

Renewable and Low Carbon Technologies



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1. Introduction

- 1.1.1 The Council has prepared this draft Supplementary Planning Document (SPD) to provide additional guidance to planning policies for renewable and low carbon technologies in the Approved Maldon District Local Development Plan (2014-2029) (LDP). The Council will seek to manage renewable and low carbon technology developments and seek to reduce carbon emissions in new developments in accordance with Policies D2 and D4. This document is not providing new policies, but offering additional guidance to the current policies of the LDP.
- 1.1.2 This SPD is intended to provide information to a number of users within the District including developers, voluntary organisations, businesses, residents, community groups and public sector bodies.
- 1.1.3 This SPD offers technical guidance to help applicants by providing advice on matters needing to be addressed in order for renewable and low carbon technology applications to be submitted successfully. The technical guidance is to be used also as a tool for decision makers when assessing the suitability of proposals.

1.2 Purpose of Supplementary Planning Documents (SPDs)

- 1.2.1 The primary function of an SPD is to add further detail to specific policies contained within statutory planning policy documents, such as the Local Development Plan and national planning guidance. A SPD may cover a particular topic or theme, or it can be specific to certain places or developments.
- 1.2.2 An SPD should only be necessary where their production can help to bring forward sustainable development at an accelerated rate. They must not be used to add financial burdens on development. This SPD provides further guidance on how to deliver renewable energy and low carbon projects efficiently in a cost effective way.
- 1.2.3 Once the SPD has been adopted by the Council, its contents become a material consideration when making decisions on planning applications.
- 1.2.4 The role given to the Renewable and Low Carbon Technologies SPD will be that of technical guidance for planning applications to provide direction and clarity on delivering projects in accordance with Policies D2 and D4.

Consultation

- 1.2.5 The Town and Country Planning (Local Planning) (England) Regulations 2012 state that the Council must consult stakeholders and the community before they can adopt an SPD.
- 1.2.6 This document was subject to a 6 week consultation, however is not subject to an independent examination. Therefore although SPDs carry material weight in making planning decisions, they carry less weight than Development Planning Document's (DPD), which are subject to independent examination.

The consultation exercise for this SPD had run from 29/01/2018 to 09/03/2018.

- 1.2.7 There were a variety of ways to respond to the consultation:
- Online by visiting: www.maldon.gov.uk
 - By filling out and returning a response form
 - By emailing a response form to: policy@maldon.gov.uk
 - By posting a response form to: Renewables SPD Consultation, Planning Policy, Maldon District Council, Princes Road, Maldon, Essex, CM9 5DL
- 1.2.8 The final version of this document was amended prior to adoption to reflect some or all of the following:
- comments received during the consultation period for this SPD
 - any changes to government policy via the NPPF and PPG
- 1.2.9 This document was then taken before Full Council in Spring 2018 to seek approval for adoption.
- 1.2.10 A Sustainability Appraisal and Habitats Regulation Assessment have been completed and consulted on for the Approved Maldon District LDP. These documents are available to view at www.maldon.gov.uk/LDP. As the SPD supports the policies of the Approved LDP, there is no further need to undertake a separate Sustainability Appraisal or Habitats Regulations Assessment for the SPD. The Strategic Environmental Assessment Screening report and the response from Natural England, Historic England and the Environment Agency confirms this.
- 1.2.11 An Equalities Impact Assessment has been carried out for the SPD and is available at <https://www.maldon.gov.uk/site/>.

Monitoring and review

- 1.2.12 Once adopted the SPD will be an important planning document having weight when planning applications are assessed. Therefore it is important that adequate processes and review mechanisms are in place to monitor the success of this SPD and determine whether updates are necessary.
- 1.2.13 The monitoring process is a continuing function that aims primarily to provide stakeholders with up-to-date information on an annual basis: this will be set out in the Council's Authority Monitoring Report and as required for the completion of other statistical returns. Indicators identified in the LDP for Policies D2 and D4 will be the primary benchmarks used for monitoring the success of this SPD. Other indicators and information may be introduced to help the Council monitor the progress of renewable energy projects in the District and the number of developments that meet the identified standards set out in the SPD.
- 1.2.14 The Planning Policy team will implement this procedure. A review process of the SPD will be considered if:
- There is a significant change in national planning policy
 - There are significant changes to the LDP's evidence base that indicate the LDP is unable to deliver its objectives in relation to renewable energy
 - The SPD is not effective in delivering suitable renewable energy developments

1.3 Scope and Objectives of SPD

Scope

- 1.3.1 The guidance provided in this Maldon District Renewable and Low Carbon Technology SPD focuses on those technologies that create opportunity and prosperity within the District without creating any adverse impacts to the natural environment, society or the economy.
- 1.3.2 This document will outline the conditions that must exist for those technologies to be appropriately situated within the District. Policy S1 of the Approved LDP identifies the principles of sustainable development, which are central to the LDP and provides the overarching theme for this SPD. Policies D2 and D4 of the LDP identify the relevant requirements for any renewable energy and low carbon technology projects as well as establishing the conditions for achieving sustainable design within new development. Therefore in order for renewable energy development to be granted planning permission, ensuring that each project is suitable for that location is essential. Further details are provided in Sections 3 and 5.
- 1.3.3 Further detail on the appropriate Policies of the Approved LDP are outlined in section 2: Policy Framework, where the synergies that exist between local policy and the National Planning Policy Framework (NPPF) are also identified to ensure that this SPD is in conformity with the NPPF, thereby promoting consistency across planning policy documents.

Objectives

- 1.3.4 The objectives of the SPD are:
- To offer clear and concise guidance on ways to interpret Policies D2 and D4 of the Approved LDP, paving the way for efficient and sustainable implementation of all developments within the District.
 - To assist the understanding of building regulations and techniques available to improve sustainability performance of buildings through their design, construction and subsequent use.
 - To provide information and guidance on Permitted Development rights and the process that would be applied to a development where a planning application is required.
 - To identify the opportunities and challenges, including the cumulative impacts, that renewable energy and low carbon technologies pose, both as a single entity and through community project initiatives.

Content

- 1.3.5 Chapter 2: summarises the national and local planning policy context, including an overview of the relevant LDP policies. This chapter will also provide an overview of renewable and low carbon technologies currently deployed with the Maldon District.
- 1.3.6 Chapter 3: directly concerns the planning considerations relating to sustainable building regulations, how non-residential development can achieve the required Building Research Establishment Environmental Assessment Method (BREEAM) standards, the benefits to achieving the voluntary WELL Building Standards and Passivhaus Standards for residential development, as well as additional guidance contained within the Maldon District Design Guide. Sustainable building standards,

will be analysed for resource efficiency as a way of identifying the most efficient and effective techniques for building sustainable homes within the Maldon District.

- 1.3.7 Chapter 4: will focus on the implementation of renewable and low carbon technologies into new developments, as well as the procedures and regulations surrounding retro-fitting technologies into existing buildings.
- 1.3.8 Chapter 5: provides planning and technical guidance relating to renewable and low carbon technologies that are considered appropriate within the Maldon District. The technical guidance reflects the unique opportunities and challenges for the deployment of renewable and low carbon technologies that exist in the District and it will consider the District's features and characteristics and will also include the potential impacts that may arise at different stages, for example at deployment or in-design stage. Information regarding community ownership initiatives and national incentive schemes will also be available to view within this section.

1.4 Context and content of the SPD

Context

- 1.4.1 Renewable and Low Carbon Technologies have the ability to reduce the levels of greenhouse gases that are present in the atmosphere. These technologies also have the potential to overcome the dangers that climate change poses on our planet. The Intergovernmental Panel on Climate Change (IPCC) recognises that 'these technologies not only have the potential to mitigate climate change but can help improve energy security, reduce negative impacts on the environment and health and contribute to social and economic development'.
- 1.4.2 The Government has pledged that the United Kingdom will reduce its level of emissions to contribute towards limiting global warming to below 2 Degrees Celsius, in light of the Paris agreement at the Climate Change Summit, COP21 in 2015. It will be the responsibility of Local Planning Authorities to help achieve these objectives through planning policies and guidance.
- 1.4.3 Policy D4 of the LDP identifies that renewable and low carbon energy projects have the potential to reduce greenhouse gases. But, the LDP also recognises that it is essential that the benefit of optimising renewable and low carbon technologies should be balanced with the need to protect the local and natural environments that surround our communities, and the amenity of local residents.
- 1.4.5 The natural biodiversity and geodiversity sites that are featured within the Maldon District include internationally, national and locally protected Ramsar sites, Special Areas of Conservation and Special Protection Areas as well as SSSI's, National Nature Reserves and Marine Conservation Zones. Interspersed within this landscape are numerous national and locally protected heritage assets including Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Conservation Areas, as well as undesignated heritage assets. These pose one of many challenges for the deployment of renewable and low carbon technologies within the District.
- 1.4.6 The District's sensitive landscape is encapsulated by the two estuaries and the associated extensive flat and gently undulating alluvial plain, to which their presence and distribution are strongly characterised by geology and landform. In a local context, there is an increasing awareness of the importance of the natural landscape

and biodiversity which is under threat from development pressures and the impacts of climate change. It is imperative that these sites of local ecological significance are protected against development that would have detrimental impacts.

- 1.4.7 This SPD includes information on a range of technologies; however it will not contain guidance on offshore wind energy. Although part of the District boundary does cover the coastline, there is insufficient space for offshore wind energy developments to be allocated within the boundary. The principles set out in the SPD will however be used as guidance if Maldon District Council is consulted on offshore proposals.
- 1.4.8 Regarding large-scale onshore wind energy developments, the Secretary of State has advised that Local Planning Authorities must clearly allocate suitable areas for wind energy development in a Local or Neighbourhood Plan. The Approved LDP does not identify any suitable sites for wind turbines: therefore this SPD applies to domestic and small-scale projects and any proposals identified through Neighbourhood Plans.
- 1.4.9 What is defined as a domestic or small-scale wind energy development is outlined in Section 5: Implementing Renewable Energy into Current and New Developments.

