieve the targets are set out The Ten Point Plan for a Green Industrial Revolution[17]. The plan focuses on £12 billion of government investment to create and support jobs in the following areas:

1. *"advancing offshore wind*
2. *driving the growth of low carbon hydrogen*
3. *delivering new and advanced nuclear power*
4. *accelerating the shift to zero emission vehicles*
5. *green public transport, cycling and walking*
6. *'jet zero' and green ships*
7. *greener buildings*
8. *investing in carbon capture, usage and storage*
9. *protecting our natural environment*

15 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf

16 www.gov.uk/government/news/uk-sets-ambitious-new-climate-target-ahead-of-un-summit

17 www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution

10. green finance and innovation"

1.29 Both the Government's Ten Point Plan for a Green Industrial Revolution and the Future Homes Standard focus on operation carbon emissions, rather than embodied carbon. The Government's Ten Point Plan for a Green Industrial Revolution includes the planned development of greener buildings with a target to install 600,000 heat pumps by 2028 and for homes built to the new Future Home Standard to be 'zero carbon ready' with 75-80% lower CO_2 emission than current Building Regulation standards.

1.30 The Government's Future Homes Standard will introduce changes to Building Regulations Part L, Volume 1: Dwellings (Conservation of Fuel and Power) and Part F, Volume 1: Dwellings (Ventilation) which will increase energy efficiency standards to result in lower carbon emissions from the heating, cooling and lighting of dwellings. Approved Document L Volume 2: Buildings other than dwellings and Approved Document F Volume 2: Buildings other than dwellings will also be updated. The Future Homes Standard will also include new regulations, Approved Document O: Overheating to address the potential impact of overheating on residential amenity in new residential buildings arising from the anticipated effects of climate change. The changes to the regulations and approved documents will take effect in 2025 with an interim uplift in June 2022 in England

Planning Policy

1.31 The East Suffolk Council - Suffolk Coastal Local Plan and East Suffolk Council - Waveney Local Plan together with the 'made' Neighbourhood Plans and the Minerals and Waste Local Plan produced by Suffolk County Council), form the development plan for the district. The Suffolk Coastal Local Plan and Waveney Local Plan both highlight the importance of climate change issues in their vision and strategic priorities for their respective local plan areas. Each Local Plan has a chapter dedicated to Climate Change with planning policies that support and promote the uptake of decentralised renewable or low-carbon energy to assist in transitioning to a low carbon future.

1.32 The Local Plans contain several key planning policies to deliver sustainably constructed and well-designed buildings that minimise their impact on the environment. Neighbourhood Plans may also contain policies relating to sustainable construction.

1.33 The guidance in this SPD is also complementary to the Government's National Planning Policy Framework (NPPF) (2021) and Planning Practice Guidance to which the Council must have regard, as a material consideration, in reaching decisions on planning applications. Of particular significance are Chapters 2 and 14 of the NPPF. Chapter 2 of the NPPF is dedicated to achieving sustainable development and states that "the purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs (para.7)". Plans must be prepared with the objective of achieving sustainable development (para.16). Chapter 14 of the NPPF is focused on meeting the challenge of climate change, flooding and coastal change. The NPPF requires the planning system to support the transition to a low carbon future in a changing climate through a range a of measures (para.152). These include contributing to reductions in greenhouse gas emissions, reuse of existing resources and support for renewable and low carbon energy.

Local Planning Policy –

East Suffolk, Waveney Local Plan

- Policy WLP8.21: Sustainable Transport
- Policy WLP8.24: Flood Risk
- Policy WLP8.25: Coastal Change Management Area
- Policy WLP8.26: Relocation and Replacement of Development Affected by Coastal Erosion
- Policy WLP8.27: Renewable and Low Carbon Energy
- Policy WLP8.28: Sustainable Construction
- Policy WLP8.30: Design of Open Spaces
- Policy WLP8.31: Lifetime Design
- Policy WLP8.34: Biodiversity and Geodiversity

Local Planning Policy –

Suffolk Coastal Local Plan

- Policy SCLP7.1: Sustainable Transport
- Policy SCLP8.2: Open Space
- Policy SCLP9.1: Low Carbon & Renewable Energy
- Policy SCLP9.2: Sustainable Construction
- Policy SCLP9.3: Coastal Change Management Area
- Policy SCLP9.4: Coastal Change Rollback or Relocation
- Policy SCLP9.5: Flood Risk
- Policy SCLP9.6: Sustainable Drainage Systems
- Policy SCLP9.7: Holistic Water Management
- Policy SCLP10.1: Biodiversity and Geodiversity

The roles of Planning Building Control

1.34 The Building Control and the planning system perform different functions. Building control deals with the safety, functionality, and performance of buildings against the Building Regulations 2010 (as amended). The Building Regulations are set in law at a national level, and represent minimum standards for development to be delivered to, as applicable to the development element (e.g. the conservation of fuel and power through energy efficiency measures in buildings) and type (e.g. dwellings). Optional (higher) standards, as set out in national planning policy, can be required through adopted Local Plan policies and secured through planning conditions attached to planning permissions. For example, adopting the optional higher water use standard of 110 litres per person per day (otherwise 125 litres per person per day) in East Suffolk Council's Local Plans was possible because it was evidenced through the plan-making process that in East Suffolk there is a need for enhanced water efficiency.

1.35 Local Plans have also been able to set higher energy efficiency standards, where these are no higher than the equivalent of Level 4 of the Code for Sustainable Homes, which equates to approximately 20% above the Target Emission Rate for CO_2 as set in the 2013 Edition of the 2010 Building Regulations. Policy SCLP9.2 applies this higher standard.

1.36 The Council's Development Management function (principally involving the determination of planning applications) seeks fundamentally to ensure development in the district is economically, socially and environmentally sustainable, and otherwise acceptable in planning terms, with this process being plan-led. This means that development decisions must be made in accordance with the policies of the development unless material considerations indicate otherwise.

Key Sustainable Construction Local Plan policy requirements

1.37 Suffolk Coastal Local Plan policy SCLP9.1 Low Carbon & Renewable Energy and Waveney Local Plan policy WLP8.27 Renewable and Low Carbon Energy are very similar policies that support new energy generation schemes. They both support Neighbourhood Plans in identifying suitable areas for renewable and low carbon energy development. The policies also support renewable and low carbon energy schemes in the Local Plan areas, with the exception of wind, subject to requirements such as no significant adverse impacts on the amenity of residential properties and businesses and technology being removed once decommissioned.

1.38 Suffolk Coastal Local Plan policy SCLP9.2 Sustainable Construction and Waveney Local Plan WLP8.28 Sustainable Construction seek through different approaches to mitigate the impact of construction on climate change through a comprehensive sustainable construction approach that includes higher water and energy efficiency standards.

1.39 Policy SCLP9.2 requires developments of more than 10 dwellings to achieve higher energy efficiency standards that result in a 20% reduction in CO_2 emissions below the Target CO_2 Emission Rate (TER) set out in the 2013 Building Regulations. The standard is derived from the energy requirements of Level 4 of the now withdrawn Code for Sustainable Homes. The TER is defined by Building Regulations as the minimum energy performance requirement for a new dwelling and relates to CO_2 emissions from the provision of space heating, hot water, mechanical ventilation and lighting. The Suffolk Coastal Local Plan states the requirement for the submission of an interim compliance report prior to development commencement, and a

final compliance report must be submitted upon development completion for residential development.

1.40 Policy WLP8.28 requires new developments of 10 or more dwellings and commercial developments of 1,000sqm or more floorspace to submit a Sustainability Statement. The areas to be addressed in the statement include improved efficiency of heating, cooling and lighting, maximising daylight and passive solar gains, and renewable and low carbon energy generation. Policy WLP8.28 was developed and adopted prior to the Planning Practice Guidance permitting planning policy to set energy performance standards higher than building regulations, up to the equivalent of Level 4 of the Code for Sustainable Homes.

1.41 Policy SCLP9.2 and WLP8.28 require some developments to use the British Research Establishment Environmental Assessment Method (BREEAM) to achieve higher performing buildings. Policy SCLP9.2 requires all new non-residential developments of 1,000sqm or more, and policy WLP8.28 requires all new office and school developments of 1,000sqm or more to achieve the BREEAM 'Very Good' standard or equivalent.

1.42 Policy SCLP9.2 and WLP8.28 both require all new residential developments to achieve the optional technical standard for water efficiency of 110 litres/person/day.

1.43 Table 1 below sets out key specific policy requirements of the Local Plans. However, there are other elements of the Local Plan policies that relate to sustainable construction, and these are also addressed in the topic based guidance chapters.

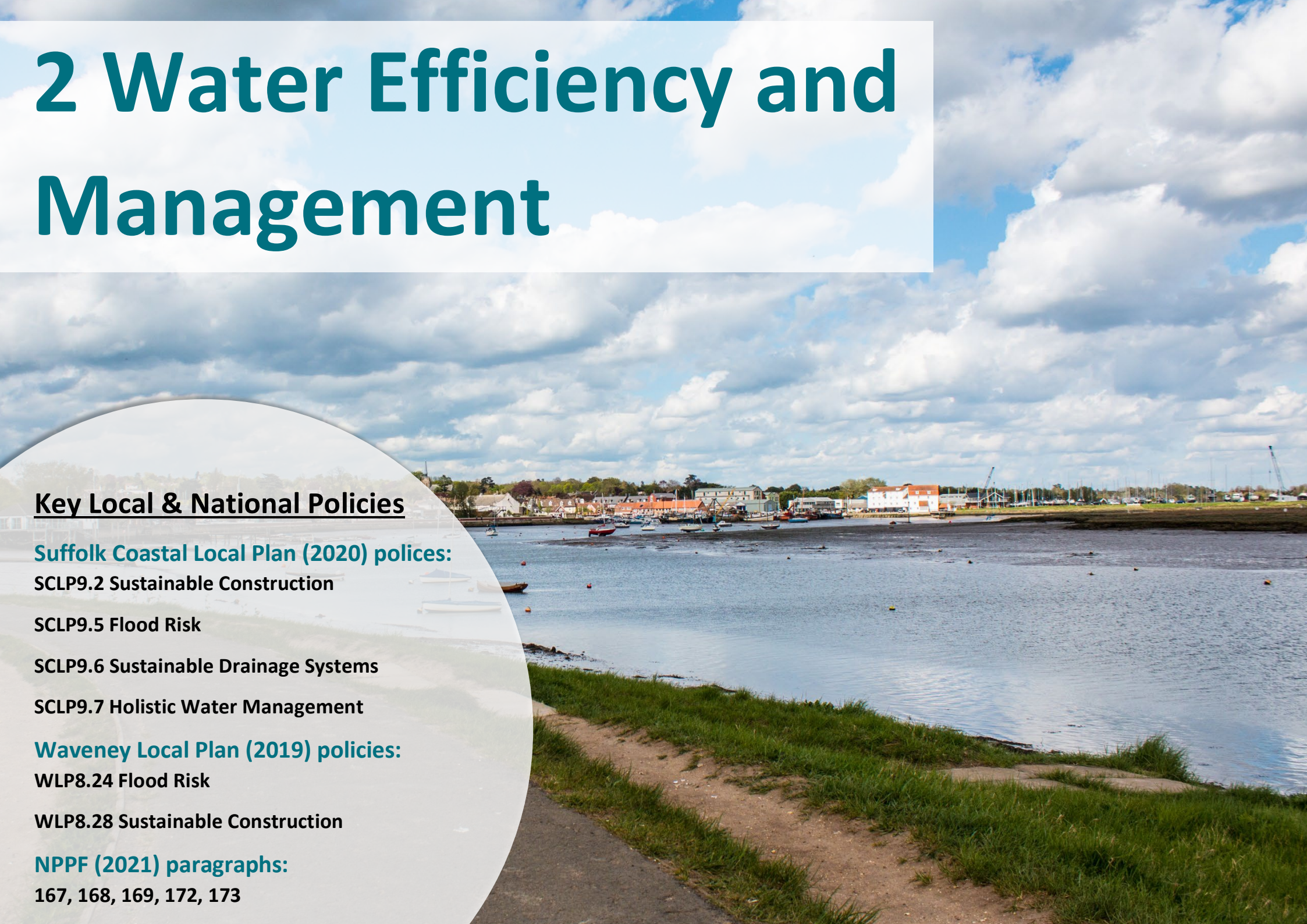
Table 1: Summary of key climate change requirements for applications in the Suffolk Coastal Local Plan

Topic	Requirement	Evidence Required	Further advice
Water efficiency & management	SCLP9.2 All new residential developments should achieve 110 litre/person/day.	Confirm water efficiency standard in a Water Statement (can be incorporated into an Energy Statement, Sustainability Statement or Sustainable Drainage Strategy)	Chapter 2
	SCLP9.7 All developments to demonstrate water can be made available to support the development. All new developments expected to incorporate water efficiency and re-use measures.	Confirm water availability and use of water efficiency and re-use measures in a Water Statement (can be incorporated into an Energy Statement, Sustainability Statement or Sustainable Drainage Strategy)	Chapter 2
Sustainable Drainage Systems	SCLP9.6 Developments of 10 dwellings or more, or non-residential development with 1,000sqm+, or site of 1 hectare or more required to utilise sustainable drainage systems.	Sustainable Drainage Strategy	Chapter 2
Energy efficiency and carbon reduction	SCLP9.2 All new residential developments of more than 10 to achieve a 20% reduction in CO_2 emissions below Target CO_2 Emission Rate (TER) in Building Regulations.	Energy Statement by Energy Compliance Specialist or equivalent	Chapter 3
Construction Standards	SCLP9.2 All new non-residential development of 1,000sqm + to achieve BREEAM "Very Good" standard or equivalent.	BREEAM Post construction stage certification (secured through planning condition).	Chapter 3 and 10
Sustainable Design	SCLP9.2 Proposals should achieve efficiency of heating, cooling and lighting of buildings by maximising daylight and passive solar gain through building orientation.	Energy Statement	Chapter 6

Table 2: Summary of climate change requirements for applications in the Waveney Local Plan

Topic	Requirement	Evidence Required	Further advice
Water efficiency & management	WLP8.28 All new residential developments should achieve 110 litre/person/day.	Confirm water efficiency standard in a Water Statement (can be incorporated into an Energy Statement, Sustainability Statement or Sustainable Drainage Strategy)	Chapter 2
Sustainable Drainage Systems	WLP8.24 Developments should use sustainable drainage systems to drain surface water. No surface water connections to foul systems and connections	Sustainable Drainage Strategy	Chapter 2
Construction Standards	WLP8.28 All new office and school developments of 1,000sqm+ are required to achieve BREEAM 'Very Good' standard.	BREEAM Post construction stage certification (secured through planning condition).	Chapter 3 and 10
Sustainable Design	WLP8.28 Residential developments of 10 or more and commercial schemes of 1,000sqm or more should demonstrate sustainability.	Sustainability Statement.	Chapter 3

2 Water Efficiency and Management



Key Local & National Policies

Suffolk Coastal Local Plan (2020) polices:

SCLP9.2 Sustainable Construction

SCLP9.5 Flood Risk

SCLP9.6 Sustainable Drainage Systems

SCLP9.7 Holistic Water Management

Waveney Local Plan (2019) policies:

WLP8.24 Flood Risk

WLP8.28 Sustainable Construction

NPPF (2021) paragraphs:

167, 168, 169, 172, 173

2 Water Efficiency and Management

Water conservation: efficiency and holistic management

2.1 The East of England is well-known for being the driest region of the UK. According to Anglian Water, East Anglia receives a third less rainfall than anywhere else in the UK – around just 600 millimetres each year. Of this total rainfall, after deductions made by plants and water lost through evaporation is accounted for, just a quarter is left available for human use. Anglian Water therefore heavily relies on manmade reservoirs for the storage of freshwater, particularly during the driest months of the year.

2.2 According to the Environment Agency[18], if no action is taken between 2025 and 2050, around 3,435 million additional litres of water per day will be needed in England to address future pressures on public water supply; within this figure it is estimated that the East of England will require an additional 570 million litres per day to meet the needs of residents and the agricultural sector, industry and energy sector. Demand for water can be reduced through buildings design, the selection of appliances and sanitaryware chosen. The inclusion of water efficient systems, such as rainwater harvesting systems, and the selection of water efficient white goods (e.g. washing machines and dishwashers), low flush toilets and other water efficient fixtures can reduce demand for clean drinking water supplied to buildings. Improving the drainage, attenuation, and infiltration capacity of land through sustainable drainage systems will also help to reduce demand on water use. Water conservation can also help to reduce the pollution of water bodies and protected habitats by reducing surface water run-off. Lower water use can also place less demand on wastewater treatment systems.

2.3 England's water companies have set an industry-wide target of reducing water use to an efficiency rate of 110 litres of water per person per day in each region by 2050. To put this figure into context, the average person in the UK is reported to use around 150 litres of water every day[19]. However, research suggests that usage for more recently built homes is lower.

2.4 The planning system, together with Building Regulations, has a substantive role in reducing water usage. Minimum water efficiency standards are required and regulated under Requirement G2 and Regulation 36 of Part G of Schedule 1 of the Building Regulations 2010. Practical technical guidance is provided in Approved Document G. Planning Practice Guidance on *Housing: Optional Technical Standards* allows local planning authorities to set Local Plan policies that require new dwellings to meet the Building Regulations optional requirement of 110 litres/person/day, which is a higher level of requirement for water efficiency than the standard requirement of 125 litres/person/day, where there is a clear local need.

2.5 Due to the water supply challenges in the district outlined earlier, the Council requires the optional technical standard of 110 litres/ person/ day through both Local Plans' respective Sustainable Construction policies (Policies SCLP9.2 and WLP8.28). A condition will be attached to all qualifying developments granted permission to ensure this is

[18] Environment Agency (2020) 'Meeting our Future Water Needs: a National Framework for Water Resources'. assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/873100/National_Framework_for_water_resources_summary.pdf.

[19] Essex & Suffolk Water (2021) 'Saving water'. www.eswater.co.uk/savewater.

achieved. Standard condition wording is provided in Appendix C of this SPD.

2.6 Policy WLP8.28 states that the optional standard of 110 litres per person per day must be complied with "…unless it can be demonstrated that it is not viable or feasible to do so". According to *The Housing Standards Review: Cost Impacts* report that was produced for the Department for Communities and Local Government in 2014, the uplift in cost between 125 and 110 litres per person per day is just £9 per dwelling[20]. The Water Cycle Study (2019) undertaken for the Suffolk Coastal Local Plan evidence base noted that the cost would likely now be even less, based on changes in the market[21]. These costs were used in the assessments of the respective Whole Plan Viability Study documents prepared for the Local Plans[22,23]. Therefore, the standard water conservation condition applied to residential permissions is highly unlikely to be able to be varied on viability grounds.

2.7 The Council will also support proposals wishing to design for even higher levels of water efficiency. This includes through innovative design approaches. Designing higher levels of water conservation into a development need not be limited to simply reducing the initial use of water, it can also incorporate means to re-use water. This can be through the use of filtered rainwater (collected from where it fell), 'grey water' (e.g. wastewater from a washing machine used to flush a toilet) or surface water collected via a sustainable drainage system.

2.8 In addition to requiring all new dwellings to meet the higher water use standard, both Local Plans also set out wider expectations on water efficiency. Policy SCLP9.7 Holistic Water Management states that all new developments will be expected to incorporate water efficiency and water re-use measures to maximise their opportunity to reduce water use. Policy WLP8.28 expects proposals for major residential development of 10 or more houses and commercial development schemes of 1,000sqm or more of floorspace should demonstrate, amongst other measures, that they have incorporated sustainable water management measures such as the use of sustainable drainage systems, green roofs and/or rainwater harvesting systems.

Designing for water efficiency

2.9 Requirement G2 (of the Building Regulations) states that "reasonable provision must be made by the installation of fittings and fixed appliances that use water efficiently for the prevention of undue consumption of water". To estimate the water consumption of a new dwelling (as per Regulation 37), the 'water efficiency calculator' set out in Appendix A (Water Efficiency Calculator for New Dwellings) of Approved Document G is generally used, though a 'fittings approach' is also acceptable. Evidence of a proposal's compliance with the planning permission's water efficiency condition is to be included in a Water Statement, which can be incorporated into a Sustainability Statement for development located in the Waveney Local Plan area.

[20] EC Harris LLP (2014) Housing Standards Review: Cost Impacts. assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/353387/021c_Cost_Report_11th_Sept_2014_FINAL.pdf.

[21] Wood Environment & Infrastructure Solutions UK Limited (2019) Suffolk Coastal District Council and Ipswich Borough Council Cross Boundary Water Cycle Study: Main Report. www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/Cross-Boundary-Water-Cycle-Study.pdf.

[22] Aspinall Verdi (2019) Plan Viability Study: Suffolk Coastal District Council. www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Suffolk-Coastal-Whole-Plan-Viability-2019-01-03.pdf.

[23] Aspinall Verdi (2018) Waveney Local Plan – Whole Plan Viability Assessment: Waveney District Council. www.eastsuffolk.gov.uk/assets/Planning/Waveney-Local-Plan/Background-Studies/Whole-Plan-Viability-Assessment.pdf.

2.10 To put water efficiency requirements into the context of typical use, figures provided by the Consumer Council for Water on the average water use of water fixtures and fitted appliances or activities (e.g car washing) are presented in Table 3, alongside figures on their average contribution to overall household water use (second column), and the Building Regulations maximum consumption rates for appliance fittings where the optional standard is adopted (most relevant where a fittings approach is used). The columns of the table do not all directly compare, but are intended to give an indication of the relationship between average use and technical standards for fittings.

Table 3: Typical water usage and maximum consumption of water by fittings for compliance with Building Regulations

	Water fitting, appliance or action	Average water use of each appliance/action	Approximate % of average household's water use	Building Regulations maximum fittings consumption to achieve optional requirement level of 110 litres per person per day
Bathroom	Showers	Power shower: 13 litres per minute Mixer shower: 8 litres per minute Electric shower: 5 litres per minute	27%	8 litres per minute
	Bath tap	Standard: 80 litres when the bath is 'full'*	12%	170 litres total holding capacity to overflow
	Toilets	Modern cistern: 5 litres per flush Older: 9 litres per flush	18%	4/2.6 litres dual flush
	Bathroom basin	6 litres per minute is used with a running tap	6%	5 litres per minute
Utility	Washing machine	Average cycle: 50 litres	15%	8.17 litres per kg of dry load capacity used per average cycle**
Kitchen	Dishwasher	Average setting: 14 litres per cycle Eco-setting: 10 litres per cycle	16% ('Kitchen')	1.25 litres per place setting capacity used per average cycle**
	Kitchen sink (rinsing/ hand washing)	30 litres per minute running tap wash		6 litres per minute
	Washing up dishes by hand	8 litres per bowl wash		N/A
Other	Car wash / Other	250 litres per hose pipe use 30 litres per bucket wash	6% ('Other')	N/A

Sources: www.ccwater.org.uk/households/using-water-wisely/averagewateruse/, www.eswater.co.uk/help/saving-water/at-home/ and 'Maximum fittings consumption optional requirement level' Table 2.2 of *Approved Document G* of the Building Regulations (2015 edition with 2016 amendments).

*Here 'full' is used in a colloquial sense, referring to the level to which a person would typically fill the bath to in order to bathe, which is only usually around half of its total holding capacity before it would overflow.

**See EU Energy Label information based on average eco-programme cycle. Most new washing machines and dishwashers will be compliant with these minimums.

Other design elements that can reduce the use of water include:

- **Greywater recycling**: the appropriate collection, treatment and storage of wastewater discharged from kitchens (tap water or dishwasher water), baths or showers, to meet a non-potable water demand in the building, such as toilet flushing, washing machine cycles, outside tap or other non-potable water-compatible use.
- **Rainwater harvesting systems:** the appropriate collection and storage of rainwater run-off from hard outdoor surfaces (e.g. roofs) to meet a non-potable water demand in the building or garden, such as toilet flushing, washing machine cycles, outside tap/watering plants or other non-potable water-compatible use. Rainwater harvesting may also be possible to design into a site's sustainable drainage system (SuDS).
- **Low-flush toilets or waterless compost toilets.**
- **Water-smart landscaping**: using plants that are not dependent on additional watering/do not require a large amount of water. The Royal Horticultural Society have a webpage on trees for climate change[24], which includes trees that are resistant to drought and therefore are water efficient.

  This may also be able to be achieved though exchanging parts of an otherwise fully-lawned garden for a section of permeably surfaced space that features pre-built raised beds for growing ornamental and edible plants. Putting aside the additional benefits of growing plants in raised beds over growing them directly in the ground/at ground level, this is recommended (where appropriate in design and landscape terms) because of the temptation for occupiers to water their lawns when they turn brown due to lack of rainfall. With well-built raised beds, with water impermeable linings, water will be better retained, meaning plants will not need to be watered as much.

  This approach can also be teamed with the use of 'green' (typically grasses or sedum), 'blue' (green plus rainwater harvesting), 'brown' (left to self-seed from windblown seed and bird droppings) or 'biodiverse' (carefully selected planting scheme for supporting priority species) roofs to add additional (and low-water intake, low maintenance) greening and water conservation to the home, therefore reducing demand for more water-intensive lawns.

  Avoid using water-intensive plant species such as willows away from water bodies where they can access enough water without the need to drain groundwater, as in the extreme can cause subsidence damage to nearby buildings and drainage systems.

2.11 Policy SCLP9.2 Sustainable Construction requires all new non-residential developments of equal or greater than 1,000sqm gross floorspace to achieve the British Research Establishment Environmental Assessment Method 'Very Good' standard or equivalent, unless it can be demonstrated that it is not viable or feasible to do so. BREEAM is a comprehensive assessment that includes a methodology for assessing and scoring water conservation; this is included in the 'water' section of the British Research Establishment's (BRE) *Non-domestic Buildings (England) Technical*

[24] Royal Horticultural Society (2021) 'Trees for Climate Change'. www.rhs.org.uk/advice/profile?PID=712.

Manual[25]. Table 8.3 'Water efficient consumption levels by component type' (p.206 of the manual) shows how a BREEAM assessor would assess and score the water efficiency performance levels of fixtures and fitted appliances in a commercial building. Policy WLP8.28 Sustainable Construction requires this for new office and school developments of 1,000sqm or more floorspace. Following delivery of the development post construction BREEAM certificates should be submitted to the Local Planning Authority.

2.12 Together with the intention to limit water use as a sustainability goal in its own right, some sites or uses may have a more pressing or specific need to conserve water than others. This may be due to the proposed use requiring significant water usage. Policy SCLP9.7: Holistic Water Management states that all development will be expected to demonstrate that water can be made available to support the development, therefore, in some instances it may be necessary or desirable to take additional measures to avoid or reduce water usage, or to re-use water.

2.13 Where proposals are likely to trigger the requirement for an Environmental Impact Assessment (EIA) on the grounds of potential significant water use, applicants are encouraged to request a screening opinion from the Council in the first instance. Following a determination that an EIA will need to be undertaken, a secondary scoping stage will need to take place, whereby it may be determined that the applicant will need to specifically consider the impact of the development on water supply in the preparation of their Environmental Statement. Information on the preparation of Environmental Statements is included in Schedule 4 of The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.

2.14 Policy SCLP9.7: Holistic Water Management also states that all development will be expected to demonstrate that adequate foul water treatment and disposal already exists or can be provided in time to serve the development. It is recommended that applicants have regard to the relevant Water Cycle Study undertaken as part of the Plans' evidence bases. Anglian Water should be consulted at an early stage to ascertain specific requirements for the proposal.

Sustainable drainage and flood risk

2.15 Reducing a development's demand on water can go a long way in reducing the costs and environmental harm associated with high – and often unnecessary – usage of water.

2.16 However, the district also faces challenges arising at the other end of the water management spectrum: from flooding. Some areas of the district are at higher risk of flooding, which potentially include surface (pluvial, from rainfall), river (fluvial), sewer, artificial (e.g. reservoir), coastal (tidal, particularly from the overtopping of sea defences) or other waterbody (e.g. lake).

2.17 As identified in the Suffolk Coastal and Waveney District Councils Strategic Flood Risk Assessment documents (2018), certain parts of the district are at greater risk of flooding than others. Within the former Waveney area there are thousands of properties that fall within one of the flood zones (1,2, 3,

[25] www.breeam.com/NC2018/content/resources/output/10_pdf/a4_pdf/print/nc_eng_a4_print_mono/eng_nondom_2018.pdf.

3a 'high probability' or 3b 'functional floodplain'), and the majority of these are in Lowestoft. Similarly, in the former Suffolk Coastal area, Aldeburgh, Woodbridge and Felixstowe are at a high level of risk. However, areas of flood risk exist in other locations across the district.

2.18 Much of the district's land is relatively flat, the topography natural, rain-permeable (e.g. agricultural fields) and well-draining (due to soil type, geology and vegetation cover meaning groundwater flooding has limited potential), and the built environment is generally low density. Together this means that during intense rainfall most of the district's land will generally be highly permeable and benefit from slower water attenuation rates, at or close to what is referred to as 'greenfield runoff rates', than more urbanised areas of the UK.

2.19 Poor drainage, such as through soil compaction or loss of vegetation (e.g. due to the felling of trees), or an excess of impermeable surfacing added on top (following development, e.g. concrete, buildings, road surfacing, etc.), will significantly decrease the land's absorption capacity and increase surface water run-off rate. This increased volume of un-absorbed surface water must flow and pool somewhere, particularly during intense bouts of rainfall. This flooding may not necessarily collect on site, or even locally, and the effects may be felt much further downstream. The cumulative impact of development over time, if not mitigated with sustainable drainage systems, poses a risk of flooding.

Site-specific flood risk assessments and the sequential and exception tests

2.20 The Planning Practice Guidance on Flood Risk explains that a site-specific flood risk assessment should be undertaken in areas at risk of flooding, which are defined in the PPG, or for sites of 1 hectare or more. The Council's Local Validation List sets out the circumstances in which a flood risk assessment will be required:

- For every application in Flood Zones 2 or 3
- For any application elsewhere with a site area greater than 1 hectare,
- All new buildings, significant extensions and changes of use within the floodplain or adjacent to a Main River,
- Engineering operations that involve raising the level of land or significantly increasing surface water run-off to non-mains sewer systems such as watercourses and soakaways
- Development in basements and on lowered ground levels
- Development or changes of use to a more vulnerable class (as specified in Table 2 NPPF Technical Guidance) that may be subject to land, groundwater, sewer or canal flooding). Such uses include but are not limited to new dwellings/residential, hospitals, residential institutions, educational establishments, health services, holiday or short-let caravans and camping etc
- Sites adjacent to roads with no drainage (also see Sustainable Drainage Strategy)
- Any development proposals within the flood zones identified in the Strategic Flood Risk Assessment (SFRA).

2.21 The site-specific flood risk assessment should be informed by the findings and guidance of the Strategic Flood Risk Assessment for the respective Local Plans, particularly Section 5 Guidance for Developers in Level 1. Further information on undertaking the assessment is also set out in the Local Validation List.

2.22 The sequential test seeks to steer development to areas with the lowest risk of flooding. Proposals for development on sites that are not allocated for development but that have been identified as being at risk of flooding (i.e. as per the Planning Practice Guidance on Flood Risk) will not be permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding, as per paragraph 162 of the NPPF. Applicants wishing to progress such sites are therefore expected to provide evidence in their application that they have:

- applied the **sequential test** to other possible sites at suitable locations for the proposal to see if another suitable site in Flood Zone 1 is available, and if not,
- applied the **exception test** to their proposal (if appropriate under the Flood Risk Vulnerability Classification table in the PPG) and provide evidence of this process as part of their application.

2.23 In more detail, this evidence should demonstrate:

- why that specific site was chosen despite the flood risk/why the development could not be accommodated elsewhere; and
- the case for the wider sustainability benefits to the community which are considered to outweigh the flood risk; and
- how the development will be safe for its lifetime, taking account of the vulnerability of its users and the impact of climate change, without increasing flood risk elsewhere. This should involve testing a range of flood event scenarios and address as a minimum: finished floor levels; safe access and egress; an emergency flood plan; identification and provision of surface water exceedance routes; flood resilience/resistance measures; any increase in built or surfaced area; and any impact on flooding elsewhere, including sewer flooding; and
- where possible, how the development will reduce flood risk overall.

2.24 This is because the severity, type and physical extent of the flood risk needs to be weighed against the physical design and layout of the development proposed, and the vulnerability of the use(s) proposed, and how exposed or safeguarded vulnerable uses are to the threat.

2.25 Sites that include an area of floodplain will be expected to provide a SuDS scheme that does not rely on the floodplain for the storage of surface water run-off. All storage volume should be provided separately, outside of the floodplain.

Designing to mitigate flood risk

2.26 The existing drainage, attenuation, detention and infiltration capacity of the site and the extent of the potential to drain the developed site through natural green and blue infrastructure (nature-based solutions) should be the initial scoping step. Green infrastructure alone may be able to perform this function through many different means such as landscaping, use of best-performing plant species for the developement site's conditions, rain gardens and creation of streams, for example. In more detail, the following should be considered for mitigating flood risk through the design of development (where the principle of development on the site, in flood risk terms, is accepted):

- **the design of the buildings/land uses** – what materials palette to use; whether the buildings incorporate a green, blue or brown roof, or a rainwater harvesting or greywater recycling system; whether buildings/land uses are designed to entirely avoid flood water or to be resilient to the incursion of flood water e.g. by designing buildings that elevate inhabitable space above current or projected flood water levels.

- Some materials may also be more resilient to the occasional incursion and submergence in water than others. Impermeable surfacing (e.g. standard road surfacing or stone setts) can be swapped for more permeable alternatives and/or reduced in use to only the amounts necessary.

- **the organisation of buildings, land uses and public realm on site** – the layout of the site may need to be organised around the identified physical extent of the flood risk. This will also have to be balanced with the design of the separate surface-water drainage system, i.e. sustainable drainage systems (SuDS).

- If an area of the site falls partly within a flood plain, the layout and design may need to ensure that the most vulnerable uses (e.g. housing) are located furthest away or most elevated from the flood zone (depending on topography of the site or design of the buildings) and that any buildings or land use which need to be placed within it meet the tests in the PPG and are made resilient to flooding (see above), or that that section of the site is simply left to act as a natural floodplain, and improved to further enhance its attenuation and infiltration qualities through further landscaping (e.g. planting additional suitable species of tree).

- **the landscaping and planting scheme used, and the extent of artificial engineered elements to be incorporated** – the appropriate approach may need to vary according to the ground conditions, i.e. appropriate landscaping according to soil type, quality, ground saturation levels, etc., the nature of the flood risk (pluvial, tidal, etc.), and the drainage performance required.

- The Royal Horticultural Society webpage on trees suited to the foreseen effects of climate change[26] includes trees tolerant of waterlogging and therefore may be appropriate for inclusion in or adjacent to SuDS schemes and/or enhancing the effectiveness of flood plains. However, some species of tree, such as willows, can so substantively change ground water levels that they cause subsidence and damage to properties with their roots.

This evidence must be submitted as part of the Sustainable Drainage Strategy document to be submitted as part of the planning application for the proposed development.

[26] Royal Horticultural Society (2021) 'Trees for Climate Change'. Available at: https://www.rhs.org.uk/advice/profile?PID=712.

Sustainable drainage systems

2.27 The NPPF states under paragraph 169 that all major developments should incorporate sustainable drainage systems (SuDS). This is regardless of whether the site currently experiences drainage issues, as they are intended to mitigate or improve the site's drainage to as near to greenfield run-off rates as possible.

Figure 1 Planted ditch.

Figure 2 Bridge over rainwater garden.

2.28 The two Local Plans build upon the NPPF's requirements via policies SCLP9.6: Sustainable Drainage Systems, WLP8.24 Flood Risk and WLP8.28 Sustainable Construction by requiring all residential development of 10 or more dwellings and commercial development schemes of 1,000sqm or more floorspace to demonstrate that, where practical, they have incorporated sustainable water management measures – which include, but are not limited to, the use of sustainable drainage systems.

2.29 Paragraph 169 of the NPPF states that SuDS should have appropriate minimum operational standards, have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development, and where possible, provide multifunctional benefits. This approach will support delivery of a comprehensive strategy of win-wins for people, environment and wildlife.

2.30 SuDS should also be informed by advice given by the lead local flood authority, which in this case is Suffolk County Council. It is therefore expected that development has had regard to the Suffolk Flood Risk Management Strategy (2018) and in particular *Appendix A: Sustainable Drainage Systems (SuDS) – a Local Design Guide.*

2.31 The landscaping of the green and blue infrastructure (which includes SuDS) on a site should be considered early in the design process, rather than retrospectively 'layered in'. SuDS schemes can be significant in size and can be intentionally designed as high-quality features and spaces central to the public open space and quality of the overall public realm of the development, using a nature-based solution, without compromising their functionality.

2.32 SuDS can be designed to have multiple benefits and these are expected to be provided wherever possible (NPPF para 169). However, their primary function is to efficiently drain a site of its surface water and this must be prioritised in the design scoping process. Before the design process can start, the drainage performance of the site must be established. This process should provide understanding of:

- the existing level of surface water attenuation and infiltration capacity of the site,

- the potential increase in surface water impact following the proposed development, and
- (if necessary) the results of the site-specific flood risk assessment, where potential existing or future flood risk has been identified, taking into account the potential impacts of climate change over the development's lifetime.

2.33 SuDS schemes are expected to be designed in accordance with the most up to date industry standard on best practice SuDS design, which at the time of writing is the CIRIA (2015) *The SuDS Manual (C753)*. The key principles for designing successful SuDS schemes are for them to (as applicable to site context):

- Store rainwater for later use (i.e. rainwater harvesting) – for use as on its own or in combination with grey water for flushing toilets, appliances or other applications not requiring potable quality water. It can also be used for watering green infrastructure on site, not limited to private gardens or allotment gardens. Rainwater should be harvested and used as close as possible to where it falls unless a communal rainwater harvesting system is being used (i.e. serves multiple buildings);
- Store run-off and release it slowly (attenuation) allowing water to soak into the ground (infiltration); use infiltration techniques, such as porous surfaces in non-clay areas. NB attenuation periods for SuDS should be designed so that SuDS empty within 48 hours of any rainfall unless they have been specifically designed to permanently retain water such as a retention basin doubling as a pond;
- Slowly transport water on the surface;
- filter out pollutants;
- allow sediments to settle out by controlling the flow of the water.

2.34 Where site-specific challenges are present, such as sites that are contaminated, sloping, very flat, have high ground water levels, or have open space in floodplain zones, a specific approach may be needed to respond to the site conditions.

2.35 SuDS are expected to:

- Drain surface water and be integrated into the green infrastructure provision of the development (Policy WLP8.24; Policy SCLP9.6). Preference should be given to the installation of blue-green surface infrastructure, as opposed to hardscape (artificial engineered solutions) or underground solutions (as per Suffolk Coastal Local Plan paragraph 9.59), which should be a last resort, due to the wider benefits attained from a landscaped SuDS scheme;
- Where possible, incorporate 'blue corridors' to create a network that facilitates natural hydrological processes that help to minimise flooding (as per Suffolk Coastal Local Plan paragraph 9.58); this approach is also helpful for the movement of wildlife;
- Restrict run-off rates to as close to the greenfield rates, or at the very minimum a betterment of at least 30% over the brownfield run-off rates (Policy SCLP9.6);
- Contribute to the design quality of the scheme;
- Deliver sufficient and appropriate water quality and aquatic biodiversity improvements wherever possible. This should be

complementary of any local designations such as Source Protection Zones;

- Where practical incorporate green roofs and/or rainwater harvesting systems (which could be used on their own for the collection of rainwater in water butts, or integrated into a water recycling system for uses not requiring potable water, such as flushing toilets);
- Should be designed to be safe to access. Where restrictions to access are required due to an unavoidable safety concern, low impact barriers such as landscaping and an appropriate planting scheme should be used instead of fencing, if possible.
- When deciding whether to incorporate a retention element (e.g. a pond with a permanent minimum level of water) or detention element (e.g. a basin which is dry most of the time, having been designed to completely drain within a maximum of 48 hours after rainfall), the amenity benefits of either option should be carefully assessed within the overall site context. For example, is there a publicly accessible blue infrastructure within a walkable radius of the site, or is the community currently under served in this regard. Is a detention basin more suited to the public open space to be provided;
- Should take account of any impacts on the historic environment, where applicable;
- Deliver environmental improvements including improvements to water quality, biodiversity and flood risk;
- Create a more varied natural environment within the site. A SuDS scheme that contrasts but has relationship with other green/blue infrastructure elements on site such as using a 'rock garden' approach to add variety to what is otherwise a wooded network of green features on site;
- Not connect to the foul system and should only connect to the combined or surface water system in exceptional circumstances where there are no feasible alternatives. Foul and surface water flows should also be separated (Policy SCLP9.6; Policy SCLP9.7; Policy WLP8.24).
- Contribute to the creation of green space, and improving the overall aesthetic quality and enjoyment of the public space on site;
- Contribute to the overall habitat, food source and breeding spaces provided for ecosystems to thrive on the site through the use of supportive flora;
- Improve biodiversity: increasing the amount of biodiversity able to be supported by the site, potentially whilst also prioritising the needs of native and/or priority species, through the use of supportive flora for new habitat creation;
- Inform and educate residents and visitors. This may be through the use of interpretation / signage and/or, on larger sites, the establishment of nature trails (particularly where the SuDS scheme is an integral part of a larger green/blue infrastructure plan for the site);
- Lead to an improvement in the water quality of the surface run-off water (environmental net gain);
- Provide overall space for play and leisure experiences by ensuring the landscaping design is safe to access (most relevant to detention elements);

- Support the physical and mental health of future occupants by being integrated into and having a relationship with other health and wellbeing amenities on site, for example, creating a natural setting to encourage use of the site's nearby outdoor gym equipment and trim trail/equipped area of play.

- Reduce the heat island effect of urban environments: creating urban cooling, particularly where nature-based SuDS schemes include trees with significant canopy cover; the latter is also linked to improving air quality;

- Enable easy site maintenance by being intentionally designed to be low-maintenance and any necessary artificial elements (if relevant) easy to access and repair.

- SuDS can also be used to harvest rainwater for use by on-site or adjacent community green infrastructure such as allotments, community gardens, orchards, school gardens or, where applicable to the mix of land uses present on the site, on-site land-based enterprises (e.g. plant nurseries).

2.36 Where a nature-based green/blue infrastructure SuDS scheme is being proposed, it is critical that appropriate plant species are selected; plants in a rain garden should be happy to be inundated for a few hours and those on a roof garden should be happy with the growing medium within which they have been planted. The following elements are typically incorporated into nature-based SuDS schemes:

- Rain gardens – these are particularly useful for the installation of SuDS along highways. These can be a useful way of protecting and segregating cyclists and pedestrians from vehicular traffic.

- Blue planters – these rainwater harvesting planters simultaneously provide food and ornamental plant growing space whilst collecting excess rainwater for later use.