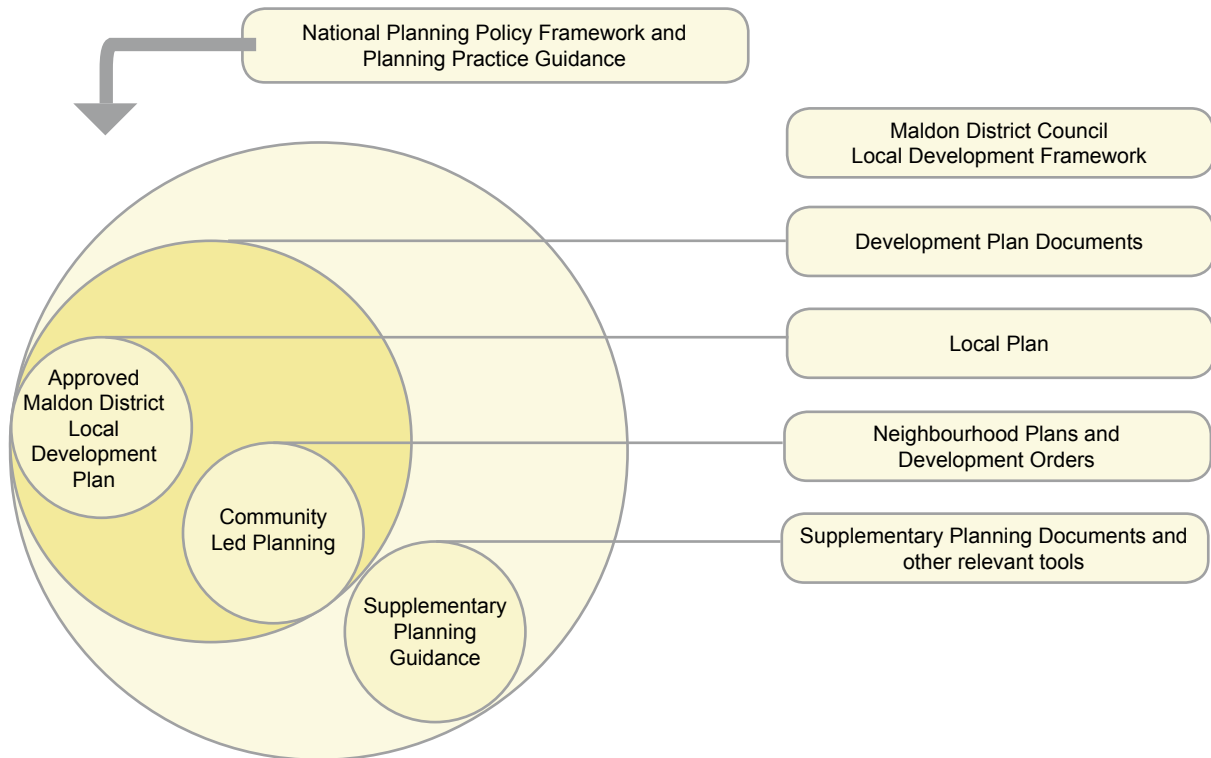
1.5 Defining renewable and low carbon technologies

- 1.5.1 Low carbon technology, an umbrella term, covers a range of technologies and systems that aim to reduce and limit greenhouse gas emissions through a range of processes. The Committee on Climate Change identify the following as low carbon technologies and systems:
- Renewable Energy Technologies
 - Nuclear Power
 - Electrification
 - Sustainable Building Materials and Techniques
- 1.5.2 Low carbon technologies consist of different methods of low emissions energy generation, and can also help improve the efficiencies of development throughout its lifecycle, including the design and construction phases of housing development. Guided by national, compulsory and voluntary sustainable building regulations, low carbon technologies can be incorporated into schemes to make developments compliant or even exceed the required standards.
- 1.5.3 Renewable energy, simply, is energy from a source that is not depleted when used. According to the Carbon Trust, renewable energy refers to energy that occurs naturally and repeatedly in the environment. They produce sustainable and clean energy from sources such as the sun, waves, wind and geothermal heat from the ground. Renewable energy can also be produced from plant sources, such as wood or crops. Renewable energy, unlike fossil fuels, will never diminish. They emit zero greenhouse gas emissions during their harnessing phase, unlike other low carbon technologies such as Combined Heat and Power systems, which can only limit greenhouse gas emissions through various efficiency measures.
- 1.5.4 In combination, renewable and low carbon technologies can positively reduce dependence on non-renewable energy resources and additionally, support a national energy framework seeking to enhance its energy security by reducing dependence on energy imports.

2. Policy framework

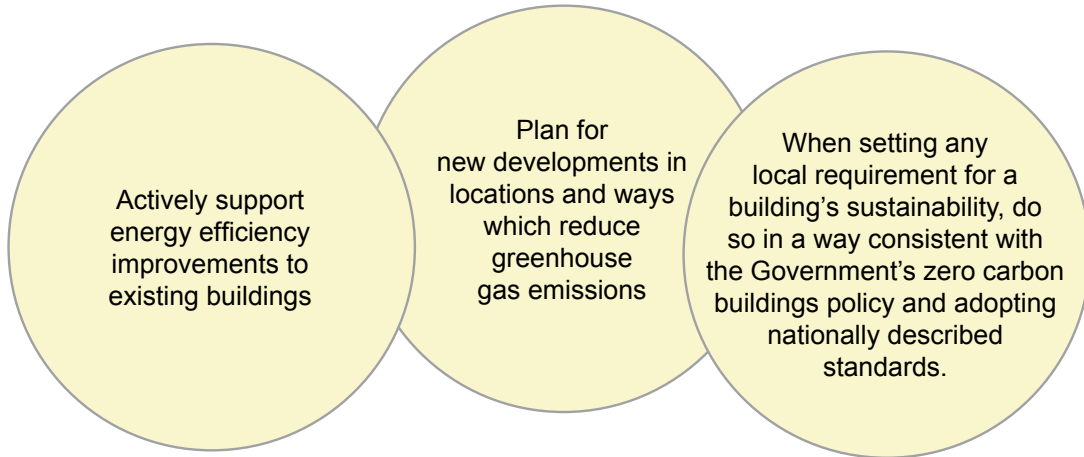
2.1 The planning system and policy framework

- 2.1.1 The national planning system, directly concerning the District of Maldon and its Local Planning Authority, is orchestrated by the Department for Communities and Local Government. The National Planning Policy Framework (NPPF) is a fundamental tool in reducing the complexities associated with the planning system and in addition, allows the system as a whole to be more accessible. It provides a framework within which local communities and local authorities can plan and produce unique and distinctive local and neighbourhood plans, which reflect both the needs and priorities of their communities.
- 2.1.2 Written Ministerial Statements, which feed into the NPPF, enable Ministers to bring important matters to the attention of the House of Commons. Ministerial Statements can be issued to support or supplement existing policy guidance or to provide amendments and updates to current national policies set out by Government. The guidance provided in Ministerial Statements is channelled through sources shared with the NPPF and PPG.
- 2.1.3 Figure 2.1 illustrates the framework that encompasses Development Plan Documents and the Supplementary Planning Documents of Maldon District Council and the influence of the NPPF and PPG.

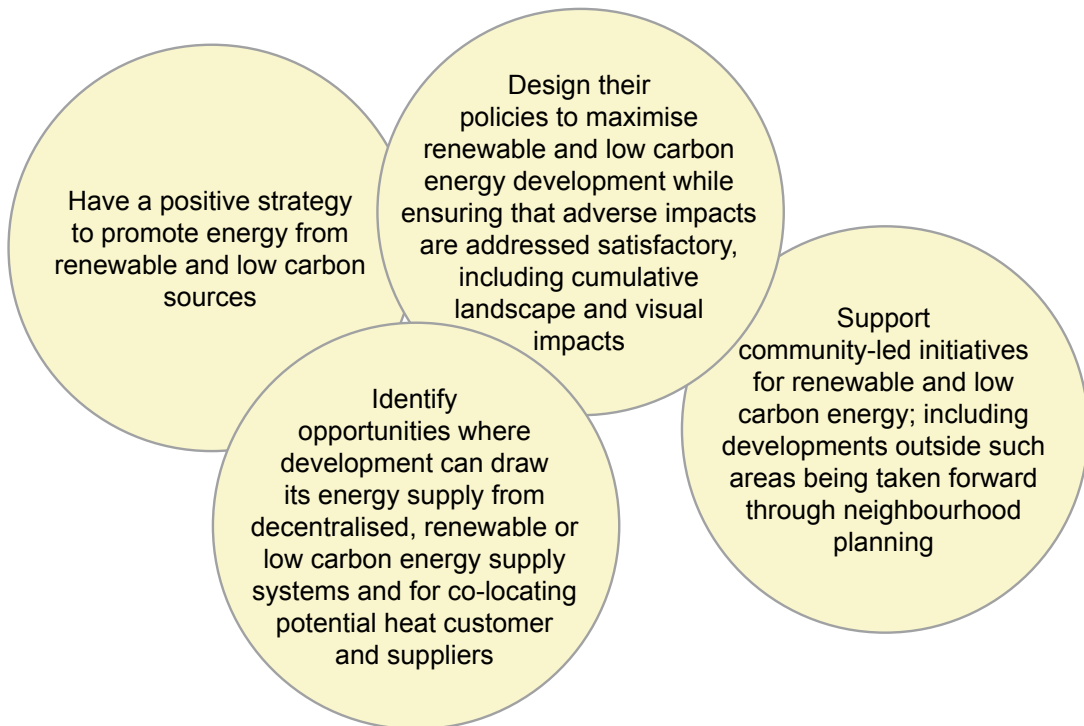


2.1.4 The NPPF sets out the Government’s planning policies for England and how these are then applied to the policies of Local Planning Authorities in Local Development Plans. Within the NPPF there are a number of guidelines concerning both sustainable building standards and renewable technology deployment.

2.1.5 In meeting the challenges of climate change, paragraph 95 of the NPPF (2012) sets out a number of proactive guidelines. To support the move to a low carbon future, local planning authorities should:

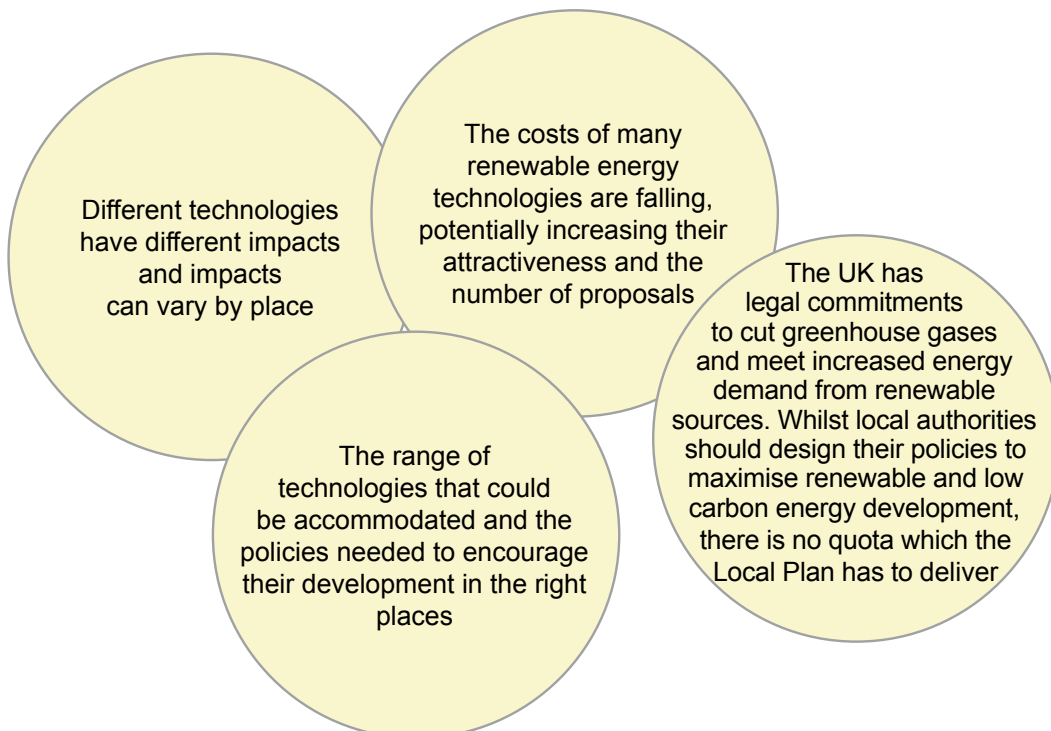


2.1.6 To encourage the use and supply of renewable and low carbon technologies, paragraph 97 of the NPPF (2012) states that local planning authorities should identify the responsibility of communities in contributing, through the use of renewable and low carbon energy systems, towards clean energy. In doing this, local planning authorities should:



2.1.7 The NPPF (2012), paragraph 97, references the role and responsibility of communities by helping to increase the use and supply of clean energy as previously mentioned, however it must be emphasised that this does not mean the need for renewable and low carbon technologies overrides issues surrounding environmental protection nor other material planning considerations.