- Tree pits – again, tree pits can be used to segregate cyclists and pedestrians from traffic and doors opening from parked cars. It is important that the tree pits are designed for the specific needs for the intended species (soil type, pH, tolerance for drought/saturated roots, aeration, size it will grow to, etc.).

- Green (wildflower or sedum), blue (rainwater harvesting), brown (allowed to self-seed from wind or bird droppings) or biodiverse (intentionally planted according to desired outcomes for biodiversity net gain) roofs. These can be very large or very small (they can be used on bike sheds, bus shelters, garden sheds, bin stores, etc.), which makes them a highly flexible option for environmental and biodiversity net gain on new and conversion developments.

- Retention ponds – maintains a permanent minimum level of water.

- Detention basins – designed for the total amount of surface water collected to infiltrate within a maximum of 48 hours.

- Swales – for conveyance or kept dry or wet.

- Permeable paving.

- Living walls (also known as green walls, also related to vertical gardens) – particularly when these are substantial in scale, spanning multiple stories of external walls.

- Roof gardens with rainwater butts for watering plants.

- Balconies with built-in planters.

2.37 Where sites are more challenging, it is recommended that professional expertise is sought early in the design process. To achieve the required greenfield runoff rates and a net improvement from pre-development rates, it may be necessary to use artificial, 'hardscape' engineered solutions.

2.38 Policy SCLP11.1 Design Quality and Policy WLP8.29 Design both state that major residential development proposals will be supported where they perform positively when assessed against *Building for Life 12* guidelines and that, as the guidelines use a 'traffic light' scoring system for assessing design quality against their criteria, developments should avoid red outcomes unless there are exceptional circumstances.

Figure 3 Infiltration basin at Ravenswood, Ipswich.

2.39 The *Building for Life 12* guidelines have since been superseded by *Building for a Healthy Life*[27] guidelines. This new document places a greater emphasis on how development can support (or undermine) public health. It covers the opportunities presented by designing SuDS as a tool for improving health, amongst other benefits and its primary function to drain surface water. It includes, under the 'Streets for All' section, a sub-section on 'green and blue infrastructure'. As this document is directly referred to in policy, the Council will have regard to it when assessing SuDS scheme design.

Adapting to Coastal Change

2.40 The Suffolk Coastal Local Plan contains planning policies SCLP9.3 Coastal Change Management Area and SCLP9.4 Coastal Change Rollback or Relocation and the Waveney Local Plan contains planning policies WLP8.25 Coastal Change Management Area and WLP8.26 Relocation and Replacement of Development Affected by Coastal Erosion.

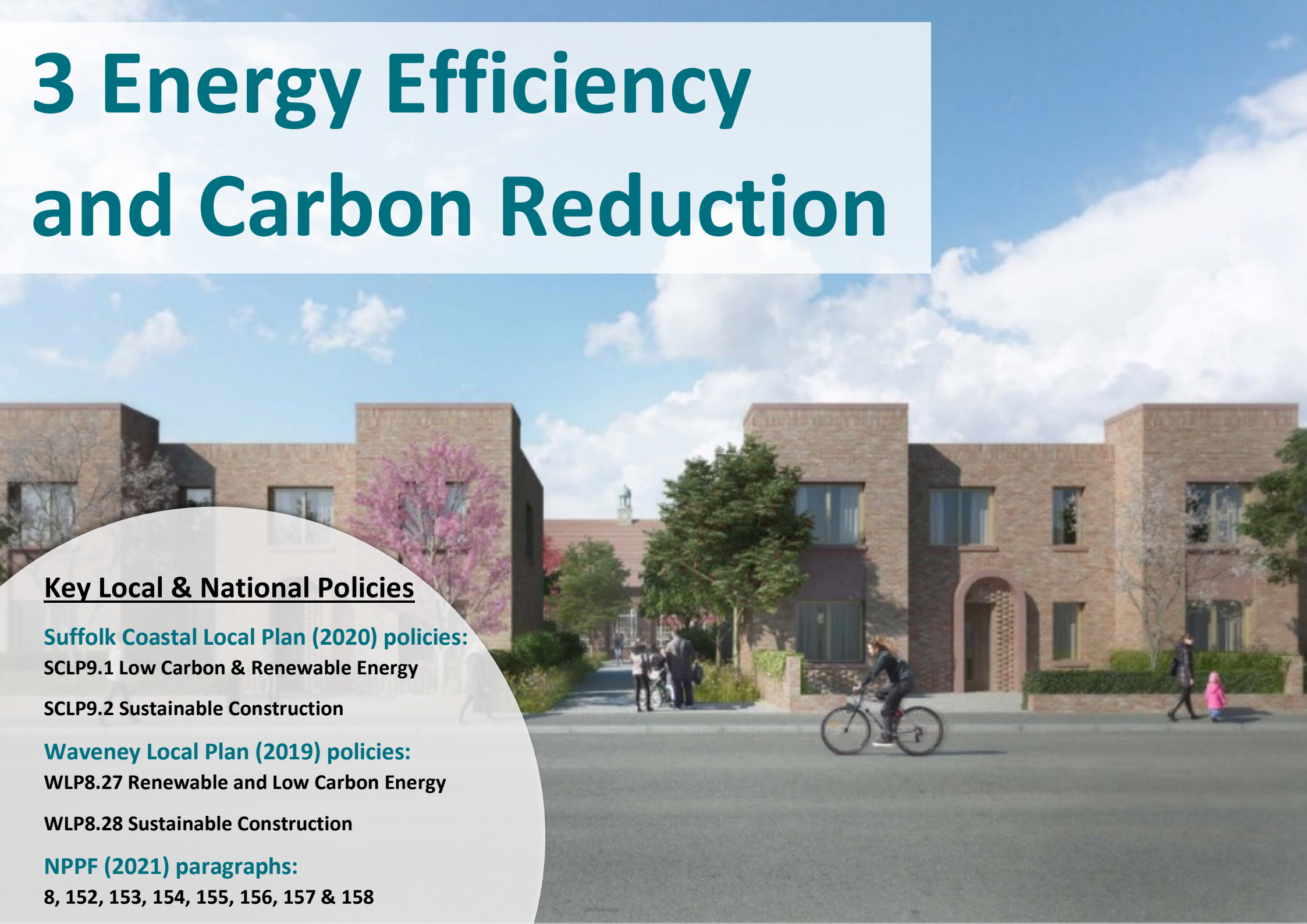
2.41 The Local Plan policies permit limited temporary development in coastal areas at risk from change within a 20 year time period. Buildings and facilities lost to coastal erosion can be replaced in the Countryside subject to requirements in the Local Plans policies. Replacement development offers the opportunity to provide homes and facilities that are designed and constructed sustainably.

[27] Building for a Healthy Life - A Design Toolkit for neighbourhoods, streets, homes and public spaces' Available to download at: https://www.udg.org.uk/publications/othermanuals/building-healthy-life.

2.42 Further detailed guidance will be provided in the Coastal Adaption Supplementary Planning Document[28] (SPD) which is currently under preparation. The Coastal Adaptation SPD is being developed in partnership with Great Yarmouth Borough Council, North Norfolk District Council, the Broads Authority and the Coastal Partnership East Team. The document will cover the coastline from Holkham in Norfolk down to Felixstowe in Suffolk. The Coastal Adaptation SPD will provide guidance on interpreting and implementing planning policies in relation to coastal matters.

[28] www.eastsuffolk.gov.uk/planning/planning-policy-and-local-plans/supplementary-planning-documents/

3 Energy Efficiency and Carbon Reduction



Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.1 Low Carbon & Renewable Energy

SCLP9.2 Sustainable Construction

Waveney Local Plan (2019) policies:

WLP8.27 Renewable and Low Carbon Energy

WLP8.28 Sustainable Construction

NPPF (2021) paragraphs:

8, 152, 153, 154, 155, 156, 157 & 158

3 Energy Efficiency and Carbon Reduction

3.1 When designing a building it is important to consider the impact that the method of construction and chosen materials will have on carbon emissions and climate change. Buildings account for almost a third of global carbon emission and construction accounts for 11%. The importance of this is increasing – following changes to the Building Regulations through the ongoing roll out of the Future Homes Standard with an interim uplift in June 2022, domestic heating systems that predominately use gas or oil are unlikely to perform well enough to pass the Building Control process (SAP calculations), meaning renewable energy generation, such as through photovoltaics and forms of heat pumps, are likely to be required.

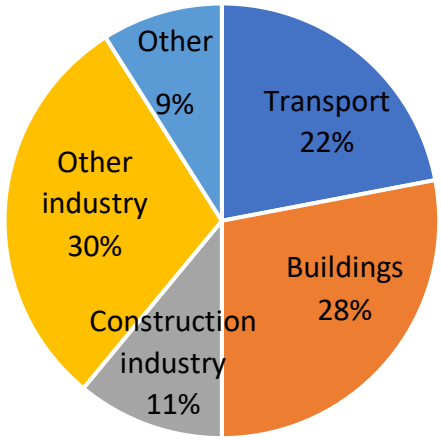


Figure 4 Share of global energy-related CO2 emission by sector 2015[29]

Operational Carbon

3.2 Operational carbon is the term given to the carbon emitted during the lifetime of a building. It includes, but is not limited to lighting, heating, artificial ventilation, hot water and running of electrical appliances in buildings. Operational carbon can be reduced through various measures:

- Buildings designed and orientated to reduce the need for artificial lighting.
- Thermally efficient buildings to reduce the need for heating and ventilation.
- Installation of energy efficient lighting and electrical appliances.

3.3 Improving energy efficiency and reducing operational carbon emissions has the benefit of lowering utility bills for occupants.

Zero Operational Carbon

3.4 New buildings powered 100% by renewable energy and that don't burn fossil fuels emit no carbon. This can be achievable for some buildings including small scale residential properties. Smaller residential buildings can be powered by roof mounted PV panels. Larger residential properties and buildings are likely to require additional off-site renewable energy.

[29] UN, 2017, Global Status report: Towards a zero-emission, efficient and resilient buildings and construction sector, https://www.worldgbc.org/sites/default/files/UNEP%20188_GABC_en%20%28web%29.pdf

Embodied Carbon

3.5 Carbon is emitted during the extraction and processing of raw materials, the manufacture of building materials, the assembly of materials on-site and during the transportation of building materials. Carbon is emitted during the lifetime of the building during maintenance, repair and replacement of the fabric of the building and during refurbishments and redevelopment of buildings for modernisation or conversion to alternative uses.

3.6 Carbon is also emitted at the end of a building's life, during the process of dismantling and demolishing it and transporting the material remains for disposal in landfill or reuse elsewhere. It is for this reason that the Council will support and encourage the retention, renovation, and re-use of existing buildings (in whole or in part) over demolition where retention is a feasible and suitable option for the subsequent use(s).

Upfront embodied carbon

3.7 The carbon emitted during the extraction, manufacture and processing of materials, transportation of materials, and construction of the building. It excludes the embodied carbon emitted during the lifetime of the building and at the end its life.

Offsetting Carbon

3.8 Carbon offsetting is a method of achieving zero embodied carbon by investing in other projects that reduce or store carbon, however it can be less favourable than achieving a truly zero carbon development.

Whole life net zero carbon

3.9 A building would generally be considered to have achieved a lifetime net zero carbon emissions if it was constructed using materials that are 100% recycled/reused and transported to site using renewable energy and powered by 100% renewable energy. It is however accepted that carbon emissions can result from processing recycled materials, construction processes and general repair and maintenance of a building. The building would also need to be dismantled at the end of its life and the component parts transported using renewable energy for reuse in other future projects. This is an aspirational target that considers the full impact of the construction, running and end of life of buildings on carbon emissions and climate change.

How to reduce embodied carbon

3.10 The key to reducing embodied carbon is reusing existing buildings, reusing the materials from demolished buildings, building for longevity, building using materials with a low embodied carbon, and buying locally produced materials.

3.11 Many buildings are capable of being repaired and altered to suit new uses. Some buildings may only require minor alterations and others may need to be stripped back to their main structural components. High levels of insulation and new technologies can usually be retrofitted to buildings to achieve high levels of thermal and energy efficiency. The priority should be reusing any existing buildings onsite as this enables carbon emissions to be reduced during the production of materials, construction and demolition of the building.

Recognised approaches for calculating and reducing carbon

3.12 A detailed whole life study can be caried out at Royal Institute of British Architecture (RIBA) Stage 3 Developed Design and the RIBA 2030 Climate Challenge (2021) provides useful targets and a checklist. Early consideration of all the various building elements including the materials, construction methods, energy efficiency and thermal efficiency will help identify what changes can be made to reduce carbon emissions. RIBA provide useful information for architects and designs here:

- Emobodied and whole life carbon assessment for achitects (2017)[30]
- RIBA 2030 Climate Challenge, Version 2 (2021)[31]

3.13 An overarching assessment methodology for carbon assessment is provided by RICS here:

- Whole Life Carbon assessment for the built environment, RICS, (November 2017).[32]

3.14 There are several recognised design approaches that refer to the RICS methodology that can assist designers and developers. These include the following design guides:

- Net Zero Carbon Toolkit, by Levitt Bernstein, Elementa, Passivhaus Trust and Etude commissioned by West Oxfordshire, Cotswold and Forest of Dean District Councils, funded by the LGA Housing Advisers Programme[33].
- Climate Emergency Design Guide, London Energy Transformation Initiative (LETI) (Jan 2020)[34]
- Net Zero Carbon Buildings: A Framework Definition, UJ Green Building Council (UKGBC) (April 2019).[35]

Energy hierarchy

3.15 Developments are recommended to follow the philosophy known as Be Lean, Be Clean and Be Green which advocates the use of an energy hierarchy to reduce energy demand and the associated carbon emissions. The first step is reducing the demand for materials, energy and water consumption through the use of passive design measures. The second step ensures that energy efficient heating, hot water and cooling systems are used. The third step involves the use of renewable sources of energy to reduce carbon emissions.

3.16 **The** Council strongly recommends that developers appoint an Energy Specialist as early as possible in the design process. This will assist with maximising opportunities for sustainability and minimise the risk of not achieving planning policy compliance. Not considering energy use early may result in a developer retrofitting their development and incurring

[30] https://www.architecture.com/knowledge-and-resources/resources-landing-page/whole-life-carbon-assessment-for-architects
[31] https://www.architecture.com/about/policy/climate-action/2030-climate-challenge
[32] www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf
[33] https://cotswold.gov.uk/media/05couqdd/net-zero-carbon-toolkit.pdf
[34] https://b80d7a04-1c28-45e2-b904-e0715cface93.filesusr.com/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf
[35] http://www.ukgbc.org/ukgbc-work/net-zero-carbon-buildings-a-framework-definition/

unnecessary costs to comply with Building Regulations, planning policy and/or discharge a planning condition.

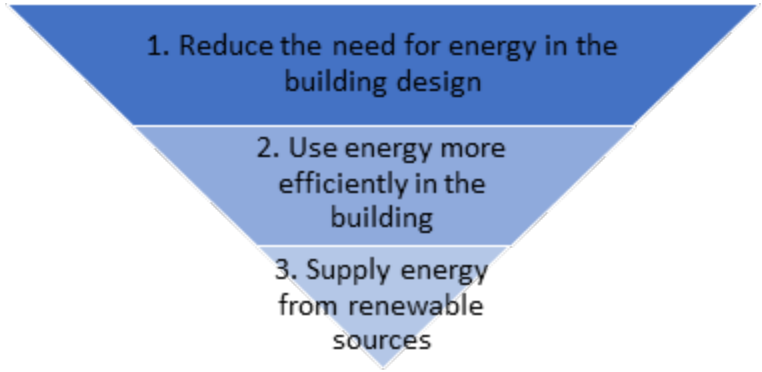


Figure 5 The energy hierarchy

Policy expectations for new development and conversion development

3.17 The Local Plans and this SPD have been produced at a time of changing national policy and Building Regulations. Changes to Building Regulations may impact the requirements and implementation of the planning policies in the Local Plans. Further technical guidance may be produced in the future in response to future changes.

3.18 The respective Sustainable Construction policies of the development plan make distinctions between policy requirements that apply to: (1) all new residential development proposals; (2) new major residential development proposals; (3) new commercial development proposals over a size threshold; and (4) conversion development proposals.

3.19 Suffolk Coastal Local Plan policy SCLP9.2 requires all new residential developments of more than 10 dwellings to achieve higher energy efficiency standards that result in a 20% reduction in CO_2 emissions below the Target CO_2 Emission Rate (TER) set out in the 2013 Building Regulations.

3.20 The requirement under policy SCLP9.2 for an Energy Statement demonstrating a 20% reduction in CO_2 emissions below the Building Regulation target CO_2 emission rate will cease when the Government's Future Homes Standard comes into force amending Part L (conservation of fuel and power) Building Regulations for dwellings.

3.21 The Target CO_2 Emission Rate is defined in Building Regulations Part LA: Conservation of fuel and power in new dwellings (2013 edition with 2016 amendments) as the "minimum energy performance requirements for a dwelling". The TER is based on CO_2 emissions from the provision of space heating and hot water, use of pumps and fans, and use of internal lighting. The calculations for the baseline and 20% improvement Target CO_2 Emission Rate (TER) for developments and the Dwelling Emission Rates (DER) should be carried out in compliance with Building Regulations. Planning Policy SCLP9.2 seeks to reduce CO_2 emissions and improve energy efficiency of all the dwellings on site. Applicants should avoid varying energy efficiency standards and DER across a development.

3.22 An Energy Statement, or equivalent should be submitted that demonstrates the development meets the policy requirements of SCLP9.2. Building Regulations require each new dwelling to provide an SAP Energy Performance certificate. Sample SAP calculations and certificates may be submitted for comparison to show the increase in energy efficiency compared to Building Regulations. However, calculations are required to demonstrate a 20% reduction in CO_2 emissions below TER.

3.23 When new Building Regulations for Part L (Conservation of fuel and power), Part F (Ventilation) and Part O (Overheating) take effect in 2025 with an interim uplift in June 2022, the requirement for an Energy Statement demonstrating a 20% reduction in CO_2 emissions below the Building Regulation target CO_2 emission rate (TER) to meet the requirement of planning policy SCLP9.2 will cease. To meet the requirements of the new Building Regulations is it very likely that renewable and low carbon energy technologies such as solar panel and ground and air source heat pumps will be needed. Planning proposals should carefully consideration the impact new technologies will have on a building's appearance and on the wider setting of the streetscape and/or landscape. The location of solar panels, external heat pump units and other technologies should be clearly shown on plans and elevations submitted as part of a Full or Reserved Matters planning application.

3.24 Both new and conversion development proposals are expected to submit as part of their planning application, and evidence in their interim and final compliance reports, how they have at least considered the use of locally sourced, reused and recycled materials, along with on-site renewable energy generation in order to achieve environmental net gain. All development proposals are also encouraged to set out measures for minimising waste arising from the construction process.

3.25 Waveney Local Plan Sustainable Construction policy WLP8.28 does not set a specific energy efficiency target for any kind of development. Policy WLP8.28 is also more select in which non-residential buildings must achieve the British Research Establishment Environmental Assessment Method 'Very Good' standard or equivalent (unless it can be demonstrated that it is not viable or feasible to do so).

Policy expectations for retrofitting

3.26 According to the Centre for Ageing Better's technical briefing *'energy efficiency and decarbonising our homes'* for *The Good Home Inquiry*, to achieve the UK's carbon emission targets and to improve the quality of our existing housing stock we need to retrofit around 26 million homes – this equates to 1.6 homes every minute between now and 2050.

3.27 Retrofitting works generally sits outside of the planning system and is therefore not affected by planning policy. This is due to retrofitting primarily taking place inside of buildings. Most improvements to the thermal and energy efficiency of a building such as the addition of solar panels and double glazing are permitted through general permitted development rights. Developers should be aware that Building Regulations may apply even when an application for planning permission is not required

Permitted development and sustainable construction

3.28 Development that is permitted through permitted development rights is not required to comply with policies of the development plan, which includes the sustainable construction policies. However, in the interest of improving the quality, usability, longevity, and resilience of buildings in the district, constructing in a sustainable manner by following the guidance in this SPD is strongly encouraged.

3.29 Where applicable, some permitted development rights include prior approval criteria which is relevant to sustainable construction such as, for the creation of new dwellings, the requirement to meet minimum internal space standards and provide adequate natural light in habitable rooms.

3.30 If there is uncertainty over whether development is permitted through the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended), please contact the Council's Planning Team.

4 Materials

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.2 Sustainable Construction

SCLP11.1 Design Quality

Waveney Local Plan (2019) policies:

WLP8.28 Sustainable Construction

WLP8.30 Design

NPPF (2021) paragraphs:

126, 152, 157 & 158

4 Materials

4.1 Reusing existing buildings onsite should be the priority for any new development. The reuse of existing buildings reduces the need for new materials to be sourced, manufactured or transported to site resulting in lower carbon emissions. Reusing existing buildings can also result in creative design solutions that enhance the character of the local area.

4.2 The materials used in a development are a key part of its sustainability. The design, method of construction and materials chosen have a significant impact on the total carbon emitted during the course of a building's lifetime. Embodied carbon can account for more emissions than operational carbon, during the lifetime of a building. The structural system of a building is usually the largest source of embodied carbon in a building, whether this steel or concrete or both.