- 2.1.8 It is important that local communities and interested stakeholders are consulted and all planning concerns are addressed in a sufficient manner before the development is granted planning permission.
- 2.1.9 Local and Neighbourhood Plans provide a legitimate platform for the delivery of renewable and low carbon technologies with the engagement and support of local communities. Through specific channels of communication such as public consultations, local planning authorities are able to engage effectively and efficiently with stakeholders.
- 2.1.10 Neighbourhood planning enables communities to take direct control in regards to creating a shared vision for their neighbourhood, steering development and growth in a way that is endorsed by the entire community. Neighbourhood planning also provides the right set of tools for local people to ensure that they get the right types of development for their community where the ambition of the neighbourhood is aligned with the strategic needs and priorities of the wider local area.
- 2.1.11 In regards to renewable and low carbon technology developments, Neighbourhood Plans can allocate suitable sites for the allocation of these technologies, including for wind energy development. If no suitable sites are designated then large-scale wind energy development cannot be supported through any policy within the plan.
- 2.1.12 For both Neighbourhood and Local Development Plans, as outlined within Planning Practice Guidance: Renewable and low carbon energy (18th June 2015), the policies concerning renewable and low carbon technologies must be considerate of certain matters, such as:



- 2.1.13 Each Local Development Plan is tailored to the unique environment it encapsulates; therefore policies are designed to best serve not only the natural and built environments, but the social settings and economic opportunities that co-exist in those environments.

2.2 Maldon District Local Development Plan Policy and Documents

2.2.1 The Maldon District LDP contains three policies that directly relate to the Renewable and Low Carbon Technologies SPD:

1. Policy S1: Sustainable Development (Table 2.1)
2. Policy D2: Climate Change and Environmental Impact of New Development (Table 2.2)

2.2.2 The policies relating to sustainable building standards and renewable and low carbon technologies have been produced in conformity with the guidelines set out in the NPPF. The policies are tailored to the District of Maldon and have clear and coherent objectives relating to the delivery of sustainable development.

Policy S1: Sustainable Development

When considering development proposals the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in the NPPF and will apply the following key principles in policy and decision making:

- 1) Ensure a healthy and competitive local economy by providing sufficient space, flexibility and training opportunities for both existing and potential businesses in line with the needs and aspirations of the District;
- 2) Deliver a sustainable level of housing growth that will meet local needs and deliver a wide choice of high quality homes in the most sustainable locations;
- 3) Promote the effective use of land and prioritise development on previously developed land and planned growth at the Garden Suburbs and Strategic Allocations;
- 4) Support growth within the environmental limits of the District;
- 5) Emphasise the importance of high quality design in all developments;
- 6) Create sustainable communities by retaining and delivering local services and facilities;
- 7) Enable and adapt to the effects of climate change by limiting greenhouse gas emissions through the efficient use of energy and use of renewable alternatives, coastal management, and mitigating against flooding;
- 8) Ensure new development is either located away from high flood risk areas (Environment Agency defined Flood Zones 2 and 3) or is safe and flood resilient when it is not possible to avoid such areas;
- 9) Conserve and enhance the natural environment, by providing protection and increasing local biodiversity and geodiversity, and effective management of the District's green infrastructure network;
- 10) Conserve and enhance the historic environment by identifying the importance of local heritage, and providing protection to heritage assets in accordance with their significance;
- 11) Identify the capacity and constraints of local infrastructure and services, and seek to mitigate identified issues through developer contributions including Section 106 agreement and / or Community Infrastructure Levy and other funding sources;
- 12) Maintain the rural character of the District without compromising the identity of its individual settlements;
- 13) Minimise the need to travel and where travel is necessary, prioritise sustainable modes of transport and improve access for all in the community; and
- 14) Support the expansion of electronic communications networks, including telecommunications and high speed broadband.

The Council will always work proactively with applicants jointly to find a solution which means that development proposals can be approved wherever possible, and to secure sustainable development that improves the economic, social and environmental conditions in the area.

Planning applications that accord with the policies in this LDP and, where relevant, with policies in the District’s neighbourhood plans, will be approved, unless material considerations indicate otherwise.

Where there are no policies relevant to the application or relevant policies are out of date at the time of making the decision, the Council will grant permission unless material considerations indicate otherwise. Account will be taken if any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the NPPF taken as a whole; or specific policies in the NPPF indicate that development should be restricted.

TABLE 2.1 POLICY S1: SUSTAINABLE DEVELOPMENT

2.2.3 Policy S1 sets out several key overarching sustainable objectives from which the policies in the Approved LDP are derived. Therefore when considering development proposals, the Council will take a positive approach that reflects the presumption in favour of sustainable development contained in national planning policy. The Council will therefore seek to secure development that improves the economic, social and environmental conditions in the area.

Policy D2 Climate Change & Environmental Impact of New Development

All development must minimise its impact on the environment by incorporating the following principles:

- 1) All non-residential development should achieve a minimum of BREEAM ‘Very Good’ rating or be supported by a bespoke assessment that demonstrates appropriate environmental performance results above current Building Regulation requirements;
- 2) Development should seek to maximise the use of building materials from sustainable sources and apply sustainable construction methods where appropriate;
- 3) Incorporating recycling facilities having regard to the Council’s adopted waste strategy and current or planned waste collection methods;
- 4) Development will contribute towards making the most efficient use or re-use of existing resources and reducing the lifecycle impacts of materials used in construction. The Council may require large scale development proposals to be supported by a Site Waste Management Plan;
- 5) Green infrastructure should be incorporated as a way of adopting and mitigating for climate change through the management and enhancement of existing habitats and the creation of new ones to assist with species mitigation, to provide shade during high temperatures and for flood mitigation. Negative impacts on ecology, landscape and green infrastructure should be minimised;
- 6) Minimising all forms of possible pollution including air, land, water, odour, noise and light. Any detrimental impacts and potential risks to the human and natural environment will need to be adequately addressed by appropriate avoidance, alleviation and mitigation measures;
- 7) Where appropriate, development will include measures to remediate land affected by contamination and locate development safely away from any hazardous source;
- 8) Where appropriate, development will include measures to address land instability issues where identified;
- 9) Maintain and enhance local air quality in accordance with national objectives;

- 10) Seek to reduce the need to travel, particularly by private vehicle, by encouraging sustainable transport methods, and providing flexibility in the development to enable home working or similar facilities; and
- 11) Development must take into account and other benefits of preserving the best and most versatile land. Where possible poor quality land should be prioritised over higher quality land.

TABLE 2.2 POLICY D2:
CLIMATE CHANGE AND ENVIRONMENTAL IMPACT OF NEW DEVELOPMENT

- 2.2.4 In accordance with national planning policy, this SPD will clarify how the Council will expect national sustainable building standards and the requirements of Policy D2 to be delivered.
- 2.2.5 Policy D2 is directed towards both residential and non-residential developments within the District, using a criteria-based approach to identify what is expected of new development. The criteria-based policy incorporates minimum nationally recognised standards throughout.
- 2.2.6 The Council requires, where viable, non-residential development to achieve a minimum BREEAM rating of 'Very Good' or be supported by a bespoke assessment that demonstrates appropriate environmental performance results above current Building Regulation requirements. For guidance see Section 3.3.
- 2.2.7 Policy D2 focuses on methods of mitigation and adaptation for new developments and the processes involved. This would help deliver the Council's objective to reduce wastefulness and improve development design and good practice as requested within the Ministerial Statement dated 25/03/2015.

Policy D4 Renewable and Low Carbon Energy Generation

In principle, support will be given for the delivery of large-scale renewable and low carbon energy projects, excluding wind energy, provided adverse social, economic and environmental impacts have been minimised to an acceptable level.

Suitable areas for wind energy development may be identified through the preparation of Neighbourhood Plans and proposals for wind energy developments will be determined in accordance with national planning policy and practice guidance.

Development proposals will be approved where it can be demonstrated, to the Council's satisfaction, that the development will not have an adverse impact, either individually or cumulatively, on the following:

- 1) The purpose or function of internationally, nationally or locally designated sites of protected wildlife or landscape areas;
- 2) Heritage assets and the setting of heritage assets within the landscape;
- 3) Landscape and the character of the undeveloped coast and areas, which by nature of their topography, are sensitive to development;
- 4) Neighbouring amenity, in respect to visual impact, flicker, vibration, glare, overshadowing, active or background noise levels and any other emissions;
- 5) The safety of public footpaths, bridleways, highways, avian wildlife and aviation;
- 6) Telecommunications including those used by the police and emergency services and navigational equipment; and
- 7) The best and most versatile agricultural land.

Proposals must have full consideration of individual impact or cumulative impact where there are more than one existing or proposed renewable energy projects.

The Council will strongly support the principle of the development of a new nuclear power station at Bradwell-on-Sea.

TABLE 2.3 POLICY D4: RENEWABLE AND LOW CARBON ENERGY GENERATION

- 2.2.8 Policy D4 provides a criteria-based narrative for development proposals wishing to be deployed within the District. As mentioned in the policy, support will be provided for both large and small-scale developments, providing they do not produce adverse social, economic and/or environmental impacts of an unacceptable level within the District.
- 2.2.9 Large-scale onshore wind energy will not be promoted or outlined within this SPD. See paragraph 5.1.3 for more details.
- 2.2.10 The principles of Policy D4 are aligned with the preservation of environmental and social qualities that exist in the Maldon District. The sensitivity of Maldon’s landscape and character pose many challenges to managing renewable energy and ensuring that these projects maintain a sustainable, positive relationship with its physical surroundings as well as the amenity of the District’s communities.
- 2.2.11 For further clarification regarding the two specified Policies relating to this SPD, seek guidance within the Approved LDP found at <https://www.maldon.gov.uk/ldp>.

Burnham-on-Crouch Neighbourhood Development Plan

- 2.2.12 The ‘made’ Burnham-on-Crouch Neighbourhood Development Plan is a Development Plan Document and forms part of the Development Plan for the District. It therefore has the same legal status as the Approved LDP. Any planning applications in Burnham-on Crouch should therefore be determined in accordance with the development plan, unless material considerations indicate otherwise.
- 2.2.13 The Burnham-on-Crouch NDP identifies the benefits of renewable energy in addressing climate change, however it also addresses a need to preserve or enhance the character and appearance of the overall town and conservation area in particular, to avoid harm to listed buildings through inappropriate development within their setting. Policy EN.4 outlines the requirements for renewable energy development proposals within Burnham-on-Crouch:

Policy EN.4 – Renewable Energy

Proposals for the development of renewable energy proposals will be supported in the Plan area subject to the following criteria:
• They preserve or enhance the character and appearance of the conservation area
• They take account of the setting of the Town within the Dengie Peninsular
• They do not have an unacceptable detrimental effect on the integrity of a listed building or its setting; and
• They do not have an acceptable detrimental effect on the amenities or residential or other properties in the site’s locality

TABLE 2.3 POLICY EN.4:
RENEWABLE ENERGY POLICY OF THE BURNHAM-ON-CROUCH NEIGHBOURHOOD
DEVELOPMENT PLAN

- 2.2.14 In addition, Policy EN.5 of the Neighbourhood Development Plan encourages any future construction and maintenance of wind turbines to be accessed from the river to reduce the impact on the road network where possible.
- 2.2.15 For further clarification regarding the specified Policies of the Neighbourhood Development Plan, see Burnham Neighbourhood Plan. All emerging neighbourhood plans should consider the need to include policies concerning renewable and low carbon technologies, if necessary.

Maldon District Design Guide

- 2.2.16 Developers should have regard to the Maldon District Design Guide in all new developments within the District. The Maldon District Design Guide sets out clear design principles to guide future development in the District. One key design objective relates directly to renewable energy and sustainable building design. The key objective, sustainability, aims to minimise the impact on our environment by using land efficiently whilst respecting the existing landscape character and green infrastructure. New development should therefore be sustainable and resilient to climate change by taking into account landform, layout, building orientation, massing, landscape and visual impact to minimise energy consumption and mitigate water run-off and flood risks. To enhance biodiversity as a minimum, schemes should lead to no net loss of habitat.
- 2.2.17 Part C: C21 Future Proofing outlines the importance of mitigation against the effects of climate change in increasingly warmer and cooler weather patterns and the importance of reducing energy consumption and waste production. The Design Guide provides a number of review stages requiring completion throughout the design and development process, these are as follows:
- Building design takes advantage of orientation
 - Building depths are limited wherever possible to maximise natural lighting levels and natural ventilation
 - Layouts avoid single-aspect dwellings which may cause homes to overheat if south-facing or create additional heating demands if north-facing. (Cavity wall insulation and thermal window technologies can mitigate these issues however (see 3.4.18))
 - South-facing windows to maximise natural daylight
 - North-facing facades seek to minimise large areas of glazing to prevent unnecessary heat loss in winter
 - Shading is considered to south-facing windows to prevent overheating in the summer months, such as a deciduous tree adjacent to the property
 - The use of green roof systems or green walls are considered and are appropriate within the context of the site
 - The use of low-embedded energy or materials that can be recycled is used, where appropriate
 - Materials with high thermal mass are used where appropriate
 - Existing and proposed green infrastructure, landscape features and SuDs are incorporated to mitigate climate change
 - Consideration is given to incorporate alternative energy sources including air-to-air heat pumps, community heating systems and biomass
 - Use of tree planting or changes to land management to provide shading or cooling.
 - Bat or bird roosting or nesting facilities in buildings and grounds are considered
- 2.2.18 The Design Guide emphasises that sustainable design can work in harmony with developments contained within conservation areas and on/or close proximity to listed buildings. This includes renewable and low carbon energy projects which if designed appropriately can positively enhance heritage assets. A number of design review stages require completion, which ensures sustainable design and construction methods:

- You have checked if the building or site is listed or in a conservation area
- Energy efficient solutions are integrated as part of the development
- Any solar panels that are positioned on building surfaces are facing within 90 degrees south and not overshadowed for maximum efficiency, however are not restricted to. Ensure that the roofs are strong enough to hold the panels
- The design allows for system maintenance
- All water fittings i.e. taps and showers are specified and installed are recognised low flow technology
- Low or dual flush WCs are used
- The opportunities for rainwater harvesting or grey water recycling is maximised, where possible

2.3 National energy strategy and targets

- 2.3.1 The Government's latest energy strategy report, The Energy Revolution and Future Challenges for UK Energy and Climate Change Policy (HC 705, 2016) , states that 'harnessing renewable energy in a way that makes a significant contribution to the nation's electricity supply is twofold, by producing clean forms of energy and increasing energy security'.
- 2.3.2 This is important because local planning authorities are responsible for renewable and low carbon energy developments of 50 megawatts or less installed capacity (under the Town and Country Planning Act 1990) which would help deliver the Government's aspirations. As of August 2017, there were 57,673 renewable heat installations accredited to the Domestic Renewable Heat Incentive in the UK (see Section 5.10), emphasising the role of local communities and domestic households in contributing towards a green energy mix and helping to secure better energy security for more people. The national targets and statistics outlined below demonstrate why it is the duty of all, including communities and residents of the District, to deliver renewable and local carbon energy generation and incorporate sustainable design in new development.
- 2.3.3 The UK has committed itself to a reduction in greenhouse gas emissions through the Climate Change Act 2008, which includes a commitment to an 80% reduction in emissions by 2050 of those emission levels of 1990. The Act also has an interim target to reduce carbon dioxide emissions by 26% by 2020.
- 2.3.4 To meet these targets, the government has set five-yearly carbon budgets which run until 2032. They restrict the amount of greenhouse gas the UK can legally emit in a five year period. The UK is currently in the second carbon budget period (2013 to 2017).
- 2.3.5 As outlined in Figure 2.1, there has been a 42% decrease in greenhouse gas emissions emitted in 2016 compared to that emitted in 1990. UK emissions were 38% below 1990 levels in 2015. The first carbon budget (2008 to 2012) was met and the UK is currently on track to outperform on the second (2013 to 2017) and third (2018 to 2022). The UK is, however, not on track to meet the fourth budget (2023 to 2027).
- 2.3.6 To meet future budgets and the 80% target for 2050, the UK will need to reduce emissions annually by at least 3% from now on. This will require the Government

to impose stricter measures to reduce emissions. Therefore it is essential that the Council establishes a framework within which the District can contribute to future carbon budgets: promoting appropriate renewable energy and low carbon technology projects and sustainable building standards that will deliver these objectives.

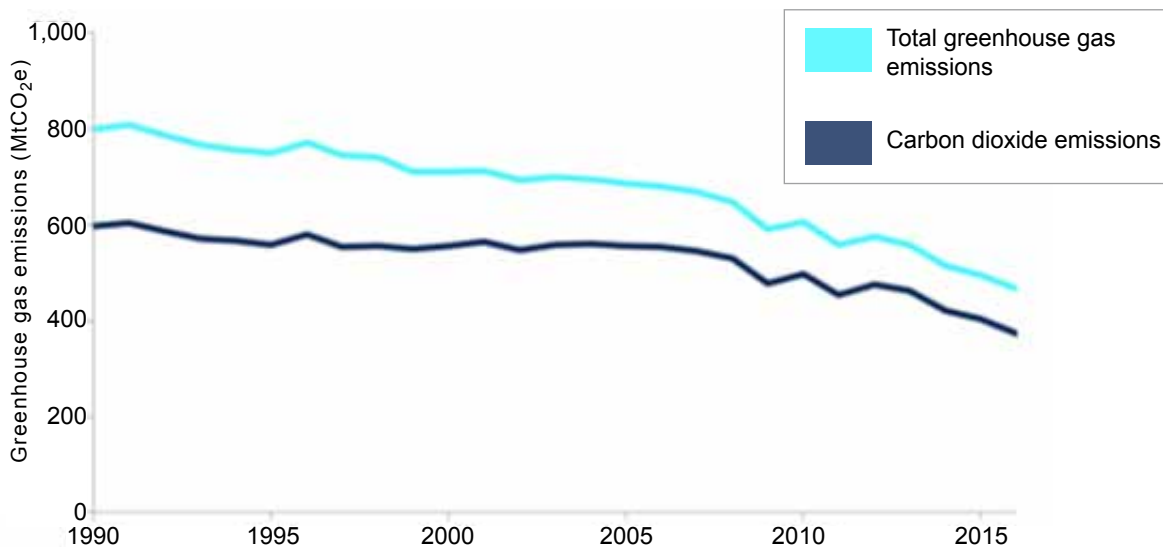
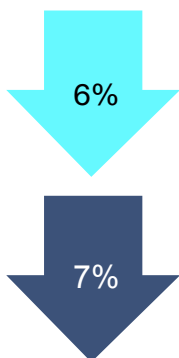
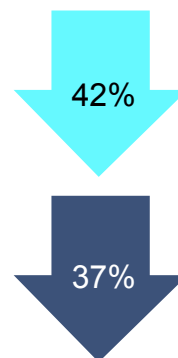


FIGURE 2.1: UK GREENHOUSE GAS EMISSIONS 1990-2016

2015 – 2016 % change



1990 – 2016 % change



SOURCE:
DEPARTMENT FOR BUSINESS, ENERGY AND INDUSTRIAL STRATEGY (2017)

- 2.3.7 The LDP also recognises the UK’s commitment to the Renewable Energy Directive (EU, 2009) . The directive establishes a mandatory national target for the UK to achieve a 15% share of all energy generation from renewable sources. Broken down, this equates to a 30% share of electricity, a 12% share of heat generation and a 10% share in transport from renewable sources by 2020.
- 2.3.8 Illustrated in Figure 2.2 is a breakdown of targets set out in the Renewable Energy Directive. In 2015, 22.31% of electricity, 5.64% of heat and 4.23% of transport fuel consumption was met by renewable sources. In total, this equates to 8.31% of 15% of all energy generation having been achieved through renewable sources, indicating that there is progress to be made. The objectives of this SPD can therefore help to ensure Maldon’s contribution remains constant.