4.3 Consideration of materials at the early design stage can help reduce the buildings overall carbon emissions. The RICS Whole life Carbon assessment for the built environment is recommended as an approach for identifying opportunities to reduce emissions over the course of a building's lifetime.[36] The Construction Material Pyramid produced by the Centre for Industrialised Architecture is also a useful tool understanding the impact of different building materials and calculating the carbon emissions.[37]

Figure 6 Black Barn, Dallinghoo

[36] www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf
[37] www.materialepyramiden.dk

Key principles

- Reuse existing buildings onsite where practical
- Source materials responsibly (e.g. local materials)
- Use recycled materials or materials with a recycled content
- Use material that can be recycled when the building comes to the end of its life
- Use renewable materials (e.g. FSC timber, sheep's wool insultation)

4.4 Some building materials can be reused or recycled such as bricks, hardcore, timbers, doors and window frames. Re-using materials is preferable over recycling because the former entails less embodied energy. Where materials are to be reused or recycled these will need to be inspected by the developer or a structural engineer if necessary to ensure they are suitable for the development and do not need any repairs. This can reduce the amount of raw materials used in the construction of a building and help retain the character of an existing building or area. This is particularly important when working on a listed building or in a Conservation Area.

4.5 When sourcing materials, care should be taken to use products that minimise impacts on biodiversity. For example, avoid sourcing wood from forested areas at an unsustainable rate or using materials such as peat, weather worn lime-stone or other materials from vulnerable habitats. Materials that have a long lifespan are of greater environmental benefit and a lasting benefit to occupiers of the building. They should exhibit characteristics of durability, low maintenance and use of waterproofing agents that are not harmful to the environment.

4.6 In some cases more environmentally friendly alternatives or versions of traditional and familiar building materials and products are available on the market. There are lower carbon versions of concrete, lower emission paint options and various types of LED lighting. New products, materials and technologies are being developed all the time and should be considered.

Concrete

4.7 Globally 4 billion tonnes of cement are produced which account for approximately 8% of global CO_2 emissions each year[38]. Cement is a key component in the production of concrete, which is a mixture of cement and aggregate, and can be reinforced with steel to increase its strength. Concrete is one of the most common and widely used building materials. It is used for foundations, floors, walls and structural frames. The embodied carbon in concrete varies depending on its composition.

4.8 The design of new buildings should minimise the use of concrete and consider the use of alternative materials wherever practical. Recycled or sustainably sourced content should be used for concrete where possible and reusable plastic formwork should be considered. Fly ash and blast furnace slag which are waste products from iron and steel manufacture can be used to create concrete. This recycles a waste material, reduces CO_2 emissions and produces concrete that is usually stronger and more

[38] www.chathamhouse.org/2018/06/making-concrete-change-innovation-low-carbon-cement-and-concrete-0/executive-summary

durable, but the concrete then takes longer to set/cure and it affects the final colour.[39]

4.9 Limecrete is material that can be used as alternative to concrete floor slabs in some instances. It is created from natural hydraulic lime and lightweight aggregate or sand. As it does not include cement it has a lower level of embodied carbon than concrete and is therefore a more environmentally friendly material.[40] Limecrete can take much longer than concrete to set, but it is often specified in historic buildings for its breathable properties.

Timber

4.10 Wood is a renewable material that should be sourced from sustainably managed forests to prevent deforestation. Timber should be sustainably sourced and certified from either the FSC (Forest Stewardship Council) or PEFC (Programme for the Endorsement of Forest Certification). Timber should be sourced as locally as possible to reduce carbon emission from transportation. Where possible the design of a building should minimise the use of engineered timbers as they contain glues/adhesives that make recycling and reuse of the timber more difficult. The use of OS boards (Oriented strand boards) should also be minimised as they contain glues and resins that make recycling and reuse of the timber more difficult. Construction methods should aim to use reversible mechanical fixings or interlocking strategies which require no additional materials. [41]

Figure 7 Black Barn, Dallinghoo

Brick

4.11 Brick is a commonly used material for external walls in Suffolk and across East Anglia. Brick is often used to help match an extension to an existing building or help a new building match the materials and character of properties in the local area. The process of extracting clay from the ground and firing it at 2,000 degrees to produce a brick emits a significant amount of carbon.

[39] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/660888/fly-ash-blast-furnace-slag-cement-manufacturing.pdf

[40] https://limecrete.co.uk/limecrete-faq/

[41] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, Appendix 2, page 132

4.12 Where possible consideration should be given to using local reclaimed brick and using a mortar which is softer than the brick and can therefore be easily removed enabling the brick to re-used at the end of the building lifespan. Existing damaged bricks can be recycled by being broken up and used as aggregates. Some developments use brick slips to save the time and cost of laying full size bricks. Per kilo brick slips have a higher embodied carbon than full sized bricks because of the steel fixings used to mount them on the wall. [42]

4.13 There are various products on the market that have developed around the world to provide more environmentally friendly alternatives to brick and concrete block. Many seek to turn waste, particularly plastic waste, into strong bricks and blocks that reduce the amount of waste that ends up in landfill. Often, they perform the same or better than traditional products. Aesthetically, once rendered and painted external walls look the same, regardless of whether they are constructed from traditional materials or newly developed products.

Structural steel

4.14 Steel is used to form lintels, beams and other important structural elements in buildings. The process of extracting, manufacturing and transporting steel means it has a high level of embodied carbon. By weight steel has a higher level of embodied carbon than concrete. 51% of steel is used for construction[43] and steel is responsible for 6.6% of global carbon emissions.[44]

Where practical the use of bolted connection details and clamped fittings instead of welded joints assist with the re-use of elements when the building is demolished. Coatings or coverings that will prevent visual assessment for re-use should be avoided if possible. Developers are encouraged to keep an inventory of product origins and properties so that products can be re-used once the building has been demolished. [45]

Figure 8 Black Barn, Dallinghoo

[42] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, Appendix 2, page 133

[43] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, Appendix 2, page 133

[44] www.buildinggreen.com/feature/urgency-embodied-carbon-and-what-you-can-do-about-it#:~:text=By%20weight%2C%20steel%20has%20a%20much%20higher%20embodied,basic%20oxygen%20furnaces%20%28BOF%29%20rather%20than%20electric%20

[45] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, Appendix 2, page 133

Glass

4.15 Glass is manufactured using sand, silica, sodium carbonate, lime, magnesium oxide and aluminium oxide that are non-renewable materials. [46] The process of melting, refining and floating the molten glass to form sheets results in glass having a high level of embodied carbon.

4.16 Consideration should be given to the thermal benefits of different double and triple glazed units and the various types of glass available such as solar glass that allows sunlight to pass through while reflecting a large amount of the sun's heat.[47] Timber frames can have a longer useful life than PVC and a superior thermal performance than metal frames. [48] The design of new buildings should consider the portion and orientation of glazing to maximise daylight and solar gain without overheating. Glass can be recycled for use as insulation and aggregate.

[46] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, Appendix 2, page 134

[47] www.pilkington.com/en-gb/uk/architects/types-of-glass/solar-control-glass

[48] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, Appendix 2, page 134

5 Waste

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.2 Sustainable Construction

Waveney Local Plan (2019) policies:

WLP8.28 Sustainable Construction

NPPF (2021) paragraphs:

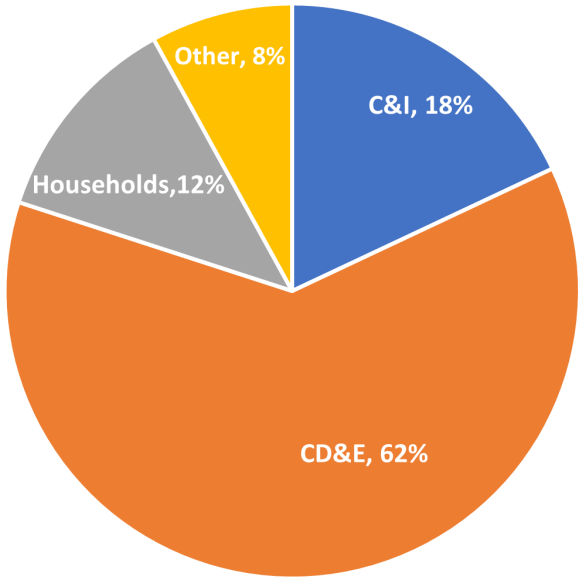
8, 20 & 152

5 Waste

5.1 Construction, demolition and excavation waste accounts for approximately 60% of the UK's waste.[49] Almost half of the waste is recycled and recovered and approximately a quarter ends up in landfill and the rest incinerated, used for backfilling or used for land treatment or released into water bodies.[50] Backfilling involves using waste in excavated areas such as mines and gravel pits for engineering, landscaping and other reasons.

5.2 Carbon emissions that result from the demolition of existing buildings should be considered when carrying out carbon assessments. Consideration should be given to whether demolition is needed for the regeneration and development of the site or whether buildings can be retrofitted to achieve a good outcome for the site. The demolition of existing, structurally sound buildings should be avoided wherever possible to reduce unnecessary waste. Demolition should also be avoided and retrofitting considered where it will result in a reduction in carbon emissions over a development's life span.

5.3 The carbon emissions resulting from waste and waste disposal should be considered and included in whole life carbon assessments of a building. (See paragraph 3.12 and 3.13 for information on calculating carbon emissions.)



C&I = Commercial & Industrial
CD&E = Construction, demolition & excavation

Figure 9 Waste generation split by source, UK, 2016 [51]

[49] Department for Environment Food & Rural Affairs, March 2020, UK Statistics on Wastes, page 12 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918270/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_updated_size_12.pdf

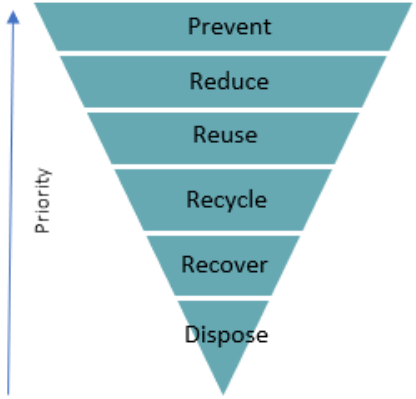
[50] Department for Environment Food & Rural Affairs, March 2020, UK Statistics on Wastes, page 14 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918270/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_updated_size_12.pdf

[51] Department for Environment Food & Rural Affairs, March 2020, UK Statistics on Wastes, page 11, Figure 3. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918270/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_updated_size_12.pdf

How to reduce on-site construction waste

5.4 Waste creation during construction and at the end of a building's life can be minimised through good design and site waste management planning. It will also reduce the cost of the construction of a new development.

5.5 Developers are encouraged to consider, at the design stage, rooms that are designed to use whole or regular sized sheets of plasterboard so they are not cut to leave unusable off-cuts. Bricks can be collected and reused onsite. Bricks from one part of a construction site for example can be used on another part of the site rather than being disposed of in a skip. Materials should be handled with care to ensure they are not broken by being stood on or bruised by impact damage (e.g. wood or plasterboard). Just-in-time deliveries of materials can help minimise the length of time materials will be stored where they are exposed and vulnerable to damage.



1. Reduce amount of waste by not creating it in the first place
2. Limit the amount of material used that will create waste
3. Reusing materials before they are discarded
4. Transform material into another usable material
5. Destroy waste to reclaim energy for consumption
6. As a last resort store or bury waste

Figure 10 Waste Management Hierarchy

Further information is available at:

- Designing out waste: A design team guide for buildings, available online at: www.modular.org/marketing/documents/DesigningoutWaste.pdf
- DEFRA (2009). Code of Practice for the Sustainable Use of Soils on Construction Sites, available online at:

www.gov.uk/government/publications/code-of-practice-for-the-sustainable-use-of-soils-on-construction-sites

Providing waste storage facilities for occupants

5.6 The design and layout of a property or development are important factors in waste reduction and management. In larger developments consideration should be given to the location of communal facilities for recycling, particularly for recyclables currently not collected as part of the kerbside collection service, such as a communal bottle bank for glass bottles. Such facilities should be carefully designed and located so as not to cause potential noise disturbance to existing and future residents. At a smaller scale, individual plots need to have enough space for refuse and recycling storage (internal and external) and consideration should be given to the provision of or space for composting facilities if possible. Provision for waste management should be located to:

- be easily accessible;
- not have the potential to create a nuisance to local people; and
- not have an adverse impact on local amenity

Figure 11 Wheelie bin storage screen

5.7 East Suffolk Council provides 140 litre or 240 litre black and blue wheeled bins for household waste and recycling waste. Green 140 litre or 240 litre wheeled bins are available for garden waste for an annual cost to the occupant.

5.8 It is anticipated that the forthcoming Recycling and Waste Strategy for England may impose additional statutory requirements for all local authorities to provide separate collection services for additional recyclable waste streams, such as food waste and glass. Consideration should be given to the potential need in the near future for individual building plots and communal waste facilities to have sufficient space for additional receptacles.

5.9 'On the go' recycling facilities should be provided in public spaces to enable the public to recycle their waste while outside of the home or workplace. These are litter bins that provide the opportunity for a person to separate different types of materials for waste recycling (e.g. paper, cans, non- recyclables). These should be conveniently located for the public to use.

5.10 "Unflushables" are a major issue for water sewerage companies and a cause of pollution, and space should be incorporated for their proper disposal. Where a development proposes to include a smoking shelter it should include a suitable receptacle for all smoking-related litter. Smoking shelters should also be located away from any surface water drainage system to minimise the risk of pollution of natural water courses. Such shelters should also be suitably located so as not to cause potential nuisance to nearby neighbours.

How to manage materials from demolished buildings

5.11 When a building has reached the end of its life, consideration should be given to its deconstruction prior to demolition so that materials in a condition to be re-used or recycled can be removed. This will reduce the amount of waste taken to landfill. Burning of any wastes on site is not good practice, increases harmful emissions, may cause nuisance, and could contravene waste legislation.

Figure 12 Wheelie bin storage screen by front door constructed from the same black horizontal timber as the house

6 Siting, Form and Orientation

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.2 Sustainable Construction

SCLP11.1 Design Quality

Waveney Local Plan (2019) policies:

WLP8.28 Sustainable Construction

WLP8.30 Design

NPPF (2021) paragraphs:

8, 126, 130, 134, 152 & 157

6 Siting, Form and Orientation

6.1 The two main design policies of the development plan, Policy WLP8.29 Design and Policy SCLP11.1: Design Quality set out the design approaches that the Council support. Whilst these do not principally cover sustainable construction, there is a clear relationship between these policies and sustainable construction.

6.2 Both design policies SCLP11.1: Design Quality and WLP8.29: Design state (inter alia) that permission will be granted where proposals demonstrate a clear understanding of the character of the built, historic and natural environment and use this understanding to complement local character and distinctiveness. The Council expects proposals to respond to local context by relating to surrounding buildings and the form of the wider street scene through scale, layout, height, massing, and the use of appropriate high-quality materials. To be clear, these criteria do not rule out the use of highly energy-efficient, innovative design and materials or use of Modern Methods of Construction (MMC) where they may represent an alternative appearance to that of surrounding properties; the requirement to conform to local context is one material consideration that will be balanced with others. With that said, it is possible to design to high standards of resource efficiency, such as to Passivhaus Standards, whilst still incorporating traditional materials, even if just used for aesthetic purposes.

6.3 Policy WLP8.32 Housing Density sets out requirements for minimum densities (units per hectare) in and around Lowestoft and the market towns, and a more 'enclosing' design approach (also known as creating 'perimeter blocks'), using terraced or semi-detached building form in urban areas. Building at higher densities and with fewer detached sides to units makes achieving higher energy efficiency easier, compared with lower densities.

Figure 13 Sustainable design principles incorporated into the design of the housing proposed at the former Deben High School site in Felixstowe

Orientation of buildings

6.4 Important early design considerations are the form and orientation of a building. The orientation of a building together with the placement and proportion of glazing impacts on the daylight, solar gain (heat) and natural ventilation that will benefit a building. The more a building can benefit from natural light, heat and ventilation, the less energy it will be necessary for the building to consume. However, this must be balanced with the potential disbenefits of overheating, and those associated with the inappropriate use of glazing (see Chapter 11 Healthy Buildings and Places section).

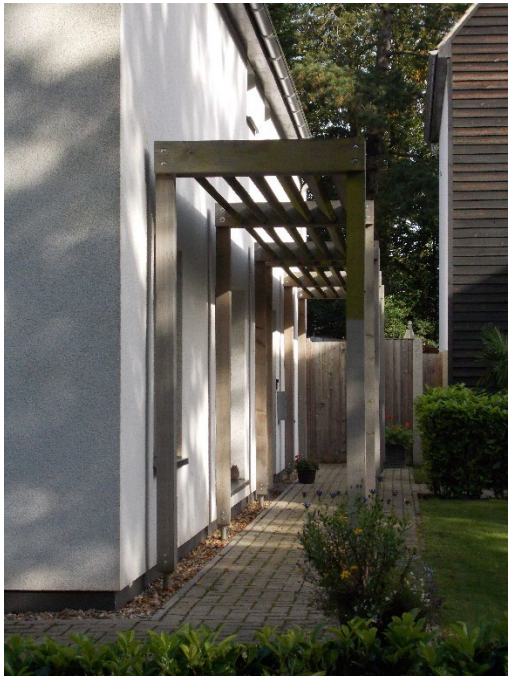
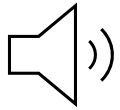


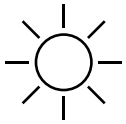
Figure 14 Solar shading in front of windows and doors

6.5 The design and layout should:

Consider overshadowing and the impact on neighbouring properties' daylight and roof/solar panels.



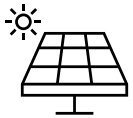
Consider sources of noise that may be present in the location, and how plots and buildings are best located and oriented away so as to reduce the impact on noise-sensitive spaces of homes, workplaces and education buildings, such as bedrooms, studies (or flexible-use spaces that may be used for working/studying from home) offices, break rooms, classrooms, libraries, external amenity areas etc.



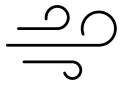
Maximise daylight into the active rooms of dwellings and workplaces by orienting the building and/or planning the building's layout so that these rooms benefit most from the sun by being south-facing and well-glazed (balanced with any noise mitigation requirements).

Maximise the productivity and amenity value of gardens by orienting them to be south-facing and unshaded/mostly unshaded (balanced with any noise mitigation requirements).

Have the largest roof surface facing south west to south east to maximise access to sunshine for solar panels.



Incorporate solar thermal panels heating hot water or photovoltaics to generate electricity.



Orientate to utilise prevailing winds for natural cooling ventilation.

Figure 15 Solar shading in front of windows and doors

Orientation of glazing

6.6 North facing windows usually result in heat loss and southern facing windows in heat gain. South facing glazing should be designed to optimise heat gain without overheating in the summer. East and west facing windows often result in overheating due to the low angle of the sun at the start and end of the day. The optimum glazing ratios are considered to be 25% glazed on the southern elevation, no more than 20% on the east and west elevation, and as little as possible on the north elevation.[52]

6.7 When considering the design, quantity and type of glazing consideration should be given to protecting dark skies, in particular within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty and in proximity to the Broads, where dark skies form part of the intrinsic value of the area. The Suffolk Coast & Heaths Area of Outstanding Natural Beauty Management Plan 2018-2023[53] seek to value and protect the area's dark night skies. In the Broads Plan (2017) a long-term aim is to protect and enhance the sense of tranquillity, wildness, and dark skies[54]. Information on lighting design and glazing in an area with dark skies is available here:

https://www.darksky.org/towards-a-dark-sky-standard/

Building form

6.8 The ratio of the external building surface area to the internal floor area has a significant impact of the thermal efficiency of the building. Buildings with high levels of exposed external wall relative to the internal floor area

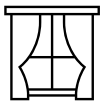
[52] London Energy Transformation Initiative (LETI) Climate Emergency Design Guide, Jan 2020, page 48 https://b80d7a04-1c28-45e2-b904-e0715cface93.filesusr.com/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf

[53] www.suffolkcoastandheaths.org/managing/reference-library/management-plan/

[54] www.broads-authority.gov.uk/__data/assets/pdf_file/0023/240665/Broads-Plan-2017.pdf

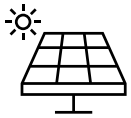
achieve poor levels of energy efficiency and would need increased levels of insulation to compensate. The design of the building form should consider the:

Position of windows for across ventilation.



The size and portion of glazing in each elevation.

Solar shading, overhanging roof, external blinds, shutters or brise soleil over large areas of southern glazing.



Incorporate solar thermal panels heating hot water or photovoltaics to generate electricity.

Where solar panels are not set to be installed at the initial build stage, design the roof angle and surface to be 'solar panel ready' so they can be installed easily later and highly efficient in that location.

7 Sustainable Energy and Construction and the Historic Environment

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP11.3 Historic Environment

SCLP11.4 Listed Buildings

SCLP11.5 Conservation Areas

Waveney Local Plan (2019) policies:

WLP8.30 Historic environment

WLP8.39 Conservation Areas

NPPF (2021) paragraphs:

152

7 Sustainable Energy and Construction and the Historic Environment

7.1 East Suffolk's high quality historic environment is an important part of its character and the district is home to many heritage assets including listed buildings, Scheduled Monuments and Conservation Areas. The Council is supportive of measures to adapt historic buildings to improve their energy efficiency and increase the use of renewable energy generation, however acknowledges that this needs to be balanced against the need to preserve the appearance and structure of historic buildings and spaces. It is important to note that the conservation of a historic building and its materials in itself will be conserving the embodied energy that was used in their construction.

7.2 Further detailed information and guidance on sustainable construction and the historic environment is set out in the East Suffolk's Historic Environment SPD (2021)[55] and in Historic England's documents. Historic England has published the following technical guidance:

- Energy Efficiency and Historic Buildings: How to Improve Energy Efficiency (2018)
- Energy Efficiency and Traditional Homes (2020)
- Energy Efficiency and Historic Buildings – Application of Part L of the Building Regulations to historic and traditional construction buildings (2017)
- Energy Efficiency and Historic Buildings: Energy Performance Certificates (2015)
- Planning Responsible Retrofit of Traditional Buildings (2015)

7.3 Information and technical guidance documents are subject to review and updating. Developers are advised to check with Historic England for any updated and new relevant guidance:

https://historicengland.org.uk/advice/technical-advice/energy-efficiency-and-historic-buildings/

Listed building consent

7.4 Listed building consent is required for work carried out on a listed building. Where listed building consent is required, an application must be made to the Local Planning Authority. Permitted development enables property owners to install some micro-renewable technologies without planning permission, however, this does not apply to listed buildings or scheduled monuments. Where there is any uncertainty, it is advisable to contact the Council's Design and Conservation Team for further information[56].

Article 4 directions

7.5 Article 4 directions are used to restrict permitted development rights to protect against inappropriate development in particular areas. Several of these are in effect in the former Waveney area. Further information about Article 4 directions is set out in the Historic Environment Supplementary Planning Document and on the Council's website[57].

[55] www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Supplementary-documents/Historic-Environment-SPD/Historic-Environment-SPD-reduced.pdf

[56] www.eastsuffolk.gov.uk/planning/planning-applications-and-enforcement/find-out-if-you-need-planning-permission/pre-application-advice-service/

[57] https://www.eastsuffolk.gov.uk/planning/design-and-conservation/conservation-areas/article-4-directions/

Archaeology

7.6 It is possible that archaeological resources survive within or beneath a historic building or place. The Suffolk County Council Archaeological Service[58] should be contacted to ascertain the most appropriate way to manage archaeological issues, such as recording or preservation in situ.

Improving the sustainability of historic buildings

7.7 Table 3 below summarises guidance on various works that can be undertaken to make an historic building more sustainable. The table below should be viewed alongside the Historic Environment Supplementary Planning Document which provides detailed guidance on sustainable construction.

[58] Archaeological planning and countryside advice | Suffolk County Council

Table 4: Sustainable construction consideration and the historic environment

Technology	Key Considerations
Retrofit insulation	The thermal performance of roofs/ ceilings, floors and walls can all be improved with the addition of insultation. Care needs to be taken to ensure that insulation is located and designed so as not to impact upon the internal or external appearance of an historic building. Care should also be taken to ensure that the insulation does not increase damp/ condensation.
Traditional methods to reduce heat loss	Instead of insulation, traditional methods can be used to improve the building's thermal performance. Thick curtains, shutters, and draft proofing can reduce heat loss from windows and doors.
Glazing	Chapter 10 of the Historic Environment SPD provides guidance on replacing windows and doors and explains the alternatives to double glazing that may also assist with thermal performance, such as secondary glazing. Secondary glazing has excellent acoustic properties and usually provides better noise insulation than double glazing. Historic buildings near busy roads could consider secondary glazing on the building elevations most affected by noise.
Maximize daylight	It is not usually acceptable to insert new windows or expand existing ones in an historic building because this could harm the structure or appearance of a building. It is important to ensure therefore that existing windows are not blocked or obstructed by new extensions.
Installing electric charging points for vehicles	Electric charging points need to be positioned close to the vehicle and careful consideration should be given to minimising the impact of any cables and boxes on the appearance and fabric of a historic building.
Electrical appliances	Energy demand can be reduced through using energy saving light bulbs, installing home appliances with the highest energy rating and avoiding leaving electrical appliances on standby.
Rainwater harvesting	Water butts can be connected to gutters and downpipes to collect water. They should be positioned to minimise the visual impact on the building, such as to the side or rear. Many historic buildings have wells which may be able to provide a private water supply for home and/or garden. A pump may be needed to extract the water and the water may need to be treated if it is to be used for consumption. All private water supplies used for domestic (or commercial) consumption and use are regulated by the local authority and therefore advice should be sought from Environmental Protection regarding the risk assessment and water sampling regime that may be required.

Renewable and low carbon technologies

7.8 The original purpose, style, height, profile, materials, details and views are important features in defining the character of historic buildings, their setting and streetscapes. Potential impacts can therefore result from the physical attachment of technologies or by the installation of free-standing equipment nearby.

7.9 Physical alterations can result in the removal of historic fabric, the attachment of fixtures or the operational effects of equipment such as vibration and emissions. Free-standing equipment can impact on the setting of a historic building if it is located within the principal views to or from the building, or by interrupting spatial relationships with other buildings or

natural features. Where equipment is to be installed in the curtilage of a site, existing outbuildings should be considered for housing or mounting equipment. Table 4 below sets out some of the considerations that relate to historic buildings and small-scale low carbon and renewable energy technologies however the Historic Environment Supplementary Planning Document should be referred to for detailed guidance.

Table 5: Renewable energy considerations and the historic environment

Technology	Key Considerations
Solar PV and SolarThermal	Solar PV and solar thermal would be most appropriately installed on inconspicuous areas of a roof, such as the inner slopes of a roof valley, or where a flat roof is obscured by a parapet. Principal elevations should be avoided, and consideration given to the appearance of the development in views of the building from higher vantagepoints. Further advice on installing solar photovoltaics in a conservation area and on listed buildings [59] is available on the Council's website.
Air Source Heat Pumps	Sensitive design and siting of the pump, its housing and associated cabling,ducting and other equipment are the principal considerations. Heat pumps distribute heat through underfloor heating. This often requiresthe setting of heating coils in a concrete floor slab which could potentially damage historic floors.
Ground and Water Source Heat Pumps	Damage to any underground archaeology should be avoided and an unobtrusive location should be sought for the pump equipment and any surface pipe work.
Underfloor heating	Underfloor heating can be appropriate in some historic buildings and the heating and cooling process is slow which could be advantageous for some historic buildings. It can however also cause a lot of damage to historic floors either through installation or through maintenance and repair and it is therefore important to understand the full implications of installing, maintaining and repairing underfloor heating.
Biomass	Biomass stoves could bring original spaces for stoves, flues, fireplaces andchimneys back into use. If a new chimney or flue is required, it should be designed and located to be unobtrusive. New appliances must meet relevant environmental standards and guidelines related to their emissions, and similarly must use appropriately sourced and recommended fuels. A new stove should ideally be approved by the Department for Environment, Food and Rural Affairs (Defra). For further information on open fires and stoves Defra have produced the following guide[60]. You can also visit the HETAS[61] website for help with which stove to buy and suppliers. The Environmental Protection Team webpage[62] on biomass and burning provides additional guidance.
Micro-CHP (Combined heat and power)	The external structure to house the CHP generator should be located and designed to fit in with the surrounds. A CHP generator may create sound and vibration. If located internally, careshould be taken not to affect internal living areas.

[59] www.eastsuffolk.gov.uk/planning/design-and-conservation/installing-solar-photovoltaics-in-a-conservation-area/
[60] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf
[61] www.hetas.co.uk
[62] www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/biomass-and-wood-burning/

8 Natural Environment

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP10.1 Biodiversity and Geodiversity

SCLP10.3 Environmental Quality

SCLP10.4 Landscape Quality

Waveney Local Plan (2019) policies:

WLP8.34 Biodiversity and Geodiversity

WLP8.35 Landscape Character

NPPF (2021) paragraphs:

152, 174, 176, 177, 178 & 179

8 Natural Environment

8.1 Sustainable buildings should be focused not only on energy efficiency and carbon reduction, but also be designed and constructed with nature and wildlife in mind. Buildings should maximise opportunities to provide lasting benefits for both people and wildlife.

8.2 Large scale renewable energy schemes, such as solar farms, have the potential to impact the character of the landscape. The size, height, location, number of solar panels and impact on the landscape should be considered early in the design process for solar farms. The National Planning Policy Framework requires developments to protect and enhance valued landscapes and "recognise the intrinsic character and beauty of the countryside and wider benefits of the ecosystems" (para.174). Designated landscapes such as the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) in the south-east of the district and the Norfolk and Suffolk Broads to the north are afforded protection in the NPPF which states "great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues" (para.176).

8.3 Policies for the protection of designated landscapes are SCLP10.4 Landscape Character in the Suffolk Coastal Local Plan and WLP8.35 Landscape Character in the Waveney Local Plan. Both policy WLP8.35 and SCLP10.4 require developments to demonstrate their location, scale, form, design and materials will protect and where possible enhance the area. Development proposals should include measures to enable a scheme to integrate into the landscape.

8.4 Whilst planning applications in the Broads area are determined by the Broads Authority under planning policies in the Local Plan for the Broads[63], consideration should be given to impacts on the setting of the Broads from proposals outside, including through reference where appropriate to the Broads Landscape Sensitivity Study for Renewables and Infrastructure.[64]

8.5 Integrating nature into developments or providing easy access to green spaces can improve the health, wellbeing and quality of life for people living and working nearby. The integration of natural features generally results in developments that are considered more attractive. Houses are considered more desirable when they are set in green spaces with access to the countryside and new houses that retain existing natural features, such as trees, hedges and ponds, are usually considered more acceptable to existing residents.

8.6 High-quality, wildlife rich, natural green spaces can also provide effective water and pollution management. Green spaces, green roofs, brown roofs, trees, rainwater gardens, swales and attenuation ponds and other natural features, can all assist in effective water and pollution management.

8.7 New or extended developments offer the opportunity to incorporate a range of features which improve areas for people and wildlife. All proposals should maximise their value for biodiversity through the inclusion of features such as:

- Creating green corridors and connecting to existing green corridors to provide movement and feeding space for wildlife and that can be used for recreational walking purposes.
- Incorporating shared community gardens and allotments.

[63] www.broads-authority.gov.uk/planning/planning-policies/development

[64] www.broads-authority.gov.uk/planning/planning-policies/landscape-sensitivity-studies

- Green roofs and walls with plants provided that support wildlife.
- Brown roofs allowed to self-vegetate over time from windblown seeds.
- Using green roofs on bike sheds, bus shelters, sheds, and bin stores as well as houses and offices.
- Well-designed balconies large enough to provide space for a seating area and growing plants.
- Integrating bird nesting opportunities into buildings, including using nest bricks for species such as swifts.
- Installing bat boxes and or bat bricks integrated into buildings.
- Hedgehog holes in fencing.
- Instead of fencing, use hedges and 'fedging' (living hedges made with willow) that can support wildlife.
- Trees to provide shade, improve air quality and support wildlife.
- Wildflowers verges along roads and in informal open spaces.
- Consider planting that will be resistant to climate change.

8.8 Natural lawns and planting should be prioritised where possible for both gardens and public open spaces. Artificial turf does not support wildlife and is made from plastics that use fossil fuels and emits carbon. Soil usually needs to be removed to level the ground and lay the artificial turf. The artificial turf does not biodegrade and cannot be recycled so ends up in landfill.

8.9 Where artificial turf is necessary for sport and leisure facilities consideration should be given to the stabilising infill material used to weight the artificial turf down and keep the fibres vertical during use, the performance infill material used on top (used to reduce injuries) and the shock pads underneath the turf. A study by FIFA has identified coconut fibres and cork as suitable alternatives to plastic based infills. The study also found the use of cork underneath artificial turf as a shock absorber can reduce the amount of infill material needed on top of the turf and in some instances existing shock absorbers can be reused when a pitch is replaced.

8.10 East Suffolk, particularly the rural areas of the former Waveney district, has some of the darker skies in the country. Many of East Suffolk's rural areas benefit from dark skies that support wildlife and contribute to the tranquil character. Suffolk Coastal Local Plan policy SCLP10.4 Landscape Character and Waveney Local Plan policy WLP8.35 Landscape Character both support proposals that protect and enhance dark skies across the plan area. Light pollution can be reduced by minimising the number of external lights, using down lights and using timer settings to limit light use therefore reducing light pollution that disturbs wildlife.

8.11 Further information is available from:

- East Suffolk Ecology webpage[65]
- Wildlife gardening The Wildlife Trust website[66]
- Homes for people and wildlife: How to build housing in a nature-friendly way by The Wildlife Trust (2018)[67].
- Biodiversity Enhancement in New Housing Developments, by Campaign to Protect Rural England (CPRE) Sussex and Royal Society for the Protection of Birds (South East)[68]

[65] www.eastsuffolk.gov.uk/planning/design-and-conservation/ecology/
[66] www.wildlifetrusts.org/gardening
[67] www.wildlifetrusts.org/sites/default/files/2018-05/homes_for_people_and_wildlife_lr_-_spreads.pdf
[68] www.cpresussex.org.uk/resources/biodiversity-enhancement-in-new-housing-developments/

- Environmental Impact Study on Artificial Football Turf by FIFA (2017)[69]

8.12 It is recognised that the Environment Act (2021) is introducing requirements for mandatory Biodiversity Net Gains (BNG) for many types of new developments, which will impact planning policy. Further technical guidance may be produced in the future in response to this requirement.

Figure 16 Swift boxes

[69] www.eunomia.co.uk/reports-tools/environmental-impact-study-on-artificial-football-turf/

9 Renewable and low carbon energy schemes

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.1 Low Carbon & Renewable Energy

SCLP9.2 Sustainable Construction

Waveney Local Plan (2019) policies:

WLP8.27 Renewable and Low Carbon Energy

WLP8.28 Sustainable Construction

NPPF (2021) paragraphs:

8, 152, 153, 154, 155, 156, 157 & 158

9 Renewable and Low Carbon Energy schemes

9.1 Planning applications for energy generating projects with a generation capacity of 50MW and less are determined by East Suffolk Council under Planning Policies SCLP9.1 in the Suffolk Coastal Local Plan and WLP8.27 in the Waveney Local Plan.

9.2 Applications for more than 50MW are classed as Nationally Significant Infrastructure Projects (NSIPs) and are examined by the Planning Inspectorate who make recommendations to the Secretary of State at the Department for Business, Energy & Industrial Strategy (BEIS). Applications for offshore energy generation of 1MW – 100MW are determined by the Marine Management Organisation. Applications relating to overhead electricity lines below 132kV are determined by the BEIS. [70]

Figure 17 Solar array

9.3 Large scale developments can contribute towards East Suffolk's energy needs. Small-scale installations such as solar photovoltaic panels, solar thermal panels and heat pumps usually generate energy for one or two buildings and provide an important contribution towards long-term energy security. Depending on the scale and location of a proposal, small installations may not require planning permission. Such schemes are known as 'permitted development'.

Small scale energy generation appropriate for households and commercial buildings

9.4 Developments providing technologies such as solar photovoltaics (PV), solar thermal, heat pumps and wind turbines can generate energy to meet some or all of the needs of a building. A single installation will produce a limited amount of energy but cumulatively these technologies will make an important contribution towards securing the district's future energy supply, reducing energy costs for households and businesses. Reducing the need for fossil fuel energy by generating renewable energy at plot, site or neighbourhood level also has the effect of reducing energy demand through the necessary supply chains for finite fuels, e.g. the road miles incurred to transport heating oil. The Energy Savings Trust can provide guidance on energy efficiency measures and small-scale energy generation technologies.

Market based incentives for energy

9.5 The type, number and availability of financial incentives for installing renewable and low carbon energy technology and heating systems, and improving the thermal efficiency of existing homes changes with the

[70] www.gov.uk/guidance/consents-and-planning-applications-for-national-energy-infrastructure-projects#electricity-development-consents

introduction of new initiatives. Details of the latest incentives and eligibility is available on the Government's website[71].

Community-led renewable and low carbon energy schemes

9.6 A community project can be used to generate local electricity, heat, store energy, provide infrastructure for electric vehicles and purchase energy. These projects reduce a community's dependence on centralised energy.

9.7 Community energy schemes can reduce energy demand by making buildings more energy and thermally efficient as well as providing renewable energy. The approach is suited to community centres, schools, small multi storey residential developments, and small-scale residential developments such as sheltered housing complexes.

9.8 Examples of community energy projects include:

- *Community-owned renewable electricity installations such as solar photovoltaic (PV) panels, wind turbines or hydroelectric generation.*
- *Members of the community jointly switching to a renewable heat source such as a biomass boiler, or a low-carbon heat system such as a heat pump or solar thermal.*
- *A community group supporting energy saving measures such as the installation of cavity wall or solid wall insulation, which can be funded wholly or partly by the Green Deal.*
- *Working in partnership with the local Distribution Network Operator (DNO) to pilot smart technologies.*
- *Collective purchasing of heating oil for off gas-grid communities Collective switching of electricity or gas suppliers.*[72]

9.9 As an example, albeit outside of East Suffolk, Culford School in Bury St Edmunds occupies historic buildings dating back to the 16th Century and is an example of a project that installed a biomass boiler. The switched from inefficient oil boilers to a biomass boiler resulted a significant cost saving on heating for the school. The biomass boiler not only saved costs but reduced the school's carbon emissions.[73]

Types of low-carbon energy that communities could use:[74]

Electricity	Heat	Electric Vehicles & Hydrogen
Solar PV	Heat pumps	Electric vehicles
Wind Turbines	Biomass	Hydrogen vehicles
Micro hydro	Solar Thermal	

9.10 Renewable energy schemes can be owned by the community with local people buying shares and earning interest. They can also be funded through grants obtained by the community from energy companies or from a range of national and local funds. This requires community groups to form Co-operative Societies, Community Benefit Societies or Community Interest Companies and have a business plan in place. Income can be earned from a

[71] www.gov.uk/domestic-renewable-heat-incentive
[72] www.gov.uk/guidance/community-energy
[73] www.theguardian.com/sustainable-business/culford-school-bionergy-switch
[74] https://communityenergyengland.org/files/document/444/1601384608_EssexCommunityEnergyRoadmapGuide.pdf

community energy project by selling energy through a Power Purchase Agreement.[75]

9.11 Neighbourhood Plans can include community energy projects within their vision for the local area and set policies identifying appropriate areas for renewable energy schemes.

Further information on community energy is available here:

- www.gov.uk/guidance/community-energy
- https://communityenergyengland.org

District Heating Networks

9.12 District and community heating are both forms of heating networks that distribute heat from a central renewable or low carbon source via insulated pipes to domestic or non-domestic buildings. District heating networks are designed to supply heating on a large scale to developments with numerous buildings compared to community heating networks that usually supply heat to one or two buildings. District heating networks are generally considered best suited for use in dense urban areas where the distance the heat must travel can be kept to a minimum.

9.13 Heat networks[76] are an important part of the Government's plan to reduce carbon emissions with a target to generate 18% of the UK's heat from heat networks by 2050. Heat networks offer one the most cost-effective methods of reducing carbon emissions from heating and cutting heating bills for customers as they exploit economies of scale.

Guidance on heat networks for developers is available here:

- www.gov.uk/government/collections/heat-networks-guidance-for-developers-and-the-supply-chain

Permitted Development

9.14 Some alterations to buildings such as the installation of small-scale renewable energy technologies can be made without needing to apply for planning permission. These are called 'Permitted Development Rights'. Permitted development rights vary depending on the type of building (e.g. house, flat, maisonette) and where the site is located. Restrictions are placed on permitted development if the building is listed or located within a protected area such as a Conservation Area, AONB or the Norfolk and Suffolk Broads. The tables in the following section set out where planning permission is required. However, to clarify if permitted development rights are applicable to a proposal the Local Planning Authority should be contacted.

Photovoltaics (PV)

9.15 There is significant potential for domestic-scale solar installations to contribute towards energy supply in the district with most south facing roof space having potential to support PV technology. The more energy that is generated through domestic installations the less justification there is for

[75] https://communityenergyengland.org/files/document/444/1601384608_EssexCommunityEnergyRoadmapGuide.pdf

[76] www.gov.uk/guidance/heat-networks-overview

large-scale schemes such as wind turbines and solar arrays to be installed locally. Photovoltaic panels work on the principle of converting sunlight into electrical energy. These can be installed above the roof, integrated into the roof tiles or installed as a free-standing array within the grounds of a building. PV technology can also be applied through window glazing but this technology tends to be more expensive.

9.16 The placing of solar panels on the roof of a house or flat can often be carried out under 'Permitted Development' which means there is no need to obtain planning permission, subject to certain conditions. Advice for homeowners on installing solar panels in Conservation areas or on Listed Buildings is available on the East Suffolk website here:

- Installing solar photovoltaics in a conservation area[77]

9.17 This technology works most effectively on south-east to south-west facing roofs and can be installed on any roof slope (optimal angle is 30 degrees). PV cells will continue to produce energy when overhead conditions are overcast but not as much as when the sun is out. Energy will only be produced when it is daylight, therefore, the energy must either be consumed, stored using batteries or sold to the electrical grid as it is generated.

9.18 Attention should be given to potential shading caused by trees, nearby structures or parts of the same building such as chimneys and dormer windows. If any solar panel within the solar array is shaded this could stop the system from operating properly. The planting of deciduous trees as part a landscaping scheme will provide shade for a building and reduce the need for cooling during the summer months while enabling maximum solar receipts during the winter when energy demand is highest.

Figure 18 Solar panels in Ufford

[77] www.eastsuffolk.gov.uk/planning/design-and-conservation/installing-solar-photovoltaics-in-a-conservation-area/

Figure 19 Solar panels in Woodbridge

9.19 Other considerations that apply to solar PV installations and other micro-energy generating technologies outlined in this section may include:

- The installation of an inverter linked to the fuse box to convert the electricity generated from direct current to alternate current for it to be usable.
- Free-standing technologies within the grounds of the property will need to be connected to the building by underground cabling which should be buried at least 0.5m below the surface to avoid damage.
- Where a building is connected to the electrical grid excess electricity can be sold to the grid when not required. Connection to the grid will also ensure a continuous supply of energy when not enough is being generated on site.
- Layout of the PV panels on the roof of a building to be in keeping with the character of the building, property and streetscape.