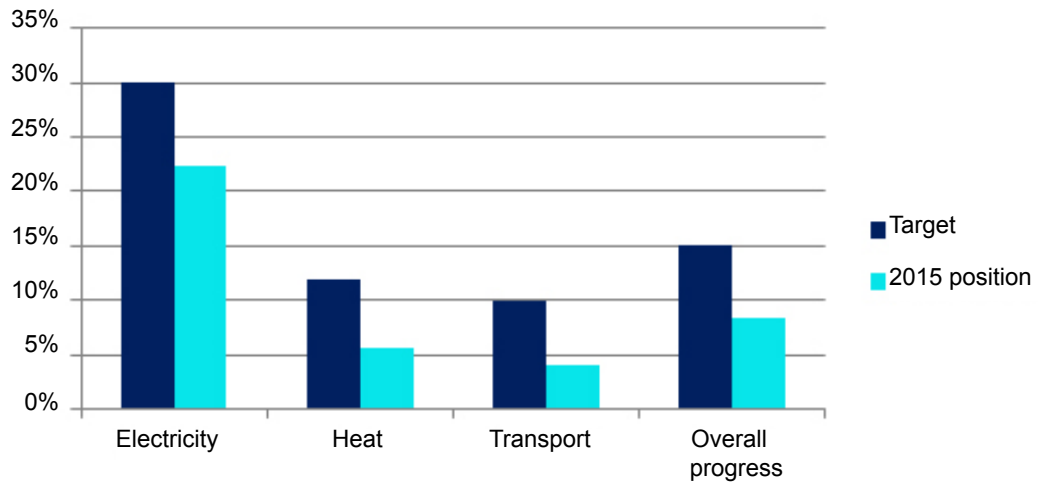


FIGURE 2.2: RENEWABLE ENERGY DIRECTIVE TARGETS AND PROGRESS IN 2015

- 2.3.9 Renewable energy and low carbon technologies and sustainable building standards can help residents achieve greater energy security and dependency. The Energy and Climate Change Committee report (HC 705, 2016) acknowledges that the UK is heavily dependent on Europe for its energy supply. All electricity imports and 69% of gas imports arrive via interconnectors with Europe (HC 705, 2016). However as a consequence, the UK’s independence in terms of energy security and flexible energy management will strengthen as the requirement for local energy generation becomes more pragmatic.
- 2.3.10 With the departure from the European Union, the UK energy mix must move towards a system that is predominantly dependent on internal energy supplies. Otherwise shifts in electricity and heat generation will create new pressures on the network, particularly the networks that store and distribute these forms of energy throughout the UK. The UK will also be liable to future tariffs on energy products, as well as the goods and services that supply the energy sector and low carbon manufacturing facilities (HC 705, 2016).
- 2.H11 However, the emergence and rapid uptake of renewable and low carbon technologies have, in essence, enabled the UK network to be flexible. The approaches and technologies promoted by this SPD, (in addition to those existing) can enable the beginnings of a more decentralised system, where generation and demand can be met at a distribution- and individual- level.
- 2.H12 To maintain influence over this sector, proactive and efficient planning is essential. This SPD will reinforce the approach taken to delivering renewable and low carbon technologies at a national level whilst providing the context for the delivery of renewable and low carbon energy developments at a local level.

2.4 Regional overview of renewable and low carbon technologies

East of England Renewable and Low Carbon Energy Capacity Study

- 2.4.1 The Renewable and Low Carbon Energy Capacity Study (AECOM, 2011) examines the resource potential for a range of renewable and low carbon energy resources in the East of England. The Department for Energy and Climate Change helped develop a reliable and robust methodology, setting out a number of steps for a resource assessment and was able to provide a number of detailed assumptions

regarding the East of England and its ability to provide functionality for renewable and low carbon technology operations.

- 2.4.2 The study identified the current capacity of renewable technologies and region's natural resources. From observations made, the following determinations have been outlined below:

Resource	Observations
Wind	The wind speeds across the East of England are relatively low, primarily due to low elevation and positioning on the east coast. However the extensively rural locations that also comprise flat topography provides reliable wind resources in large areas. The region therefore is suitable for wind generation and has a relatively large installed capacity.
Solar	The levels of insolation in the southern regions of the UK are consistent throughout. However what does vary is the capacity of the region to accommodate the different technologies of solar (domestic and commercial solar photovoltaic and solar thermal), thus influencing its deployment and availability.
Biomass and	The East of England has low levels of managed forestry when compared to other areas of the UK, this is due to alternative land uses within the region such as intensive food production. Therefore regional biomass resources are likely to be limited. However this does not limit the potential for generation from biomass with imported fuels.
Hydro	The low lying nature of the region means that there is very little head height across the river system. Whilst there are many sites which may be suitable for hydro generation (historic sites having used hydro power for milling), the capacity of these sites is low and the overall resource potential is likely to be very small.
Heat pumps	Heat pumps are limited by available heat demand and so the region is unlikely to differ significantly from others from a resource perspective. As an available resource however, heat pumps provide a direct and reliable source of heat throughout the year.

TABLE 2.4 RESOURCE OBSERVATION WITHIN THE EAST OF ENGLAND REGION

- 2.4.3 Most recent data from 2018 summarises the capacity for Essex: the County had a total capacity of 394 Megawatts installed in 2018 (see Table 2.5) with a further 219.3 Megawatts granted planning permission or under construction. This also indicates which technologies seem more favourable. However as technologies improve and viability becomes less problematic, these figures may change.

Capacity by County (MW)	Essex
Total capacity	394
Dedicated biomass	61.8
Landfill gas	68.5
Sewage gas	1.2
Wind	88.5
Hydro	0.00
Municipal and Industrial Waste	27.8
Photovoltaics	238

TABLE 2.5
TECHNOLOGY
CAPACITY WITHIN
ESSEX COUNTY 2018

2.4.4 The natural resource capabilities within Maldon therefore make it a suitable location for the deployment of certain renewable and low carbon technologies, if the conditions are correct. Section 5 highlights the opportunities that exist within Maldon for a range of technologies that are compatible with its natural resource capabilities.

Renewable and low carbon technologies within the Maldon District

2.4.5 A number of renewable and low carbon technology schemes exist within the District. Figure 2.3 shows those schemes that generate 5 Megawatts or more at 2017.

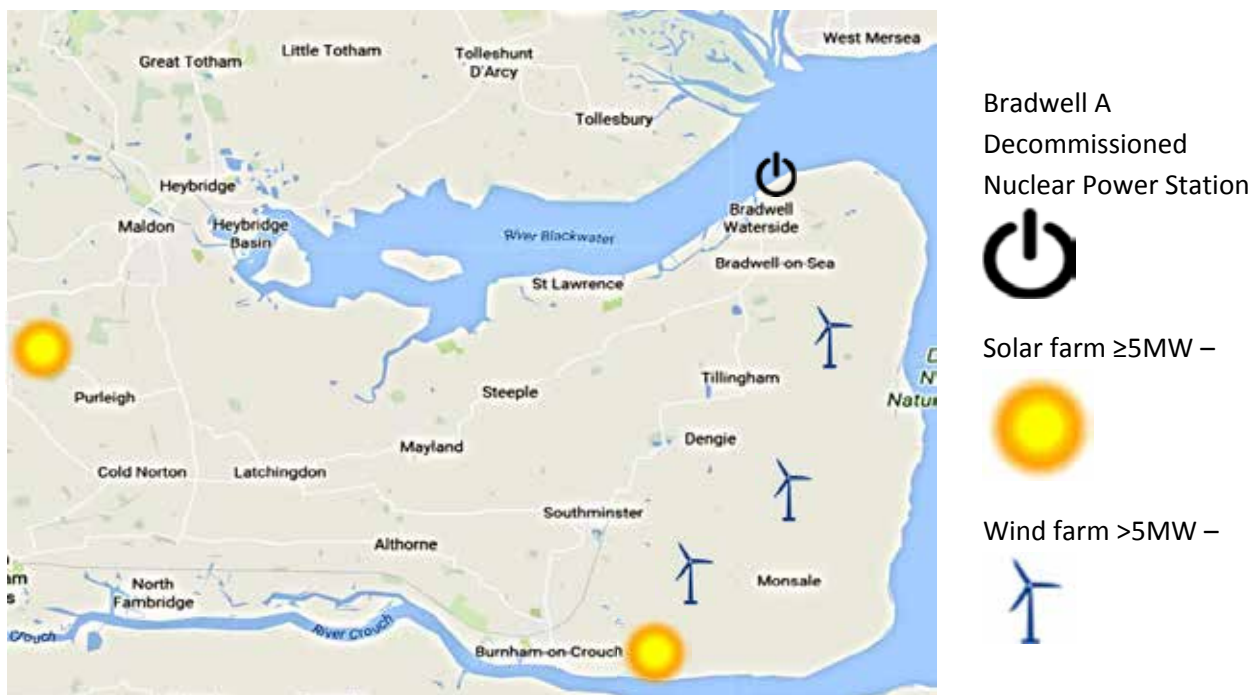


FIGURE 2.3: ILLUSTRATION OF LARGE-SCALE RENEWABLE AND LOW CARBON ENERGY SCHEMES WITHIN THE MALDON DISTRICT (GOOGLE MAPS)

2.4.6 Two large-scale solar farms are situated in the District, one to the east of Burnham-on-Crouch and one to the south-west of Purleigh. Each scheme generates a peak electricity generation of 5MW or the potential to provide electricity to power over 3,000 homes.

2.4.7 Three large-scale wind farms are distributed across the Dengie Peninsula, ranging from 17.5MW of peak electricity generation to 20.7MW. Collectively these three wind schemes have the ability to generate electricity to power over 40,000 homes per annum.

2.4.8 Figure 2.3 includes the decommissioned nuclear power station at Bradwell-on-Sea. The power station produced a peak electricity generation of 242MW before being decommissioned in 2002. The Council will strongly support the principle of the development of a new nuclear power station at Bradwell-on-Sea as it has the ability to help deliver a low carbon future for the District.

3. Planning considerations relating to sustainable buildings

3.1 Structure of guidance

- 3.1.1 This section sets out the national building regulations in relation to Policy D2: Climate Change & Environmental Impact of New Development. It also provides detailed information relating to sustainable building standards and the potential planning issues developers should be mindful of when considering new development.

3.2 Sustainable construction practices

- 3.2.1 Since the first set of national standards was introduced in The Building Regulations 1965 there have been many fundamental changes to the building regulations regime. The Building Regulations 2010 cover the construction and extension of buildings, including functional performance standards, within a series of Approved Documents.

3.3 Statutory building regulations

- 3.3.1 The Government continually issues Approved Documents and updates into the public domain; each document provides guidance about compliance with specific aspects of the Building Regulations in common building situations. The following points relate to the relevant buildings regulations within the Approved Documents do not stipulate the exact policy and regulation. These should be viewed at: <https://www.gov.uk/government/collections/approved-documents>
- 3.3.2 Building regulations may need to be adhered to even when planning permission is not necessary.
- 3.3.3 For existing buildings, the circumstances which trigger the need to take action to upgrade the thermal performance are only required for elements that are to be substantially replaced or renovated, or when there is a change of use. To prevent conflicts between energy efficiency requirements in Part L of the Building Regulations and the conservation of historic and traditionally constructed buildings, please have regard to Energy Efficiency and Historic Buildings: Application of Part L of the Building Regulations to historic and traditionally constructed buildings (English Heritage, 2012).
- 3.3.4 Listed buildings, buildings in conservation areas and scheduled monuments are exempted from the need to comply with energy efficiency requirements of the Building Regulations where compliance would unacceptably alter their character and appearance. Special considerations under Part L are also given to locally listed buildings, buildings of architectural and historic interest within registered parks and gardens and the curtilages of scheduled monuments, and buildings of traditional construction with permeable fabric that absorbs and readily allows the evaporation of moisture.

Approved Document L1A – Conservation of fuel and power

Section 1 – The requirements

- 3.3.5 Reasonable provisions shall be made for the conservation of fuel and power in buildings. This includes limiting heat gains and losses via thermal elements and other parts of the building fabric or from pipes, ducts and vessels used for space heating, space cooling and hot water services. Alternatively, this can be achieved by providing fixed building services which are energy efficient, have effective controls and/or are commissioned by testing and adjusted as necessary to ensure they use no more fuel and power than is reasonable in the circumstances.