Solar thermal

9.20 Solar water heating systems comprise of three main components: solar collectors (evacuated tubes or flat plates), a heat transfer system (fluid in the pipes) and a hot water store such as a hot water cylinder. Solar energy heats the water which is then transferred to the storage tank where it is kept until needed. It is then reheated by a conventional boiler to the required temperature ready for use. Space for a water tank will need to be considered before installing the system. Due to the use of conventional boilers, solar thermal heating is not a wholly renewable source of heating nevertheless, provides a lower carbon alternative to traditional heating systems and can help reduce energy bills.

9.21 The collectors, which is the equipment that captures the sun's energy to provide heat, are ideally positioned on a south facing roof on a 30 degree angle (this is not critical) in an area not subject to shading. The same principle can be applied to collectors that are free-standing in the curtilage of a property but additional work would be required to install piping to transfer the pre-heated water to a water store and the building.

9.22 Before mounting solar collectors onto a roof a structural survey will be required to ensure the building is strong enough to hold the additional weight of the collector and the support framework.

9.23 Further information is available from the Energy Savings Trust[78].

Air source heat pumps

9.24 Air source heat pumps function in a similar fashion to a refrigerator but in reverse. The device absorbs heat from the air which is then used to heat water or internal spaces within a building. An air source heat pump can absorb heat from outside air even when temperatures are as low as -15°C.[79] During the warmer months air source heat pumps can be reversed to be used as air conditioning units to lower internal air temperatures. There are two types of air source heat pump systems:

- air to air systems: take heat from the air outside and pass it into the building through fans;
- air to water systems: take heat from the air and direct it into the wet central heating system, which is usually an underfloor heating system.

9.25 Air source heat pumps are more efficient in air to water systems if teamed with an underfloor heating system (which can be used throughout the floors of a building) than radiators.

9.26 Air source heat pumps require electricity to run unless they are powered by renewable energy generated on site. Air source heat pumps therefore may not provide renewable heating and cooling but are nevertheless a lower carbon alternative to traditional heating systems. Air source heat pumps will become a lower carbon system as the National Grid becomes less dependent on fossil fuels and is decarbonised.

9.27 To be effective, energy efficiency measures should be implemented before a heat pump is installed. If energy efficiency measures are not implemented then the additional heat generated by the heat pump will be lost making the system less cost effective.

Figure 20 Air Source Heat Pump System

9.28 Space will need to be set aside internally for a pump and tank. External space will be needed for the condenser unit (looks like an air conditioner). These blow out cooler air and can generate noise so they need to be appropriately located. Installation near the window of a habitable room should be avoided. In some cases, a noise assessment may be required depending on the scale of the system, the number of units, and the location of external units relative to neighbours.

[78] https://energysavingtrust.org.uk/advice/solar-water-heating/

[79] https://energysavingtrust.org.uk/advice/air-source-heat-pumps/

9.29 Further information is available from the Energy Savings Trust[80] and from the MSC Service (Microgeneration Certification Scheme)[81].

Ground (and water) source heat pumps

9.30 Ground (and water) source heat pumps can be used for space and water heating. These systems operate by drawing heat from the ground (or water) and transferring it to a heat pump. There are two types of ground source heat pumps:

- Closed loop systems – utilise a sealed pipe buried in the ground. Within the pipe is a continually circulating liquid which extracts heat from the ground. This type of system involves no physical interaction between the system and the environment.
- Open loop systems – use a borehole to supply groundwater to the system which is then circulated to extract heat from the ground. Once the water has passed through the heat exchanger it is then returned to the ground via a second borehole. An open loop system can impact on groundwater therefore the Environment Agency should be contacted prior to the installation of a heat pump.

9.31 Piping is set out in a parallel manner and where space is limited pipes can be laid down in a coiled pattern. The land area required varies depending on how easily the soil can transfer heat to the pump and how much energy the pump can generate. Horizontal piping is not appropriate for small properties. Alternatively, ground pipes can be laid vertically in the ground using bore holes. Digging is required to bury the pipe network which can be disruptive.

9.32 Ground source heat pumps are most effective for under floor heating. However, if radiators are used these should have a large surface area because the water heated by the pump is usually not as hot as the water heated by a conventional boiler. The Environment Agency can advise on the design and materials used as part of any proposal. They can discuss details of a proposal for an air or ground source heat pump system and their appropriateness for a location if contacted early in the process when a scheme is being considered.

9.33 Ground and water source heat pumps require electricity to run unless they are powered by renewable energy generated on site. Ground and water source heat pumps therefore may not provide renewable heating but are nevertheless a lower carbon alternative to traditional heating systems. Air source heat pumps will become a lower carbon system as the National Grid becomes less dependent on fossil fuels and is decarbonised. In some cases, a noise assessment may be required depending on the scale of the system, the number of units, and the location of external units relative to neighbours.

9.34 Further information is also available from the Energy Savings Trust[82] and from the MSC Service (Microgeneration Certification Scheme)[83].

Small-scale wind turbines

9.35 Small-scale, domestic wind turbines can be pole mounted or building mounted. They can be used to provide some of the energy needs of a

[80] https://energysavingtrust.org.uk/advice/air-to-water-heat-pumps/
[81] https://mcscertified.com

[82] https://energysavingtrust.org.uk/advice/air-to-water-heat-pumps/
[83] https://mcscertified.com

building. However, the Net Zero Carbon Toolkit[84] does not recommend the installation of domestic wind turbines. They are currently not a recommended method of generating renewable electricity on a domestic scale due to their relative inefficiency when compared with alternative technologies, but with advances in technology this may change in the future. The cost and energy efficiency of a domestic wind turbine is not a planning consideration.

9.36 The National Planning Policy Framework permits wind energy developments involving one or more turbines in areas identified as suitable for wind energy development in the development plan and following consultation (footnote 54). The two Local Plans do not identify areas suitable for wind energy development, however local plan policies do set out that Neighbourhood Plans can identify suitable areas for renewable and low carbon energy development. A stand-alone wind turbine within the boundaries of a house or block of flats[85] and building mounted wind turbines[86] can be considered permitted development subject to limits and conditions.

9.37 Turbines are considered to be small-scale when they are of a size small enough to be attached to a building and the height does not exceed 15m above ground level, or if a standalone structure, of a height not greater than 11.1m. These heights are from the ground to the tip of the turbine blade. Small-scale turbines can be attached to buildings using brackets fastened to an external wall or be freestanding on a pole. As a general principle, the higher the turbine the higher the wind speed and the greater the energy output. Urban locations are prone to air turbulence created by wind flowing around buildings, trees and other structures making small-scale turbines less effective in these areas. When considering the height of a turbine there may be issues with visual amenity with turbines being visually intrusive to neighbours. Other issues to consider are noise, vibration and shadow flicker. It is generally recommended that a noise and vibration assessment is undertaken prior to consideration of development of small-scale wind turbines.

9.38 The installation of a small-scale wind turbine may involve works that disturb roof spaces, chimney stacks and potential access points for bats. A survey may need to be undertaken to ascertain if bats are present. If birds are present on the site, work should be undertaken outside of the bird nesting season.

9.39 Further information is also available from the Energy Saving Trust[87].

Biomass burners

9.40 Biomass burners (or stoves) and boilers are wood fuelled heating systems that use pellets, chips or logs. Stoves are generally used to heat a single room or level of a dwelling. Boilers are connected into a central heating network and can therefore be used to heat an entire building.

9.41 Log burning stoves and boilers require a significant amount of wood to heat a dwelling. Wood chips are most suitable for a heating system that will heat multiple dwellings. Wood pellet burners and boilers generally use automatic fuel feeders which need to be refilled on occasion. Pellets burn for a longer time than logs but are more expensive. Please note that appliances should be installed that meet current regulatory and environmental standards/guidance with respect to their burn efficiency and emissions. A

[84] https://cotswold.gov.uk/media/05couqdd/net-zero-carbon-toolkit.pdf
[85] planningportal.co.uk/info/200130/common_projects/57/wind_turbines/3
[86] www.planningportal.co.uk/info/200130/common_projects/57/wind_turbines/2
[87] https://energysavingtrust.org.uk/advice/wind-turbines/

new stove should ideally be one approved by the Department for Environment, Food and Rural Affairs (Defra). For further information on open fires and stoves Defra have produced the following guide[88]. You can also visit the HETAS website[89] for help with which stove to buy and suppliers.

9.42 Depending on the scale of the appliance, an assessment in terms of air quality could be required – please contact the Environmental Protection Team for advice. Appliances should only be operated using approved/regulated fuels in order to minimise harmful emissions to the environment. The Environmental Protection Team webpage on biomass and burning provides additional guidance[90].

9.43 Further information is also available from the Energy Saving Trust[91].

Micro-CHP

9.44 A micro combined heat and power system (micro-CHP) can generate heat and electricity for a large house, a block of flats or small commercial buildings. They can be a cost effective method of providing energy to a small-medium scale development with a lower impact on the environment. It operates using a power source such as a boiler running on biomass or gas that generates electricity and heat. Whilst gas is a fossil fuel the system is considered low carbon because it uses less carbon than conventional systems that generate heat and use power from the national grid. The captured heat is then pumped around the building for water and space heating. Potential air quality and noise impacts need to be considered and assessed and the Environmental Protection Team will need to be contacted to provide advice on any assessments required. Buildings that have a relatively constant heating demand are most suitable for micro-CHP. To reduce energy loss during transfer these units should be located either in the building to be supplied with energy or in a separate building.

9.45 Further information is also available from the Energy Saving Trust[92].

Anaerobic digestion

9.46 Anaerobic digestion is the generation of heat and electricity from waste and is considered one method of managing the waste that society produces and preventing adding to landfill. Anaerobic digestion is the process of breaking down organic matter, such as food waste, sewerage, manure, fats and oils, and waste from wineries/breweries, to produce gas to be used as fuel. The by-products include fertilizer and animal bedding.

9.47 The size and scale of anaerobic digestion can vary from domestic to commercial scale. Depending on the scale of the system, this technology requires consideration of noise, odour and emissions to air among other potential environmental impacts. The generators are particularly suited to rural areas where there is easy access to the agricultural and sewerage waste used in anaerobic digestion and where issues of noise, odour and emissions can be mitigated. Anyone considering an installation is recommended to discuss proposals at an early stage not only with the Local Authority (including Planning Policy and Environmental Protection Teams),

[88] https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf
[89] www.hetas.co.uk
[90] www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/biomass-and-wood-burning/
[91] https://energysavingtrust.org.uk/advice/biomass/
[92] https://energysavingtrust.org.uk/advice/micro-combined-heat-and-power/

but also with the Environment Agency as most installations will need an exemption, or potentially a Permit to operate.

9.48 Anglia Water Bioresource Strategy 2020-2045[93] centres on the treatment of sludge from over 1,100 water recycling centres. The sludge is collected and transported to treatment centres where, through anaerobic digestion, biogas is produced from the waste to fuel engines and boilers that generate combined heat and power (CHP). The process also produces high quality products for agriculture such as fertilisers. In 2019-20 Anglian Water was able to generate around 30% of their energy from renewable sources and aims to increase this to 44% by 2025.[94]

9.49 Further information is also available from The Official Information Portal on Anaerobic Digestion[95].

[93] https://www.anglianwater.co.uk/siteassets/household/about-us/pr19-11a-anglian-water-bioresources-strategy-2020-2045.pdf

[94] www.anglianwater.co.uk/siteassets/household/about-us/public-affairs-pre-2018/aws---chp---road-to-net-zero-response.pdf

[95] www.biogas-info.co.uk

Table 6: Permitted Development and Building Regulations Considerations

Renewable Energy Source	Permitted Development	Building Regulations
Standalone solar panel installation in the grounds of a non-domestic building	The installation of standalone solar panels will not require planning permission if the scheme meets the following criteria: • It is less than 4m in height; • It is more than 5m away from the property boundary; • The area of the array is less than $9m^2$ or 3mx3m wide; • Not to be installed within the boundary of a listed building or scheduled monument. •The property is not in the Broads, AONB or Conservation Area. • There are no other standalone installations on the property. Planning permission/listed building consent may be required for any work carried out on a listed building that affects its character or setting. For further information see the General Permitted Development Order Part 14 Class K.	Part P Electrical Safety: Once connected the electrical work will need to be certified.
Solar panels mounted on a house or apartment building	The installation of building mounted solar panels will not require planning permission if the scheme meets the following criteria: •Panels should not be installed above the highest part of the roof and should project no more than 200mm from the roof slope. •Must not be fitted to listed buildings. •In Conservation Areas panels must not be fitted to the elevation that fronts the highway. For further information see the General Permitted Development Order Part 14 Class A.	Part A Structure: The roof will need to be certified as being strong enough to hold the panel(s). Part P Electrical Safety: Once connected the electrical work will need to be certified.
Domestic air source heat pump	The installation of air source heat pumps will not require planning permission if the scheme meets the following criteria: •The installation complies with Microgeneration Certification Scheme Planning Standards.	Part L Conservation of Fuel and Power: Consent for technology installation will be required.

	•It is the first installation of an air source heat pump. •It is at least 1m from the boundary. •It is not permitted on pitched roofs and must be 1m from the boundary of flat roofs. •It is not permitted within the curtilage of a Listed Building. •In a Conservation Area it must not be installed on a wall or roof that fronts a highway. For further information see the General Permitted Development Order Part 14 Class G.	Part P Electrical Safety: Once connected the electrical work will need to be certified.
Domestic ground or water source heat pumps	Planning permission will not be required for the installation of a heat pump within the grounds of the dwelling. Planning permission/listed building consent may be required for any work carried out on a listed building that affects its character or setting. If the site is located within a protected landscape planning permission may be required. For further information see the General Permitted Development Order Part 14 Class C & D.	Part L Conservation of Fuel and Power: Consent for technology installation will be required. Part P Electrical Safety: Once connected the electrical work will need to be certified.
Planning permission for building mounted wind turbines on domestic premises	The installation of building mounted wind turbines will not require planning permission if the scheme meets the following criteria: • there are no other building mounted wind turbines on site; • the installation is on a detached dwelling; • the turbine height does not exceed 3m above the highest part of the roof or an overall height of 15m and the blades do not reach a height of less than 5m above the ground; • no part of the turbine is within 5m of the property boundary; • the sweep area of the blades does not exceed 3.8m2. Planning permission/listed building consent may be required for any work carried out on a listed building that affects its character or setting. Planning permission will be required if the site is within a Conservation Area and the wind turbine is to be attached to a wall or roof slope which fronts a highway. If the site is located within a protected landscape planning permission may be required.	Part A Structure: For building mounted wind turbines the roof will need to be certified as being strong enough to hold the turbine. Part P Electrical Safety: Once connected the electrical work will need to be certified.

	For further information see the General Permitted Development Order Part 14 Class H.	
Standalone domestic wind turbines	The installation of standalone wind turbines will not require planning permission if the scheme meets the following criteria: • there are no other wind turbines or air source heat pumps on site; • wind turbine height does not exceed 11.1m; • no part of the wind turbine blade is lower than 5m above the ground; • no part of the turbine is within a distance equivalent to the height of the turbine plus 10% of the property boundary; • the sweep area of the blades does not exceed 3.8m2. Planning permission/listed building consent may be required for any work carried out on a listed building that affects its character or setting. Planning permission will be required if the site is within a Conservation Area and the wind turbine is to be installed closer to the highway than the building within the grounds. If the site is located within a protected landscape planning permission may be required. For further information see the General Permitted Development Order Part 14 Class I.	Part P Electrical Safety: Once connected the electrical work will need to be certified.
Installing a flue on a domestic building for a biomass or micro-CHP system	Planning permission is not normally needed when installing a biomass system in a house if all the work is internal. The installation of flue for a biomass or CHP system will not require planning permission if the scheme meets the following criteria: • If the flue on the rear or side elevation is not more than 1m above the highest part of the roof. • It is not a Listed Building. • In a Conservation Area it must not be installed on a wall or roof that front a highway. For further information see the General Permitted Development Order Part 14 Class E & F.	Part F Ventilation: Certification is required to ensure there is enough ventilation to create a healthy and safe environment. Part L Conservation of Fuel and Power: Consent for technology installation will be required. Part P Electrical Safety: If the technology requires an electrical connection this will need to be certified.

	The Environmental Protection Team may still need to be made aware and contacted regarding emissions to air from the appliance.	
Installing a flue on a non - domestic building for a biomass or micro-CHP system	The installation of flue will not require planning permission if the scheme meets the following criteria: •The system is less than 45 kilowatts. •It is the first flue for either a biomass or CHP system. • The flue is less than 1m above the highest part of the roof. Planning permission/listed building consent may be required for any work carried out on a listed building that affects its character or setting. If the property is in a Conservation Area planning permission will be required if the flue is to be installed on a wall or roof slope which fronts a highway. For further information see the General Permitted Development Order Part 14 Class N & O. The Environmental Protection Team may still need to be made aware and contacted regarding emissions to air from the appliance.	Part F Ventilation: Certification is required to ensure there is enough ventilation to create a healthy and safe environment. Part L Conservation of Fuel and Power: Consent for technology installation will be required. Part P Electrical Safety: If the technology requires an electrical connection this will need to be certified.

10 Construction Methods & Standards

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.2 Sustainable Construction

Waveney Local Plan (2019) policies:

WLP8.28 Sustainable Construction

NPPF (2021) paragraphs:

8, 152, 153, 154, 155, 156, 157 & 158

10 Construction Methods

Timber Framed buildings

10.1 Timber framed buildings have been constructed for centuries in England with many Tudor examples still around today. Timber framed houses are classed as non-standard or non-traditional forms of construction. Timber is popular for its natural, beautiful appearance. Exposed timber frames in barn conversions, old cottages, and modern architect-designed homes are popular.

10.2 Modern timber framed buildings can be manufactured off-site and erected within a few days on site. This can save a considerable amount of time on-site. Timber frames can generally accommodate greater levels of insulation than traditional brick and block cavity construction. Insulated timber framed walls can be space saving as they are usually not as wide as brick and block cavity walls with the same levels of insulation. Timber can be sustainably sourced from managed forests and is a renewable material. Timber is a more environmentally friendly material than brick and concrete block which both have high levels of embodied carbon.

Earth-sheltered buildings

10.3 Earth-sheltered homes are set into hills, located below ground or have earth piled up around them to cover three external walls and the roof. Buildings with earth piled up and over are called earth berms.

10.4 Earth-sheltered homes typically have a single elevation exposed, usually orientated south to maximise light and solar gains. Earth can be piled up from 20cm to a metre thick over homes.[96] Vegetation can be planted into the walls and roofs of earth-sheltered homes that support local wildlife and enable the building to blend into the landscape. The thicker the depth of earth the greater variety of plants, scrubs and trees that can be supported.

10.5 One of the biggest benefits is the earth creates a climate-controlled environment that does not overheat in the summer and remains warm in the winter. The earth also provides great noise insulation and draught-proofing.

10.6 Earth-sheltered homes must be carefully designed and constructed to prevent water penetration from the surrounding earth, prevent condensation due to a lack of ventilation and ensure there is sufficient natural daylight. Homes have to be carefully located away from tree roots that can cause damage to the building in the future. Earth-sheltered homes tend however to be constructed from reinforced concrete which is not an environmentally friendly material, but usually necessary to hold the weight of the earth. The construction of earth-sheltered homes can also be more expensive than a traditional brick and block house.

Cob Houses

10.7 Cob houses are an old, traditional form of building with walls constructed from clay, soil, straw and water. There are examples of cob buildings lasting for hundreds of years. The materials are totally natural, renewable and would traditionally have been gathered locally with no transport related pollution generated. The materials are compacted together to form

[96] www.eco-home-essentials.co.uk/earth-sheltered-home-designs.html

thick, solid walls. Norfolk clay lump is similar to cob, but the materials are usually compacted to form large blocks that then form walls.

10.8 Cob and clay lump buildings are regarded as having similar properties as earth-sheltered buildings. The thick walls regulate the temperature keeping it cool in summer and warm in winter. The thick walls also provide good noise insulation.

10.9 Modern cob walls are constructed on top of a low brick or stone plinth wall and wider cob walls can be loading bearing. Cob can easily be moulded to form curved walls to create a distinctive appearance or form standard straight walls and traditional building shapes. Walls are lime rendered externally and lime plastered internally to give a breathable and smooth finish. The method of cob and clay lump construction is considered suitable for hand-s on self builders.

10.10 Meeting modern Building Regulations using cob and clay lump construction is a challenge as there is little information on the structural and thermal properties. A new project called CobBauge involving Universities, architects and engineers is researching and testing the properties of cob walls as part of a programme on low energy construction methods that could help buildings achieve net zero carbon. The project is researching the different materials and ratios of materials that can be used to form earth walls. A new cob home is expected to be constructed and monitored in East Suffolk as part of the research.

Modern Methods of Construction (MMC)

10.11 Modern methods of construction involve constructing building elements, sections or whole rooms of a building offsite and transporting them to site to be connected together. Manufacturing offsite offers the opportunity to improve safety, the level of productivity and the quality of construction. Modern methods of construction may also be able deliver houses at a faster than traditional methods of construction.

10.12 Further information on modern methods of construction in housing is available here:

- Modern Methods of Construction: A forward-thinking solution to the housing crisis?, RICS (September 2018)[97]

Prefabricated or Modular off-site building methods

10.13 Modern methods of construction rose to public prominence in 2004 when a Huf Haus[98] was featured on Grand Designs on Channel 4. The house was designed and manufactured in Germany and transported to Walton-on-Thames where it was constructed on a pre-laid concrete base. Walls arrived with working windows and doors that could open and close and had blinds installed between the sheets of glazing. The main building went up in approximately three-and-half days.