Section 2 – Design standards

- 3.3.6 Approved Document L1A defines 'energy performance of a building' as the calculated or measured amount of energy needed to meet the energy demand associated with a typical use of the building, which includes, inter alia, energy used for heating, cooling, ventilation, hot water and lighting'.
- 3.3.7 Minimum energy performance requirements are applied for new buildings, as outlined in section 2 of Approved Document L1A. The requirements specifically relate to emission targets and fabric efficiency targets. In effect, the regulation seeks a balanced contribution from sources of fuel and the materials used for the construction of a development.
- 3.3.8 The methodology outlining the calculation for energy performances of new buildings seeks to identify the Target CO2 Emission Rate (TER) and Target Fabric Energy Efficiency (TFEE) via Regulations 26 and 26A of Approved Document L1A.
- 3.3.9 The following technical standards consist of both statutory and voluntary requirements for those seeking to develop both residential and non-residential premises. The Council will require developers to adopt the mandatory standards, and exceed the minimum standards where possible to positively enhance the development, the District and the wider environment.

Mandatory Sustainable Building Standards:

BREEAM (Building Research Establishment Environmental Assessment Method) UK Non-Domestic New Construction

- 3.3.10 Policy D2 requires all non-residential developments to achieve a BREEAM standard of 'Very Good' or be supported by a bespoke assessment that demonstrates appropriate environmental performance results above current building regulation requirements. For clarity, non-residential development is defined as having a floor space greater than 1000sqm, including change of use.



- 3.3.11 Additionally, as a speculative development, it is not possible to determine an accurate baseline energy footprint for non-domestic proposals. Therefore the Council would require an Energy Statement be submitted that would account for typical building energy demands for the type of Use Classes being applied for.
- 3.3.12 In the UK, BREEAM is currently the leading and most robust environmental assessment tool for buildings. The assessment had become a standardised measure for the environment performance of buildings in the UK. A minimum BREEAM rating is also an obligation for publically funded/procured non domestic building developments.
- 3.3.13 The technical standard 'BREEAM New Construction' is a performance based assessment method and certificate scheme for new non-residential buildings. The primary aim of BREEAM New Construction is to mitigate the life cycle impacts associated with new buildings on the environment in an efficient and cost effective way.
- 3.3.14 Research has shown a reduction in operational costs for office developments upholding higher BREEAM ratings. A 2% increase in developer investment has been recovered over a two to five year period in energy savings and reduced water consumption. Not only do BREEAM ratings offer energy efficiency savings, they help limit any risk that may affect both developer and investor. As BRE (Building Research Establishment) argue, many buildings not equipped for the future may devalue significantly or become isolated assets if regulations and legislation alter in a way that requires building efficiencies to become industry norms.
- 3.3.15 Technical content concerning the BREEAM UK Non-Domestic New Construction can be found at: <http://www.breeam.com/new-construction>.

When and how to engage with the BREEAM UK New Construction scheme

- 3.3.16 Timing the engagement with and use of the BREEAM UK New Construction scheme is important to ensure the efficient use of the methodology in the new build procurement process.
- 3.3.17 As BRE states, the assessment and accreditation process is best achieved through integration and use of the scheme by clients and their project teams at key stages in the design and construction process. The Council supports this approach and encourages developers to engage at an early stage in the planning process (see section 4.1)
- 3.3.18 This Renewable and Low Carbon Technology SPD discusses the relevant lifecycle stages: New Construction, In-Use and Refurbishment and Fit-Out lifecycles, as these will be relevant and practical to those aiming to uptake BREEAM standards within the Maldon District on a localised level. More information can be found in Appendix 1.
- 3.3.19 The scheme itself can be used to assess and rate the environmental impacts arising from a newly constructed building development at two life cycle stages. These are:
1. New Build Design Stage
 2. New Build Post Construction Stage

NEW-BUILD DESIGN STAGE

- 3.3.20 The Design Stage assessment and interim BREEAM rating confirms the proposed buildings performance during the construction period of the life cycle. This stage of assessment and certification should take place at the beginning of construction.
- 3.3.21 This means that the design must be presented to a BREEAM assessor for verification and evaluation: the building’s performance will be assessed against criteria set out in the BREEAM UK New Construction Technical Manual.

POST-CONSTRUCTION STAGE (PCS)

- 3.3.22 The PCS assessment and BREEAM rating confirms the final ‘as-built’ performance of the building at the new construction stage of the life cycle. A final PCS assessment is completed and certified after completion of the building works.
- 3.3.23 BREEAM states there are two alternative approaches to assessment at the post-construction stage:
 1. A post-construction review (PCR) of an interim design-stage assessment
 2. A post-construction assessment (PCA)

A Post Construction Review assesses a buildings performance once its development and construction stages have been complete. If an interim design-stage assessment has not been conducted i.e. certified, a full post construction stage assessment is required.

BREEAM ASSESSMENT AND RATING BENCHMARKS

- 3.3.24 There are a number of elements that will determine the overall performance of a new construction project assessed using BREEAM, these are:
 1. The BREEAM rating level benchmarks
 2. The minimum BREEAM standards
 3. The environmental section weightings
 4. The BREEAM assessment issues and credits
- 3.3.25 The BREEAM rating benchmarks projects using the 2014 BREEAM UK New Construction:

BREEAM Rating	% Score
Outstanding	≥ 85
Excellent	≥ 70
Very Good	≥ 55
Good	≥ 45
Pass	≥ 30
Unclassified	< 30

- 3.3.26 For more information on how to achieve a particular BREEAM rating using the percentage scoring system, please see Appendix 1.

3.4 Voluntary sustainable building standards

- 3.4.1 The Council will seek to ensure that all developments are sustainable and minimise adverse environmental impacts and climate change, irrespective of the size of development. The following standards have been designed to minimise energy usage during the lifecycle of both domestic and non-domestic units. The Council will be supportive of development that can demonstrate sustainability through design, construction and the use of low carbon technologies, particularly those that exceed the minimum standards.
- 3.4.2 Policy D2 requires all non-residential developments to achieve a BREEAM rating of 'Very Good' or a bespoke assessment that beholds similar sustainability objectives. The following standards present alternative assessment methods that can be applied for non-residential development and would provide a sound basis to deliver sustainable residential development.

BREEAM

- 3.4.3 The key aims of BREEAM are:
- To mitigate the life cycle impacts of buildings on the environment
 - To enable buildings to be recognised according to their environmental benefits
 - To provide a credible, environmental label for buildings
 - To stimulate demand for sustainable buildings
- 3.4.4 BREEAM has enabled the idea that sustainable construction methods can be achieved at relatively little additional cost to the developer and then to the house-buyer in terms of lower energy costs which may help those living in fuel poverty.
- 3.4.5 To ensure that fundamental environmental issues are mitigated effectively and efficiently, BREEAM has set minimum standards of performance in key areas such as; energy, water and ventilation. These performance areas are all set out through range of development lifecycle stages. These are:
- Communities: Master planning
 - Infrastructure: Civil Engineering & Public Realm
 - New Construction: Buildings
 - In-Use: Buildings
 - Refurbishment and Fit-out: Buildings
- 3.4.6 Residential development that seeks to achieve these minimum standards of performance will be fulfilling criteria contained in Policy D2 and will supported in principle, subject to condition the development is not contrary to the policies within the Approved LDP.
- 3.4.7 For more information on how to achieve specific performance standards related to BREEAM, please see Appendix 2.

Passivhaus

- 3.4.8 The core approach taken by the Passivhaus 'is building, for which thermal comfort can be achieved solely by post-heating or post-cooling of the fresh air mass, which is required to achieve sufficient indoor air quality conditions – without the need for additional recirculation of air."
- 3.4.9 The Passivhaus standard aims to dramatically reduce the requirements for space heating and cooling, whilst also creating excellent indoor air quality and comfort levels. As an holistic approach to building design and performance Passivhaus is best incorporated into the design stage of new development, when the best thermal and cooling results can be achieved.
- 3.4.10 Passivhaus design incorporates the following measures in order to achieve thermal comfort in the greatest practical sense:
- Good levels of insulation with minimal thermal bridges
 - Passive solar gains and internal heat sources
 - Excellent level of airtightness
 - Good indoor air quality, provided by a whole house mechanical ventilation system with highly efficient heat recovery
- 3.4.12 The flexibility of the Passivhaus standards mean they can be applied to not only residential dwellings, but also to commercial, industrial and public buildings and could provide a good solution to delivering sustainable development in the District.

WELL building standards

- 3.4.13 The WELL Building Standard (WELL) marries best practice in design and construction with evidence-based medical and scientific research – harnessing the built environment as a vehicle to support human health and well-being.
- 3.4.14 The WELL Building Standard sets seven performance requirements relevant to occupant health in the built environment – air, water, nourishment, light, fitness, comfort and mind. WELL Certification is based on performance and requires a passing score in each of the seven categories of the WELL Building Standard. WELL Certification is awarded at one of three levels: Silver, Gold and Platinum. WELL can be applied to all new development but is more successful when applied to commercial and institutional development.

Other efficiency measures

- 3.4.15 There are a range of energy efficiency measures that can be incorporated into both domestic and non-domestic premises to ensure optimal efficiency levels in relation to both thermal insulation and cooling.
- 3.4.16 Open cell polyurethane foam coatings provide insulation for a broad range of applications. Most beneficial in relation to building efficiencies, open cell polyurethane technologies can be implemented into wall and ceiling cavities to provide high levels of insulation. More permeable than closed cell polyurethane,

open cell technologies are breathable and allow for stable temperatures throughout the year. This enables excellent thermal insulation during the winter and adequate cooling at higher temperatures, in the summer season.

- 3.4.17 An average domestic household loses 10 percent of its heat through windows and doors. Energy efficient glazing reduces these thermal losses and improves natural (passive) ventilation. There is a range of glazing materials that can be adopted in both domestic and non-domestic premises, from double-glazed to triple-glazed.
- 3.4.18 The most energy efficient glass for double glazing is low emissivity (Low-E) glass. This type of glass is manufactured with a layered coating of metal oxide on one internal panes of glass. The advantage of this type of glass is its ability to let light in but cut down on heat loss. In addition, the gap between the two panes of glass is filled with an inert, non-toxic gas that has a greater density than air, therefore more effectively reduced heat loss.
- 3.4.19 Illustrated in Figure 3.1, an award winner for sustainability in the Maldon Conservation and Design Awards is an exemplar case study, which highlights how sustainable building techniques and technologies can be incorporated into a befitting design that promotes compatibility.

Maldon Conservation and Design Awards: Sustainability Case Study

This prestigious award scheme aims to encourage a sympathetic approach to building conservation, to promote good design and the enhancement of our natural and built environment. Sustainable development is one category of design that is considered for the award, addressing such issues as climate change, energy efficiency and sustainable sources of materials and their transportation.

One example located in Purleigh, winning the award for sustainability in 2014, beholds a unique design using ‘Hemcrete’ – a bio-composite material combining lime and locally grown hemp – for its wall and roof construction. This method of design has excellent thermal insulating properties and a high energy efficiency rating.



The development incorporates twenty eight combined photovoltaic and solar thermal panels and a ground source heat pump. For information on ground source heat pumps, see Section 5.8.

The use of steel and concrete has been minimised throughout the construction process, limiting the development’s carbon footprint. Triple-glazing has been used in windows that are orientated to maximise solar gain, both in light and heat terms.



FIGURE 3.1: MALDON CONSERVATION AND DESIGN AWARD FOR SUSTAINABILITY

4. Implementing renewable energy into current and new developments

4.1 Permitted development rights for renewable and low carbon technology developments

- 4.1.1 Certain types of development can be performed without needing to apply for planning permission. These are called permitted development rights. They derive from a general planning permission granted by Parliament, rather than a local authority.
- 4.1.2 Permitted development rights should be interpreted with caution as rights which may apply to many common projects may not apply to others. In England there are a range of exclusions that apply to permitted development rights such as to development in conservation areas.
- 4.1.3 Householder permitted development rights are set out in the Town and Country Planning (General Permitted Development) (England) Order 2015 (“the Order”). Part 14 of Schedule 2 outlines all nationally recognised renewable energy resources and their permitted developments on both domestic and non-domestic premises. For the requirements set out under Part 14 of the rules on permitted development, please see http://www.legislation.gov.uk/ukxi/2015/596/pdfs/ukxi_20150596_en.pdf.

4.2 Technical advice applicable to all renewable and low carbon technology proposals

THE PLANNING APPLICATION PROCESS

- 4.2.1 The planning system is pivotal in not only minimising energy demand of current and new developments but also for the implementation of renewable and low carbon technologies in both the domestic and non-domestic sector. Due to the type and design of many renewable and low carbon technologies, careful consideration needs to be taken when exploring the possibilities in deploying these technologies.
- 4.2.2 Applications for onshore renewable and low carbon technologies of 50 megawatts and less installed capacity are processed and dealt with by the Council under The Town and Country Planning Act 1990.
- 4.2.3 Renewable and low carbon technology installations over 50 megawatts are considered and decided upon by the Secretary of State for Energy, under the Planning Act 2008. In these cases the Council is a statutory consultee.
- 4.2.4 Most micro-renewable and low carbon schemes, domestic and non-domestic, will not require planning permission as they will be classified as ‘permitted development’ under the Town and Country Planning Act 1990.
- 4.2.5 Section 61W of the Town and Country Planning Act 1990 requires applications, for planning permission, for development that involves the installation of more than 2 turbines or where the hub height of the turbine exceeds 15 metres are subject to consultation before the application is submitted.

- 4.2.6 As identified in Article 3 of the Town and Country Planning Act (Development Management Procedure) 2015, a pre-application consultation with the local community must be undertaken for wind energy schemes that do not fall within Permitted Development rights.

Cross-boundary communication – Duty-to-co-operate

- 4.2.7 Maldon District Council will continue to discuss all cross-boundary issues with neighbouring authorities and other relevant stakeholders, including for renewable and low carbon technology planning applications. This will ensure that sub-regional and cross-boundary planning issues have been fully considered and taken into account. It will be determined at pre-application stage whether neighbouring authorities will need to be consulted.

Pre-application consultation process

- 4.2.8 The Council is committed to providing an effective planning service which delivers good quality development proposals. Early discussions between applicants and the Council are a valuable part of the planning application process and are strongly encouraged.
- 4.2.9 Pre-application discussions should be undertaken to an appropriate standard to ensure that the applicant understands how the Approved LDP policies will be applied to the proposal, identifying the need for specialist input at an early and helping to identify concerns with proposals.
- 4.2.10 This will enable the applicant/developer and the Council to provide a clear and comprehensive evaluation of the proposed development in relation to the policies located within the LDP as well as for a range of other planning and technical matters, such as for highways, heritage or the natural environment. This enables the scheme to be amended to address concerns or for the applicant to have an opportunity to justify the scheme further. The Council can also provide advice, helping to reduce time at the planning application stage. See Appendix 3 for information on the pre-application process.

Decommissioning and reclamation

- 4.2.11 Planning for decommissioning of large and small-scale renewable and low carbon technology schemes should be outlined during the pre-application stage. Key decommissioning provisions will be secured under a Section 106 agreement (The Town and Country Planning Act 1990). Once any scheme ceases its operation, the land must be restored to its former use as soon as practicably possible, or within the timescale set out in the S106 agreement.
- 4.2.12 A decommissioning plan is encouraged. It is an important document that contains provisions for issues that will arise once the technology ceases to produce electricity, such as restorative measures, the removal of structures and equipment and landscaping. The plan should also include mitigation measures for possible site reclamation. Reclamation of land can focus on restoring land to its previous natural state. The potential impacts must be mitigated to their full extent in order to benefit the environment.
- 4.2.13 Typical activities during a renewable facility decommissioning and site reclamation phase include:

- Facility removal
- Fixed structure and foundation material break up
- Removal of access roads (providing they are redundant for any other use)
- Re-contouring surfaces
- Re-vegetation

4.2.14 Potential impacts from these activities are:

- Acoustic (noise)
- Air quality
- Landscape and visual impacts
- Ecological
- Environmental justice
- Hazardous material and waste management
- Human health and safety
- Land use
- Soil and geological resources

5. Planning guidance and considerations for each renewable and low carbon technology

5.1 Detailed guidance on topics of importance for each technology and the issues they can cause

5.1.1 The SPD includes technical guidance for the following renewable and low carbon technologies:

- Small-scale wind power
- Solar photovoltaics
- Solar thermal
- Biomass and energy crop
- Small hydro
- Combined heat and power
- Ground and air source heating and cooling

5.1.2 Policy D4 of the Approved LDP (see Section 2.2) sets out the requirements for renewable and low carbon energy generation within the District. The technologies stated above are identified within Policy D4. This section provides further guidance for those promoting such schemes, including how planning applications for such schemes will be assessed and what information will be required as part of the planning application for each technology. The use of these renewable and low carbon technologies can also help achieve the sustainable building standards discussed in section 3.3.

5.1.3 The Written Ministerial Statement (March, 2015) and Planning Practice Guidance state that Local Development Plans must identify all sites suitable for wind energy developments. The Approved LDP has not identified any suitable sites for large-scale wind energy development because the evidence base indicates there is zero capacity within the District. However, neighbourhood plans have the ability to identify suitable sites for technologies if a local demand exists. As paragraph 2.1.11 states this means that large-scale wind energy developments will not be considered acceptable in the District unless promoted through a neighbourhood plan.

5.1.4 Policy D4: Renewable and Low Carbon Energy Generation therefore states that proposals for wind energy will be determined in accordance with national policy. The focus of this SPD therefore is onshore wind developments that meet the criteria for Permitted Development. The technical guidance can be used to inform the preparation of Neighbourhood Plans and proposals where suitable locations can be found within the District.

5.1.5 All offshore wind energy applications are processed and approved directly by the Secretary of State: these schemes are not included within this SPD. The Council will be a statutory consultee for any schemes.

5.2 Technical guidance and information

5.2.1 Policy D4 identifies the following key issues that may need to be considered for renewable and low carbon technology developments. For ease of use, detailed guidance is set out by technology, with technology specific guidance set out for each issue (where relevant). The guidance only applies to the technologies that require planning permission.

- Overview of technology
- Availability of resource
- Landscape and visual impact
- Ecological considerations
- Culture and heritage impacts
- Green infrastructure
- Air traffic
- Operational considerations
- Decommissioning and site restoration

5.3 Onshore wind energy

Overview of technology

5.3.1 Wind turbines consist of pylon structures with the attachment of two or three blades to a rotor. Wind energy rotates the blades, which spins a shaft, which connects to a generator and produces electricity. The availability and affordability of wind energy generation in the UK has become increasingly more reasonable in recent years. The Feed-in Tariff financial incentive (see Section 5.10) available through government subsidies has contributed to the increasing attractiveness of wind energy use.

5.3.2 Onshore wind energy developments have been deployed in various locations around the Maldon District. Ranging from small schemes that are classified as 'permitted development' to large-scale turbines, each capable of producing up to 8MW. Schemes containing these scale of turbines are capable of generating electricity to power up to 55,000 domestic households per annum.

5.3.3 Wind turbines vary in size. Small-scale (microgeneration) wind turbines have a power output less than 50kW and are intended to provide electricity supply to domestic households or small-scale businesses. Their design allows them to be either mounted on a roof or stand-alone. Turbines mounted on roofs will have a blade diameter of less than 2 metres. Stand-alone turbines will typically have a blade diameter of less than 15 metres and be less than 30 metres in height.

Availability of resource

5.3.4 Wind speed is an important issue when identifying a suitable site for a wind turbine. A minimum wind speed of 3.5 metres per second is required for a small wind turbine to start generating power. A wind speed of 10 – 15 metres per second will produce

the maximum amount of energy generation of a wind turbine. For wind energy generation to be effective and efficient, wind speeds must have consistency without hindrance from any turbulent air, and other obstructions such as trees and buildings. When wind speed is too high, for safety reasons the blades will cease rotation.

- 5.3.5 Evidence has indicated that there are very few areas within the District suitable for wind farm development, when wind speeds are taken into account. It is argued by the Council that current large-scale wind energy schemes are utilising the most suitable areas for wind energy.

Landscape and visual impact

- 5.3.6 Visual changes upon landscapes can have a negative impact on societal understanding and acceptance of wind power developments. This is important in the District, which benefits from a range of international, national and locally designated sites. The potential impacts of wind energy can be a direct concern in areas of highly sensitive landscapes. Effects will vary depending on the size and number of turbines in a development, its placement within the landscape, or the number of visual receptors.
- 5.3.7 Landscape impacts include the effect of a wind turbine on the fabric, character and quality of the landscape and the degree to which it will become a defining characteristic. Visual impacts concern the extent to which the wind turbine will become a feature in particular views and the impact upon people experiencing those views. Both must be considered individually and cumulatively with other existing and proposed turbines (those with planning permission but not constructed) as part of the application process.
- 5.3.8 All developments will require a Landscape and Visual Impact Assessment as part of the planning application to assess the likely landscape and visual impacts of the proposal. This should be proportionate to the scheme proposed.

Ecological considerations

- 5.3.9 In the District there are a range of international, national and local environmental designations such of Ramsar sites, National Nature Reserves (NNR) and Specific Sites of Scientific Interest (SSSI). Wind turbines and associated infrastructure can have a significant impact on the setting of these designations and the quality of the designation itself. Therefore, the following environmental issues must be taken into consideration when devising a wind energy development strategy:
- 5.3.10 If a proposal for a wind turbine lies within or is considered to have an adverse impact upon a Ramsar, NNR or SSSI an Environmental Impact Assessment (EIA) may be required upon request. The Council will provide a Screening Opinion advising whether an EIA is required. EIA is a form of assessment that assesses the impacts of a proposal on the surrounding environment, including the perspectives of environmental, social and economic.
- 5.3.11 Approved LDP: Policy N2, states that a Phase 1 Ecological Survey may be required to identify the likelihood of protected and/or priority habitats and species or where other areas of known ecological importance may be affected. This includes the impact upon bird and bat flights paths. Developers may be required to consult with the Council in these cases.
- 5.3.12 Additionally, developments should seek to deliver net biodiversity and geodiversity gains where possible. This will be secured on a site by site basis to reflect the

characteristics of the application site and natural features in the locality. Any measures will be secured through a S106 agreement.