10.14 Modular buildings are constructed from components that are manufactured in a factory and assembled on-site. Manufactured components can vary in size and scale and be anything from sections of

[97] www.rics.org/globalassets/rics-website/media/news/news--opinion/modern-methods-of-construction-paper-rics.pdf
[98] www.huf-haus.com/en-uk/

walls, floors and roofs, to entire walls or even whole rooms. The wall can arrive on site with exterior cladding, breather members, timber frame, insulation and plasterboard all fitted. Sections of a room or complete rooms can arrive on site with plumbing, electrics, fixtures and fittings, tiling and decorations.

10.15 Modular homes constructed from components in a factory are usually assembled on pre-prepared foundations/-bases on-site. The length of time to manufacture the components and then assemble them on site varies. Where wall, floor and roof components are delivered to site, and final insulation and, plastering are then carried out, a development can progress to second fix within weeks.[99] In some cases where entire completed rooms are delivered on site, homes can take as little as four days to manufacture and 8 hours to assemble.[100]

10.16 Modular buildings are not automatically more sustainable than traditional buildings. The distance to transport components to site and the environmental impact of this must be taken into consideration.

10.17 The clean, dry, controlled conditions of a factory enable components to be manufactured to a higher standard than on-site. The factory setting enables a fast and efficient production of components. In the controlled environment of the factory it is possible to use high quality sustainable materials without exposing them to the weather and minimise any possible damage. Material cut lists and the efficiency of production lines can significantly reduce the amount of material waste. Many building materials must be installed correctly for the performance of the building to benefit. For instance, correctly installing insulation is essential to achieve the full thermal benefits and associated reduction in energy demand and factory processes can reduce human error. New innovative materials and construction techniques can be introduced into the factory process without the need to retrain on site construction staff.

10.18 Some prefabricated housing companies are seeking to provide eco-friendly housing that exceeds the conventional Passive House Standards.[101] They use modern materials and have developed their own thermally efficient building components that are manufactured to a high standard.

[99] www.ttfcuk.co.uk/company-profile/
[100] https://idmh.co.uk/ourhome
[101] www.weberhaus.co.uk/eco-friendly-homes/passive-house-design/

Construction Standards

Building Regulations/ Future Home Standard

10.19 Buildings Regulation Approval is separate from planning permission. Building Regulations are minimum national, legal standards for the design and construction of buildings to ensure they are safe and structurally sound.

10.20 Following the Future Homes Standard consultations existing Building Regulation Approved Documents have been published and take effect on 15th June 2022. New homes will be required to produce less CO2 emissions through the installation of low carbon technology and the use of materials in a more energy efficient way. Approved Document Part L on the conservation of fuel and power and Approved Document Part F on ventilation have been update and an entirely new Approved Document Part O on overheating are available online here:

- www.gov.uk/government/news/new-homes-to-produce-nearly-a-third-less-carbon

10.21 The East Suffolk Council Building Control Team can provide support and advice on Building Regulations through their pre-application advice service. Information on charges, quotes, pre-application advice, making a building regulation application and more is available online here:

- www.eastsuffolk.gov.uk/planning/building-control/

BREEAM Building standards

10.22 The Building Research Establishment Environmental Assessment Method (BREEAM) was first launched in 1990 and proports to be the world's leading sustainability assessment method for masterplanning projects, infrastructure and buildings. BREEAM has developed its own method of assessing the environmental, social and economic performance of developments together with independent assessors and a system of certification. The method is used and recognised globally.

10.23 The BREEAM is delivered by British Research Establishment (BRE). The BRE website contains technical manuals that can be downloaded for free that address topics on Communities, Infrastructure, New Construction, In-Use and Refurbishment and Fit-out. BRE provides technical expertise and services on a range of matters such as energy, fire safety, building materials, systems and innovations, and security.

10.24 BREEAM works by addressing several different categories. Each category has its own issues on which it is assessed with targets. Each category is scored and awarded credits which are used to assign the development a BREEAM rating.

10.25 Developers can appoint an independent licensed BREEAM Assessor to help decide which BREEAM standard best applies to the development. The development is registered through the Assessor who then assesses the project or building to the correct BREEAM standard. A pre-assessment can be carried out prior to work starting on site and details can be submitted as part of a full planning application, an outline planning application or reserved matters application. A pre-assessment can save time and money ensuring a building is designed and constructed meets the requirements of particular rating.

10.26 As a development progresses, information should be passed to the BREEAM Assessor to review, monitor and determine compliance with the standard. The Assessor's assessment is submitted to BRE for a certification decision. The developer should receive a certificate showing the rating received and a BREEAM plaque for the building. The BREEAM certificate showing the final decision and rating can be submitted to satisfy Planning Conditions requiring a building achieve a specific BREEAM rating.

10.27 East Suffolk Local Plan policies refer to the use of BREEAM building standards. The Suffolk Coastal Local Plan policy SCLP9.2 Sustainable Construction requires non-residential developments of 1,000sqm and the Waveney Local Plan policy WLP8.28 requires all new office and school developments over 1,000sqm to achieve the BREEAM 'Very Good' standard or equivalent.

10.28 The BREEAM building standards offer a range of possible standards that developers can achieve from 'Very Good', to 'Excellent' and 'Outstanding'. The BREEAM 'Very Good' Standard does not result in a building achieving 'net zero' carbon. BREEAM can be used however to achieve higher environmental standards than the 'Very Good' standard, such as 'Excellent'. East Suffolk supports the use of BREEAM building standards for new build, conversions and all use types as a method to achieve higher levels of sustainability than those required by Building Regulations. BREEAM can be used to develop a more holistic approach to both the design, construction and use of buildings that results in sustainable buildings.

10.29 More information on BREEAM is available here:

- www.breeam.com [102]

RICS Whole Life Carbon Assessment for the Built Environment

10.30 The Royal Institution of Charter Surveyors (RICS) is a globally recognised body with qualified professionals and offers guidance on a range of issues. The RICS Whole life Carbon Assessment for the Built Environment can be used to reduce carbon emissions and achieve targets set out in Building Regulation, local planning policies, BREEAM (Building Research Establishment Environmental Assessment Method) and LEED (Leadership in Energy and Environmental Design).

10.31 The benefits of the RICS Whole life Carbon Assessment for the Built Environment are that is assesses embodied carbon emissions as wells as operation carbon emissions and identifies the overall best approach. The aim of the RICS assessment is to mitigate the impact of carbon emissions from the built environment, make carbon assessments more transparent, mainstream and reliable, and promote long-term thinking. [103]

10.32 Detailed advice is available online from RICS here:

RICS Whole life Carbon Assessment for the Built Environment

The Passivhaus Standards

10.33 According to the Passivhaus Trust, Passivhaus is the leading international low energy, design standard, with over 65,000 buildings designed, built and

[102] www.breeam.com

[103] www.rics.org/globalassets/rics-website/media/news/whole-life-carbon-assessment-for-the--built-environment-november-2017.pdf

tested to this standard worldwide[104]. Building to Passivhaus standards can provide more comfortable, healthy, quiet and usable homes with better air quality, a more constant internal temperature, more daylight, and significantly reduced energy bills for occupants compared with typical traditional builds.

10.34 The Passivhaus Trust define the fundamental principle of the Passivhaus Standard as designing a building so that thermal comfort can be achieved solely by post-heating or post-cooling the fresh air flow required for good indoor air quality, without the need for additional recirculation of air[105]. It explains that to achieve the Passivhaus Standard in the UK the design will typically need to include: very high levels of insulation, extremely high performance windows with insulated frames, airtight building fabric, 'thermal bridge free' construction, a mechanical ventilation system with highly efficient heat recovery, and the use of the Passive House Planning Package (PHPP) to model the design[106].

10.35 The former Deben High School site, which in June 2021 was granted full planning permission for the construction of 45 apartments and maisonettes and 16 houses, is also set to be built to Passivhaus Standards.

10.36 More information including other useful case studies on how Passivhaus development has been successfully delivered can be found at https://www.passivhaustrust.org.uk/.

CEEQUAL Infrastructure and civil engineering sustainability assessment

10.37 CEEQUAL stands for Civil Enginnering Environmental Quality Assessment and Award Scheme. It is an international evidence-based sustainability assessment, rating system and awards scheme for civil enginerring, infrastructure, landscaping and works in public spaces[107]. The scheme aims to achieve sustainable infrastructure that addressses climate change, carbon emissions and resilience. The scheme is delivered by the Building Research Establishment (BRE) who also deliver and operate the BREEAM Building Standards.

10.38 Self-assessments of projects are carried out by a trained assessor using the CEEQUAL manual and online assessment platform. The self-assessment is then externally verified and a CEEQUAL certificate is awarded showing the project's score and rating. More information including technical manuals and case studies can be found at www.bregroup.com/products/ceequal/

10.39 Where practically possible it is recommended that infrastructure projects use CEEQUAL sustainability tools and assessment methods to achieve the highest possible environmental standards

[104] The Passivhaus Trust (2021) *Home.* Available at: https://www.passivhaustrust.org.uk/
[105] The Passivhaus Trust (2021) *What is Passivhaus?* Available at: https://www.passivhaustrust.org.uk/what_is_passivhaus.php#3.
[106] Ibid.
[107] www.bregroup.com/products/ceequal/

11 Healthy Buildings and Places

Key Local & National Policies

Suffolk Coastal Local Plan (2020) policies:

SCLP9.2 Sustainable Construction

SCLP11.1 Design Quality

Waveney Local Plan (2019) policies:

WLP8.28 Sustainable Construction

WLP8.29 Design

WLP8.31 Lifetime Design

NPPF (2021) paragraphs:

8, 92, 98, 126, 130, 131, 133, 152, 153 & 157

11 Healthy Buildings and Places

11.1 In addition to environmental sustainability benefits, sustainably constructed developments can also provide 'co-benefits' for the health and wellbeing of the occupants and users of the buildings and spaces by ensuring a 'win/win' design approach. Providing highly energy-efficient dwellings through producing well-insulated, air-tight (but ventilated) and water-tight shells reduces health risks associated with exposure to damp, cold and poor air quality (due to poor circulation and refreshment of air), and the indirect health risks associated with households paying high energy and water bills. Reduced pressures on health and wellbeing not only mean better quality of life for occupants, but also less pressure on local health services.

11.2 There are examples of possible opportunities for securing co-benefits for environmental and social sustainability, including:

- incorporating on-site green infrastructure, which benefits people and wildlife, provides green amenity space and/or natural vistas. On-building green infrastructure (e.g. green roofs) may also have the added benefit of improving the building's thermal insulation. The use of trees and plants for sustainable drainage, biodiversity net gain, and shading/cooling purposes which also produces an edible (e.g. fruit or nut bearing trees, culinary herbs) also supports nutritional health. Where applicable, these benefits can help to meet Paragraph 131 of the NPPF, which recognises the multiple benefits of trees and expects these to be incorporated in developments.
- the use of appropriately-located glazing for solar gain in the interests of warming buildings, as this also brings in more natural light and connects the occupants/users of the building to their wider natural and social environment. Exposure to natural light provides health and wellbeing benefits. Careful consideration should also be given to avoiding negative consequences on occupants/users such as glare from natural light.
- using internal wall and floor construction materials and techniques that incorporate both excellent thermal and sound insulation, particularly for noise sensitive development such as housing (particularly for flats or Houses in Multiple Occupation), schools, libraries, hospitals, etc.
- using locally sourced materials, which as well as reducing transport costs and carbon emissions, stimulates the local economy, and therefore the wider health and wellbeing of the local community.
- being built to last – a building that has been constructed to last at least several lifetimes offers the owner a secure asset that can be passed down through generations.
- using highly energy efficient and sound insulating doors and windows, which are typically thicker and more robust, may also add to the overall security of the building.
- using external and/or internal lighting solutions that, as well as being highly energy-efficient in terms of electricity use, are also designed to produce the minimum amount of light needed to fulfil their function (e.g. porch lights that produce just enough light to identify the correct key for the door, but not enough to disturb neighbours), or that are controlled by timers, also benefit the health of people and wildlife by limiting the impact of light pollution after dark.
- using clerestory windows, transom windows, lightwells, roof lanterns, skylight windows and sun tunnels as means to bring solar heating and light into the building (which are particularly useful in areas otherwise difficult to bring heat or light into), also incentivises the use of higher ceilings in those spaces. Higher ceilings have been linked to a greater

sense of 'psychological freedom' and creativity, which are beneficial for wellbeing and productivity;

- using an approach to the building's construction which optimises the placement of loadbearing walls so that the building is:

  a) less likely to need to be structurally adapted, extended or demolished, which then necessitates the use of more materials and the embodied carbon in the construction process, and

  b) where structural adaptations or extensions are still necessary, the building has been designed to be as flexible as possible for the process, keeping different future development options open.

  this built-in flexibility not only future proofs the building as a more flexible asset over its lifetime, it also potentially enhances the value of the space to the owners/occupants and future owners/occupants.

- addressing the challenge of heating larger open plan living areas whilst providing the co-benefit of meeting the need created by the shift towards more working from home by creating a home office room or space that can be room-divided when needed (e.g. using sliding double doors). However, this should not be at the expense of an adequately sized/shaped living space for the household to socialise with each other. Where larger spaces are required in the home or in non-domestic buildings, underfloor heating is likely to be more energy efficient and more effective at heating a space than traditional radiators, and the experience of warmth from the floor will contribute positively to the comfort and amenity of the space.

- for Houses in Multiple Occupation, it is recommended that there is sufficient space in the bedrooms for a working from home work station (desk, chair, lamp, etc.) to be set up and safely manoeuvred around so that occupants have the option to work/study from home. This may also have the added benefit of reducing heating costs as occupants are able to work in smaller spaces (their bedrooms) rather than larger communal spaces (e.g. dining room);

- the provision of suitable spaces within the development for food growing can reduce 'food miles' as well as providing biodiversity, health and educational benefits. This could be anything from providing planter boxes, to providing a community-scale allotment site.

- using computerised systems to manage the operation of internal systems and monitor energy use/costs incurred, as this may help occupants feel more in control of their home and their financial expenditure by being able to monitor and/or make adjustments to reduce it where needed.

11.3 However, much more than the listed examples can be considered and achieved for supporting health, wellbeing and safety through the overall design approach to buildings, open spaces and the wider public realm. A well-considered layout, with adequate internal space, storage space, natural light, multiple-aspect windows for views and through-ventilation, orientation for solar gain, adequately-sized and fitted kitchens, secure cycle parking, and access to outdoor space can provide more efficient, ergonomic, productive, healthy and attractive developments.

11.4 Guidance on developing for healthy, safe, and active environments will be provided in the Council's forthcoming Healthy Environments Supplementary Planning Document (planned to be prepared during 2022/23).

12 Making a Planning Application

12 Making a Planning Application

12.1 To achieve a sustainable development a range of environmental issues relating to design and construction need to be considered together with National and Local Planning Policies. A Sustainable Development Checklist has been provided in Appendix D to assist applicants when designing and developing a proposal and submitting a planning application. The checklist aims to assist in a holistic approach to sustainable development. The checklist is designed to prompt applicants to consider a variety of sustainable construction issues together with other aspects of a proposal that contribute to achieving a sustainable development.

12.2 East Suffolk Council offers a pre-application advice service[108]. Pre-application advice is not compulsory, but it is a good method of getting feedback on development proposals and increasing the chances of successful planning application. Details of the pre-application enquiry process are available online.

Energy Statement – Demonstrating a 20% reduction in CO_2 emissions below the Target CO_2 Emission Rate

12.3 The requirement under policy SCLP9.2 for an Energy Statement demonstrating a 20% reduction in CO_2 emissions below the Building Regulation target CO_2 emission rate will cease when the Future Homes Standard comes into force amending Part L (conservation of fuel and power) Building Regulations for new homes.

12.4 The Suffolk Coastal Local Plan policy SCLP9.2 requires all new residential developments of more than 10 dwellings to achieve higher energy efficiency standards that result in a 20% reduction in CO_2 emissions below the Target CO_2 Emission Rate (TER) set out in the 2013 Building Regulations. The policy requirement is in accordance with the Planning Practice Guidance on Climate Change (March 2019) that permits planning policy to set energy performance standards higher than Building Regulation, up to the equivalent of level 4 of the Code for Sustainable Homes.

12.5 The Council strongly recommends that developers appoint an Energy Specialist as early as possible in the design process. This will assist with maximising opportunities for sustainability and minimise the risk of not achieving planning policy compliance. Not considering sustainability early may result in a developer retro-fitting their development and incurring unnecessary costs to comply with planning policy and/or discharge a planning condition.

12.6 The Target CO_2 Emission Rate is defined in Building Regulations Part LA: Conservation of fuel and power in new dwellings (2013 edition with 2016 amendments) as the "minimum energy performance requirements for a dwelling". The TER is based on CO_2 emissions from the provision of space heating and hot water, use of pumps and fans, and use of internal lighting. The calculations for the baseline and 20% improvement Target CO_2 Emission Rate (TER) for developments and the Dwelling Emission Rates (DER) should be carried out in compliance with Building Regulations. Planning Policy SCLP9.2 seeks to reduce CO_2 emissions and improve energy efficiency of all the dwellings on site.

12.7 Building Regulations require each new dwelling to provide a Standard Assessment Procedure (SAP) Energy Performance certificate. Sample SAP calculations and certificates may be submitted for comparison to show the

[108] www.eastsuffolk.gov.uk/planning/planning-applications-and-enforcement/find-out-if-you-need-planning-permission/pre-application-advice-service/

increase energy efficiency compared to Building Regulations. However, calculations are required to demonstrate a 20% reduction in CO_2 emissions below TER. Applicants will need to be mindful of Government's intention to ban gas boilers in new homes from 2025 and proposed changes to the carbon intensity of electricity SAP, which takes into account the decarbonisation of electricity.

12.8 Applicants should avoid varying energy efficiency standards and DER across a development – it should be assessed at the individual dwelling level. However, where a building contains multiple dwellings (e.g. apartment blocks or terraced housing), it is acceptable to assess TER based on the average energy performance of all dwellings within the building. The area weighted average DER and TER must be calculated in accordance with the block averaging methodology defined in clauses 2.7 and 2.16 of Approved Document L1A.

12.9 When renewable energy technologies are proposed as part of a development to achieve carbon reduction requirements they should be an integral part of the design. The technologies should be clearly shown on relevant drawings, showing the type and location of technologies. The impact any technologies will have, such as noise, should be considered and assessed early at the design stage with mitigation measures proposed as necessary.

12.10 The Energy Statement should include the following completed table providing a concise summary of the results of the calculations carried out in accordance with Building Regulations. (A larger, full sized table is available for use in Appendix B.)

Table 7: Energy Statement template

Unit number/address	Target Emission Rate (TER)	Dwelling Emission Rate (DER)	% Improvement on Part L 2013

12.11 It is acknowledged that construction materials, methods and details can change during the construction of a building depending on the availability of building materials and other issues. To ensure sustainability measures that achieve a 20% reduction in CO_2 emissions below TER are implemented a planning condition will be attached to the any decision notice. A standard planning condition will require developers to submit details confirming the sustainable measures delivered onsite. Details of standard planning condition wording is available in Appendix C.

Sustainability Statement requirements

12.12 Policy WLP8.28 requires new residential developments of 10 or more dwellings and commercial developments of 1,000sqm or more floorspace to demonstrate consideration for the following sustainable measures:

- Improved efficiency of heating, cooling, and lighting of buildings by maximising daylight and passive solar gain through the orientation and design of buildings.
- Sustainable water management measures such as the use of sustainable drainage systems, green roofs and/or rainwater harvesting systems. Evidence of a proposal's compliance with water efficiency requirements can be incorporated into a

Sustainability Statement, or submitted as a separate Water Statement.

- Locally sourced and recycled materials.
- Renewable and low carbon energy generation into the design of new developments. Larger schemes should explore the scope for district heating.
- Minimising construction waste, including designing out waste during the design stage, selecting sustainable and efficient building materials and reusing materials where possible.
- Accessible and unobtrusive sustainable waste management facilities such as adequate provision of refuse/recycling/composting bin storage.
- A show home demonstrating environmentally sustainable options which can be purchased and installed in homes bought off-plan.

12.13 These measures are not an exhaustive list of the ways to reduce carbon emissions or increase the sustainability of a building. Applicants are encouraged to consider all the latest methods and measures to achieve a building that is sustainable to construct and operate.

12.14 It is recognised that construction materials, methods and other factors can change during development. Developers are advised to contact the Planning Service if they are unable to implement any of the sustainability measures that formed part of a planning application. Changes to a proposal may require planning permission. To ensure sustainability measures are implemented on site a standard planning condition will be attached to decision notices. The planning condition will require developers submit information confirming the sustainable measures delivered onsite. Details of standard planning condition wording is available in Appendix C.

Accessible and Adoptable Dwellings

12.15 National Planning policy allows local planning authorities to set optional technical standards for new housing regarding the accessibility and adaptability of dwellings and for wheelchair housing standards. The Local Plans both have planning policy requirements to provide dwellings that meet Requirement M4(2) of the Building Regulations for accessible and adoptable dwellings. The requirements will potentially enable residents to remain living in their own homes longer.

12.16 Suffolk Costal Local Plan policy SCLP5.8: Housing Mix requires 50% of dwellings to meet Part M4(2) and Waveney Local Plan policy WLP8.31: Lifetime Design requires 40% of dwellings to meet Part M4(2). Dwellings that meet M4(3) of Part M of the Building Regulations will be supported and can count towards the requirement.

12.17 Standard Condition Wording for planning applications is provided in Appendix C and full details are expected to be provided with Reserved Matters and Full planning applications.

Standard Planning Conditions

12.18 This SPD contains standard planning conditions that are designed to assist planning officers and planning applicants, which are available in Appendix C. The standard conditions help planning officers deal with applications in a consistent and efficient manner and ensure the delivery of sustainable

construction measures detailed in planning policies SCLP9.2 and WLP8.28. The standard conditions also offer applicants a degree of consistency and certainty regarding the manner in which their applications will be processed and determined.

12.19 The standards planning conditions that relate to sustainable construction planning policies SCLP9.2 and WLP8.28 are listed in Appendix C of this document. The list is not exhaustive, and some planning approvals may require more than one conditions. Where necessary conditions will be amended, or "new" "non-standard" conditions drawn up to suit the needs of the proposal and application. Some planning conditions require text to be insert or deleted depending on the circumstances. The list covers the circumstances where a planning condition will be needed.

Viability and feasibility

12.20 The carbon reduction requirements of the Sustainable Construction Policy SCLP9.2 in the Suffolk Coastal Local Plan are subject to viability and feasibility considerations and the sustainable measures supported in the Sustainable Construction Policy WLP8.28 in the Waveney Local Plan are subject to practically. The relevant requirements of the Sustainable Construction policies should be integrated early into the design and layout of the scheme to maximise the benefits of sustainable measures and minimise their cost. Early consideration of passive design measures and renewable technologies is recommended. Early consideration enables applicants to weight the potential advantages of different approaches and improve energy efficiency as much as possible.

12.21 Both Local Plans and the requirements of the planning policies within were viability tested during the preparation of the Local Plans. The starting point is therefore that the policy requirements are viable. Applicants are strongly advised to engage early with the Planning Service if the requirements of the planning policies are not considered viable and feasible and full policy compliance is not possible, in order to agree in principle whether there are any acceptable alternative ways a development can mitigate the impact of climate change and achieve the aims of the Council's sustainability policies and environmental objectives. Early engagement can also help minimise delays during the formal planning application process.

12.22 Information on the requirements for viability assessments is set out in Appendix G of the Suffolk Coastal Local Plan and Appendix 5 of the Waveney Local Plan.

Water Statement requirements

12.23 A statement that demonstrates compliance with the water efficiency policy criteria of either policy SCLP9.2 or WLP8.28 (as relevant) must be submitted. The statement should clearly show what measures have been introduced to achieve the 110 litre/ person/ day water efficiency standard. The statement can be submitted as part of a Sustainability Statement.

12.24 Compliance will be secured with the agreement of the applicant through a Planning Condition attached to the decision notice. Details of standard planning condition wording is available in Appendix C.

Sustainable Drainage Strategy requirements

12.25 All development proposals that are required in policies SCLP9.6 or WLP8.28 (as relevant) to incorporate a sustainable drainage system (SuDS) should include a Sustainable Drainage Strategy as part of the planning application. The Sustainable Drainage Strategy may be included either as part of the

application's overall Sustainability Statement (for Waveney Local Plan area proposals) or separately (for Suffolk Coastal Local Plan area proposals).

Noise, transport and air pollution

12.26 The construction phase of a new development, whether large or small, residential or commercial could have environmental impacts on existing residents and neighbours. For many developments therefore a Construction Management Plan (CMP) should be prepared and submitted for approval, ideally at the planning application stage, to set out how environmental impacts will be controlled and managed during this phase.

12.27 The CMP should in particular deal with noise, transport and air quality. With respect to noise, the document should set out matters to include: working times, plant types, control measures that may be required (e.g. acoustic barriers/screens, attenuators etc.), and a noise complaints procedure.

12.28 Given dry conditions that often prevail in East Suffolk, dust impacts can be a significant problem during the construction phase, and therefore should also be addressed within the CMP. Measures should include having an adequate supply of water on site at the commencement of development, and a range of equipment and techniques for the control of dust emissions.

12.29 For larger sites there may need to be an assessment of transport (perhaps also within a sustainability statement), and movement of materials. As discussed previously, re-use of on-site materials could reduce the volume of vehicle movements associated with the construction phase, and in turn reducing emissions.

12.30 If there is uncertainty about new development and the implications of noise or air pollution it is recommended that the Council's Environmental Protection Team be contacted.

Future changes to Building Regulations

12.31 It is recognised that changes to Building Regulations may impact the requirements and implementation of the Planning Policies in the Local Plans. Further technical guidance may be produced in the future in response to changes once they adopted.

Appendix A

Evidence Base & Further Guidance

Suffolk Coastal Local Plan evidence base[109]:

- Strategic Flood Risk Assessment (April 2018)
- Cross Boundary Water Cycle Study (January 2019)
- Suffolk Coastal Whole Plan Viability Report (January 2019)

Waveney Local Plan evidence base[110]::

- Cycle Strategy (July 2016)
- Green Infrastructure Strategy (July 2015)
- Open Space Needs Assessment (July 2015)
- Strategic Flood Risk Assessment – Level 1 (April 2018)
- Strategic Flood Risk Assessment – Level 2 (April 2018)
- Renewable Energy and Sustainable Study (November 2009)
- Water Cycle Strategy (June 2017)
- Broads Landscape Sensitivity Study for Renewables and Infrastructure (July 2012)
- Whole Plan Viability Assessment (March 2018)

[109] www.eastsuffolk.gov.uk/planning/planning-policy-and-local-plans/local-plans/local-plan-evidence-base/
[110] www.eastsuffolk.gov.uk/planning/planning-policy-and-local-plans/local-plans/local-plan-evidence-base/

- The East of England Renewable and Low Carbon Energy Capacity Study (DEEC, 2012)

  www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/Document-Library/Infrastructure/east-of-england-renewable-energy-capacity-study.pdf

Historic and Listed Buildings guidance

- Energy Efficiency and Historic Buildings: How to Improve Energy Efficiency, Historic England (2018)

  https://historicengland.org.uk/images-books/publications/eehb-how-to-improve-energy-efficiency/

- Energy Efficiency and Historic Buildings: Application of Part L of the Building Regulations to Historically and Traditionally Constructed Buildings, Historic England (2017)

  https://historicengland.org.uk/images-books/publications/energy-efficiency-historic-buildings-ptl/

- Historic Environment SPD, East Suffolk Council (June 2021)

  www.eastsuffolk.gov.uk/assets/Planning/Planning-Policy-and-Local-Plans/Supplementary-documents/Historic-Environment-SPD/Historic-Environment-SPD-reduced.pdf

- Solar PV and Planning / Building Regulations in Conservation Areas or on Listed Buildings, East Suffolk Council, 2021

  www.eastsuffolk.gov.uk/planning/design-and-conservation/installing-solar-photovoltaics-in-a-conservation-area/

Other sources of guidance:

- Planning Responsible retrofit of Traditional Buildings, Sustainable Traditional Buildings Alliance (STBA) (2015)

  https://historicengland.org.uk/images-books/publications/planning-responsible-retrofit-of-traditional-buildings/responsible-retrofit-trad-bldgs/

- Good Practice Guidance: Sustainable Design and Construction, BREEAM (August 2012)

  https://tools.breeam.com/filelibrary/BREEAM%20and%20Planning/Good_Practice_Guidance_-_Sustainable_Design_and_Construction.pdf

- Place-Based Approaches to Climate Change, RTPI (March 2021)

www.rtpi.org.uk/media/8105/2place-based-approaches-to-climate-change_final.pdf

- Guide 4: Masterplanning for Net-Zero Energy, TCPA (March 2016)

  www.tcpa.org.uk/Handlers/Download.ashx?IDMF=60228049-dbb0-411d-bf93-82fb7b7dc4f8

- Ensuring Place-Responsive Design for Solar Photovoltaics On Buildings: A good practice guide for designers, manufacturers and installers, CPRE (October 2016)

  www.cpre.org.uk/wp-content/uploads/2019/11/Place-ResponsiveZDesignZforZSolarZPhotovoltaics.pdf

- Climate Emergency Design Guide, London Energy Transformation Initiative (LETI) (Jan 2020)

  https://b80d7a04-1c28-45e2-b904-e0715cface93.filesusr.com/ugd/252d09_3b0f2acf2bb24c019f5ed9173fc5d9f4.pdf

- Net Zero Carbon Toolkit, Levitt Bernstein, Elementa, Passivhaus Trust and Etude commissioned by West Oxfordshire, Cotswold and Forest of Dean District Councils, funded by the LGA Housing Advisers Programme (July 2021)

  https://cotswold.gov.uk/media/05couqdd/net-zero-carbon-toolkit.pdf

- AVO Residential Design Guide, The Association of Noise Consultants (Jan 2020) (Interactions between noise, ventilation and overheating)

  www.association-of-noise-consultants.co.uk/avo-guide/

- Biomass and wood burning » East Suffolk Council website

  www.eastsuffolk.gov.uk/environment/environmental-protection/air-quality/biomass-and-wood-burning/

- Open fires and wood-burning stoves - a practical guide (defra.gov.uk), Defra (January 2019)

  https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1901291307_Ready_to_Burn_Web.pdf

- HETAS | The solid fuel safety and standards organisation | Stoves Biomass

  www.hetas.co.uk

Other evidence may need to be considered as part of a planning application and these are referred to in the relevant sections in this document. Local sources of information may be relevant to a particular site or application and should be referred to on a case by case basis.

Appendix B

Sustainability Statement/Energy Statement TER Template

The template relates to the requirement for a 20% reduction in CO_2 emissions below the TER set out in Building Regulations in policy SCLP9.2 of the Suffolk Coastal Local Plan.

To assist Planning Officers in checking submitted information meets the requirements of policy SCLP9.2, applicants are requested to use the template below. The template is designed to ensure the information provided in applications in clear and consistent. Subject to the information provided in an application, this level of detailed information may not be required for outline planning applications, but will required for Full Planning Applications and Reserved Matters Applications in accordance with the conditions set out in Appendix C.

Unit number/address	Target Emission Rate (TER)	Dwelling Emission Rate (DER)	% Improvement on Part L 2013

Appendix C

Standard Condition wording

Standard Planning Condition wording for the Water Efficiency Standard **To be applied to all new residential developments**	
Condition	Prior to occupation, evidence of how the required water efficiency standard of 110 litres per person per day will be achieved shall be submitted to and approved in writing by the Local Planning Authority.
Reason	To ensure that the finished dwelling(s) comply with Policy SCLP9.2 of the East Suffolk Council – Suffolk Coastal Local Plan (2020) / Policy WLP8.28 of the East Suffolk Council – Waveney Local Pan (2019) (delete as appropriate), and to ensure Building Control Officers and Independent Building Inspectors are aware of the water efficiency standard for the dwelling(s).
Standard Planning Condition wording for a Sustainability Statement Outline planning applications for residential developments of 10 or more dwellings or commercial schemes of 1,000sqm or more floorspace in the former Waveney area. (If information regarding appearance, landscaping or layout is included, it may be possible to have discussions about the orientation of buildings, maximising daylight and passive solar gain, sustainable water management, and renewable and low carbon energy generation etc at the outline planning application stage.)	
Condition	Concurrent with the first reserved matters application, a detailed Sustainability Statement shall be submitted to and approved in writing by the Local Planning Authority. The identified measures shall be implemented prior to occupation and thereafter be retained and maintained in their approved form.
Reason	To ensure the finished development implements the approved sustainable measures in compliance with the requirements of Policy WLP8.28 of the East Suffolk Council – Waveney Local Plan (2019).
Standard Planning Condition wording for Energy Statements (including 20% reduction is CO_2 emissions) Outline Planning Applications in the former Suffolk Coastal area.	
Condition	Concurrent with the first reserved matters application, an Energy Statement shall be submitted to and approved in writing by the Local Planning Authority and include details demonstrating how a 20% reduction in CO_2 emissions below the Target CO2 Emission Rate (TER) set out in Building Regulations is achieved. The identified measures shall be implemented in accordance with the approved statement, and thereafter be retained and maintained in their approved form.

Reason	To ensure the finished development implements the approved sustainable measures to comply with Policy SCLP9.2 of the East Suffolk Council – Suffolk Coastal Local Plan (2020).
Full Planning Applications in the former Suffolk Coastal area.	
Condition	Prior to commencement of the hereby approved development, an Energy Statement shall be submitted to and approved in writing by the Local Planning Authority and include details demonstrating how a 20% reduction in CO_2 emissions below the Target CO2 Emission Rate (TER) set out in Building Regulations is achieved,. The identified measures shall be implemented in accordance with the approved statement, and thereafter be retained and maintained in their approved form.
Reason	To ensure the finished development implements the approved sustainable measures to comply with Planning Policy SCLP9.2.
Standard Planning Condition wording for BREEAM Certification (where applicable) Outline Planning Applications.	
Condition	Concurrent with the submission of the reserved matters application, a British Research Establishment Environmental Assessment Method (BREEAM) new-build design stage interim rating and certificate of assessment demonstrating the building(s) will achieve at least the 'Very Good' standard or equivalent, shall be submitted to and approved by the Local Planning Authority, unless otherwise agreed in writing.
Reason	To ensure the development complies with Planning Policy SCLP9.2 / WLP8.28 (delete as appropriate).
Full Planning Applications and Reserved Matters.	
Condition	Prior to first occupation and/-or use of the hereby permitted development a British Research Establishment Environmental Assessment Method (BREEAM) New Build Post Construction Stage (PCS) final rating and certificate of assessment demonstrating the development achieved the 'Very Good' standard or equivalent shall be submitted to and approved in writing by the Local Planning Authority, unless otherwise agreed in writing.
Reason	To ensure the development complies with Planning Policy SCLP9.2 / WLP8.28 (delete as appropriate).
Standard Planning Condition wording for M4(2) Homes Outline Planning Applications for residential developments of 10 or more dwellings in the former **Suffolk Coastal** area.	
Condition	An application for the approval of reserved matters shall include provision for 50% of all dwellings (including affordable dwellings) to meet the requirements of M4(2) of Part M of the Building Regulations for accessible and adaptable dwellings. Drawings and/ or documents shall list which units/ plots meet the M4(2) (and/or M4(3) standards where applicable).

Reason	To ensure the development complies with Planning Policy SCLP5.8.
Outline Planning Applications for residential developments of 10 or more dwellings in the former **Waveney** area.	
Condition	An application for the approval of reserved matters shall include provision for 40% of all dwellings (including affordable dwellings) to meet the Requirements of M4(2) of Part M of the Building Regulations for accessible and adaptable dwellings. Drawings and/ or documents shall list which units/ plots meet the M4(2) (and/or M4(3) standards where applicable).
	To ensure the development complies with Planning Policy WLP8.31.
Full Planning Applications and Reserved Matters for all new residential developments of 10 or more dwellings.	
Condition	The hereby approved development must include provision for 40%/50% (delete as appropriate) dwellings, including affordable dwellings, that meet the requirements of M4(2) (or M4(3) of Part M of the Building Regulations, where applicable) for accessible and adaptable dwellings. Drawings and/or documents shall list which units/plots meet the M4(2) (or M4(3) standards) and shall be submitted to and approved in writing by the local planning authority prior to development of each phase.
Reason	To ensure the development complies with Planning Policy SCLP5.8 / WLP8.31 (delete as appropriate), ensure awareness and enforcement of requirements by Building Control/ Building Inspectors and enabling monitoring.

Appendix D

Sustainable development checklist

The checklist aims to assist in delivering sustainable development. The list is not exhaustive and not all questions will be relevant in all cases, depending on the Local Plan area and the type of development.

	Question	Tick – Yes, Partly, No	Comments
Energy efficiency and carbon reduction	Have you submitted an interim and/ or final Energy/ Sustainability Statement demonstrating a 20% reduction in CO2 emissions below the TER in Building Regulations?		
	Have you included an Energy Table within the Energy/ Sustainability Statement listing the unit number, TER achieved and % improvement on Part L 2013?		
	Have you submitted an Energy/ Sustainability Statement demonstrating how sustainable measures have been incorporated?		
	Have you used the Energy Hierarchy (Be Lean, Be Clean, Be Green) to achieve improved sustainability?		
	Have you submitted a Viability and Feasibility Statement to justify the exceptional circumstance required for not providing an Energy/ Sustainability Statement or introducing any sustainable measures in the development?		
Materials	Have you carried out a RICS Whole Life Carbon assessment for the built environment (or similar) for the proposed development?		
	Are there any onsite buildings that could be reused as part of the development?		
	Have you considered building materials made with a recycled content?		
	Have you considered using recycled, reclaimed or renewable materials?		
	Have the materials been sourced responsibly?		
	Have you considered building using materials that can be recycled when the building comes to the end of its life?		
Construction methods and standards	Are you going to provide a BREEAM Design stage certificate and Post Construction stage certificate that can be secured through a Planning Condition?		
	Have you considered constructing to Passivhaus standards?		
	Have you considered constructing a zero carbon or off-grid development?		
	Have you considered modular or off-site constructions measures to achieve increased sustainability?		

Siting, form and orientation	Have you demonstrated how the building's orientation maximises the use of natural daylight, solar gain and natural ventilation?		
	Have you included measures to prevent overheating?		
	Have you considered the orientation and quantity of glazing on different elevations?		
	Have you considered the impact of the building form (ratio of the external building surface area to the internal floor area) on energy efficiency?		
Renewable or low carbon energy	Does the proposal include any renewable or low carbon energy technology?		
	Is your proposal future-proofed against the Government's intention to ban new gas boilers in new developments from 2025?		
	Are you providing instructions and guidance for the occupant to help ensure the efficient use of the technology installed?		
	Are there any market based incentives for energy?		
Historic Environment	Is the building Listed?		
	Is the development in a Conservation Area?		
	Are there any Article 4 directions?		
	Have you consulted the Historic Environment SPD?		
Nature and Wildlife	Is the development in or near a Special Areas of Conservation (SACs)?		
	Is the development in or near a Special Protection Areas (SPAs)?		
	Is the development in or near a Ramsar sites?		
	Is the development in or near a Area of Outstanding Natural Beauty (AONB), National Nature Reserve (NNR)?		
	Is the development in or near the Broads?		
	Is the development in or near a Site of Special Scientific Interest (SSSI)?		
	Is the development in or near a County Wildlife Site (CWS)?		
	Is the development in or near a Local Nature Reserve (LNR)?		
	Does the development achieve environmental/ biodiversity net gain?		
	Does the development include brown, green or biodiverse roofs or walls?		
	Does the development include bird boxes?		
	Does the development include swift nesting bricks?		
	Does the development include bat boxes?		
	Does the development include hedgehog holes?		
	Does the development include species rich grass lands?		
	Does the development include any or other measures to support wildlife?		

Sustainable Travel	Have you included a Travel **Plan if required by Planning policy WLP8.21 Sustainable Transport in the Waveney Local Plan or policy SCLP7.1 Sustainable Transport in the Suffolk Coastal Local Plan**?		
	Have you demonstrated that you have considered the principles in the Suffolk Design: Streets Guide?		
	Have you consulted the East Suffolk Cycling and Walking Strategy?		
	Does the development provide secure, onsite cycle storage?		
	Does the development have regard for the Suffolk County Council Parking Standards?		
	Does the development provide electric charging points for vehicles?		
Water conservation	Have you included a Water Statement (as a stand-alone document or within the Energy/ Sustainability Statement, Design and Access Statement or the Sustainable Drainage Strategy)?		
	Have highly water efficient fittings been used to ensure lower water use and costs for occupants?		
	Does the Water Statement confirm the dwelling achieves a 110 litres/person/day water efficiency?		
	Does the Water Statement confirm water availability, use of water efficiency and re-use measures?		
	Has water-smart landscaping been incorporated into the landscape design (such as plants that are not dependant on additional water)?		
Flood Risk and Sustainable Drainage systems	Have you provided a Sustainable Drainage Strategy?		
	Has Sustainable Drainage Strategy been incorporated into the landscape design for the development?		
	Have you included a site specific Flood Risk Assessment including a sequential test/exception test.		
Waste	Have you included information on how you plan to reduce onsite construction waste?		
	Have you demonstrated use of the Waste Management Hierarchy?		
	Have you provided on site waste storage facilities for the occupants?		
	Have you considered how the materials in any existing buildings can be reused?		
Healthy Buildings and Places	Have you maximised energy and water efficiency in the materials, technologies and methods used to support future occupants' health, wellbeing and reduce their housing costs?		
	Has/ve the dwelling(s) been insulated, solar gain/shade managed, and ventilated to stabilise the internal temperature, reduce moisture, and ensure sufficient fresh air circulates throughout the property?		

	Have windows been optimally placed for increasing a sense of security over access to the property (where applicable), attractive views, natural surveillance of communal spaces and to provide ventilation to areas of the building where excess heat may accumulate (e.g. kitchens)?		
	Have you maximised the local economic benefit of the build by sourcing materials locally?		
	Have you considered how to make the building more flexible and adaptable for future uses, alterations or extensions to the building?		
	Have you maximised the sustainable urban drainage and amenity value of your landscaping/sustainable urban drainage system by using a both functional and attractive planting scheme?		

Appendix E List of Photograph Credits

Photos are sourced from East Suffolk Council, unless referenced below.

Page 22 Planted ditch, former Deben High School development, Felixstowe (Source – Tate Hindle Architects for East Suffolk Council) www.tatehindle.co.uk

Page 22 Bridge over rainwater garden, Deben High School development, Felixstowe (Source – Tate Hindle Architects for East Suffolk Council) www.tatehindle.co.uk

Page 28 Computer model of proposed Passivhaus development, former Deben High School development, Felixstowe (Source – Tate Hindle Architects for East Suffolk Council) www.tatehindle.co.uk

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