- 5.3.13 Proposals must consider how a scheme might minimise the potential of flood risk. Proposals must conform to Policy D5: Flood Risk and Coastal Management of the Approved LDP.

Culture and heritage impacts

- 5.3.14 Maldon District contains various designated heritage and cultural assets, both nationally and internationally recognised, as well as undesignated assets. Turbines can be a prominent feature in the landscape, if a turbine is proposed within the setting of, or near to the setting of cultural and heritage assets an assessment of its impact on the asset must be undertaken and submitted with the planning application along with details of how any negative impacts will be mitigated.

Green infrastructure

- 5.3.15 All wind power developments must conform to Policy N1 of the Approved LDP. There is a presumption against any development which may lead to the loss, degradation, fragmentation and/or isolation of existing or proposed green infrastructure. This means that the siting of wind turbines must not have any adverse impact upon, for example, the use of current or new infrastructure such as cycle paths or Public Rights of Way.

Air traffic and river navigation issues

- 5.3.16 Wind turbines may generate a risk for low flying aircraft. Additionally, wind turbines may have an effect on the proper operation of radar systems of both aircraft and river navigation equipment. For any wind power development that may produce such concerns, the correct assessments and consultees must be all involved in the planning process.
- 5.3.17 The National Air Traffic Service (NATS) provide air traffic control in the UK and safeguards all radars, navigation aids and communicational tools from interference and disturbance. NATS is a statutory consultee for all wind energy planning applications in the UK. The Council will encourage applicants to consult with NATS at an early stage in the application process to identify whether their application is likely to be objected to.
- 5.3.18 Wind turbines can also affect activities of the Ministry of Defence (MOD), including aerodromes, radar and communication facilities. The Council will encourage applicants to consult the MOD to ensure there are no adverse operating impacts that come as a result of the proposed development.
- 5.3.19 In all cases, the Council will consult NATS on all planning applications involving wind farm applications and will consult the MOD when the size and scale of the turbine indicates that the turbine could interfere with its operations. Applicants should provide evidence of consultation with NATS and the MOD when submitting the planning application, along with details of how any concerns have been addressed.

Operational considerations

- 5.3.20 Dependent on the size and scale of development, site access will be required for the construction and maintenance of the development, which may result in the need

for an access road leading up to the wind turbines themselves. The appropriate assessments regarding construction of the turbine and to provide the correct cabling from the development site to the sub-station where generated electricity is sent will also need to be undertaken. If any works are required to the highway or any other land this should be identified in the planning application.

- 5.3.21 Noise generation is perceived to be an adverse impact of wind turbine operations; although noise levels of modern wind energy are generally very low. Improvements in technologies have reduced mechanical noise impacts significantly. However, It is important that turbines are located an appropriate distance from noise sensitive developments to minimise any adverse impacts upon local amenity.
- 5.3.22 Where it is considered by the Council that a wind energy scheme would be placed in a noise sensitive location, such as near to dwellings, the applicants should undertake a noise assessment produced in accordance with assessment ETSU-R-97 'The Assessment and Rating of Noise from Wind Farms'.
- 5.3.23 A noise assessments must be submitted to the Council with planning applications where it is considered there are noise sensitive developments in the vicinity. Wind turbines must be located a safe separation distance from buildings, public footpaths and bridleways. For turbines with a power output of 50kW this would include a specific distance from a highway.
- 5.3.24 It is important that there is an appropriate distance between all wind turbines and power lines and that further considerations are given to issues that can arise when planning for grid connections. National Grid should be consulted on applications and evidence of any pre-application discussions should be submitted as part of the planning application.
- 5.3.25 Wind turbines may interfere with electromagnetic transmissions such as television, radio and phone signals. The Office for Communications (OFCOM) should be consulted prior to submitting an application. Evidence of consultation and documents regarding all mitigation strategies targeting adverse effects should be submitted with the planning application.
- 5.3.26 Under certain circumstances, the sun may pass behind the blades of a turbine and create a shadow effect over neighbouring properties. When the blades rotate, the shadow will flicker. Issues with shadow flicker are rare and will only effect properties with 130 degrees either side of North relative to the turbine. The likelihood will depend on the direction, distance, turbine height, time of year, prevailing wind direction and with 10 rotor diameters of a turbine.
- 5.3.27 Where a wind turbine proposal is within 10 rotor diameters of a building, an analysis of shadow flicker must be undertaken and submitted with the planning application. If shadow flicker is proven to have an impact, it must be quantified and mitigation strategies identified. Wind turbines can be controlled to avoid shadow flicker; this can be secured through a planning condition that will require the provision and operation of a system that will stop the turbine rotating when shadow flickering occurs.

Decommissioning and site restoration

- 5.3.28 The applicant should outline, at the pre-application stage, the post-operational and decommissioning activities for the scheme. A decommissioning plan should

accompany the application: this enables the developer to proactively outline the steps necessary for either site restoration or alternative land use scenarios. The decommissioning plan should build in flexibility to reflect the length of time between the application stage and implementation at the end of the development life cycle.

5.3.29 It is proposed, the main planning considerations, when determining an application for onshore wind energy developments are:

- Cumulative landscape and visual impacts
- Ecology
- Heritage asset impacts
- Shadow flicker
- Noise impacts
- Air traffic and safety
- Interference with electromagnetic transmissions
- Transport and access
- Infrastructure design and implementation; and
- Decommissioning and site restoration

5.4 Solar energy

5.4.1 Light and heat from the sun can be utilised to generate energy in the form of electricity using photovoltaic (PV) systems or to heat water using solar heat pumps.

SOLAR PHOTOVOLTAIC ENERGY

Overview of technology

5.4.2 Solar cells, also known as Photovoltaic (PV) cells, absorb and convert solar radiation into electricity via a solar inverter that changes the electric current from a Direct Current (DC) to an Alternating Current (AC).

5.4.3 Solar cells can be arranged to form solar panels, which can then be used for either micro-generation or large-scale deployment in the form of solar farms. Micro-generation schemes are most commonly used domestically or by small businesses, whereas large-scale solar farms typically require large areas of land and are more common in rural locations. Micro-generation schemes are most commonly used to meet individual needs on a localised scale.

5.4.4 Solar Photovoltaic energy uptake is currently subsidised by the UK Government under the Feed-in-Tariffs Scheme, outlined in Chapter 5.10 National Incentive Schemes (Domestic and Non-Domestic).

5.4.5 Active solar technology is permitted development provided the installation is not of an unusual design, does not involve listed buildings and is not situated within a designated area. This section applies to those developments that will require planning permission.

Availability of resource

- 5.4.6 Using photovoltaic cells, the availability of this resource is entirely dependent on the strength of solar radiation. Therefore the stronger the sunlight, the more electricity produced. The positioning of Solar PV systems is important for maximising solar exposure throughout the year.
- 5.4.7 Solar power works best on south facing roofs at a pitch of about 30 degrees. However any solar power can also work on any pitched roof on a roof facing south of due east and due west. North facing roofs are not well-suited to solar power and should be avoided. Free standing systems should be orientated at the same angle and orientated for best performance.
- 5.4.8 Shading should also be avoided: maximum efficiency is achieved from systems clear from shading, some shading is acceptable without much reduction in output but shade should be avoided between 10am and 4pm. This applies to solar systems as well as free-standing units. Shade from buildings, trees, chimneys, TV aerials and vents should be considered before installation.
- 5.4.9 Advances in solar energy technology in recent years have enabled increased compatibility of these products for homeowners. For those who previously were unable to accommodate solar energy on their roof, ground mounted solar products are now becoming a viable option, in part due to the development in tracking mount technologies.
- 5.4.10 Trackers allow solar panels to maximise electricity production by following sun movement throughout daylight hours. PV tracking systems tilt and shift the angle of a solar array, making it suitable to adopt this particular technology where roof options are not available or alternative spaces are deemed more suitable than roof installations. In addition, if roof capacity is not adequate in meeting electricity demands, ground mounted solar energy systems can be suitably matched to electricity consumption without space restrictions of a rooftop system.
- 5.4.11 Dual-axis rooftop tracking systems, specifically designed for roofs, have the ability to boost commercial uptake of solar power. Tracking systems of this sort are being designed, specifically to fit the roofs of commercial and industrial buildings and can boost energy output by up to 30 percent compared to fixed-tilt trackers and 40 percent compared to solar panels without trackers. On average, the hardware adds 10 percent onto the budget of a solar project, and can improve the economics of a solar installation by 20 percent.

SOLAR THERMAL ENERGY

Overview of technology

- 5.4.12 Solar thermal (also known as solar water heating) systems absorb the heat emitted by the sun and use it to heat water for domestic use. This simple process involves solar thermal flat plate collectors or evacuated tube collectors, placed on a roof which absorbs heat from the sun.
- 5.4.13 Flat plate collectors consist of a dark flat-plate absorber of solar energy, a transparent cover that allows solar energy to pass through but reduced heat losses, a heat-transport fluid (air, antifreeze or water) to remove heat from the absorber, and a heat insulating backing.

- 5.4.14 Evacuated tubes use heat pipes for their core instead of passing liquid directly through them. These collectors are composed of multiple evacuated glass tubes each containing an absorber plated connected to a heat pipe. The heat from the hot end of the heat pipes is conducted to the transfer fluid and circulated to a domestic hot water tank heat exchanger.
- 5.4.15 Similar in design to solar photovoltaic panels, solar thermal systems should be mounted on south-facing roofs with direct sunlight to be most efficient and productive. It is compatible with most existing water systems however will not function with appliances that heat water directly from their own source.
- 5.4.16 Solar thermal systems are currently subsidised by the UK Government under the domestic Renewable Heat Incentive (DRHI). Information regarding this scheme can be found in Chapter 5.10 National Incentive Schemes (Domestic and Non-Domestic).

Availability of resource

- 5.4.17 Similar to Solar PV, solar thermal systems capture heat generated via solar radiation, therefore the availability of this resource is dependent on the strength of the solar radiation. The stronger the radiation produced by the sun, the more heat that is absorbed by the collectors. The positioning of Solar PV systems is important for maximising solar exposure throughout the year.
- 5.4.18 A common misconception is that solar thermal systems are unsuitable in colder climates such as the United Kingdom. Solar collectors do not require bright sunlight in order to operate; they require light and whilst clear weather does improve its efficiency, solar thermal systems can operate in overcast scenarios. However considerations must be given to the operative function of solar thermal systems on an annual basis. It is identified that solar thermal systems have the capacity to cover most hot water loads at all temperatures. If the system is suitably designed it can make worthwhile annual contributions to heating.

Landscape and visual impacts

- 5.4.19 The siting and design of solar systems will be determined by the scale and nature of the development. The development of solar PV has the potential to result in significant impacts upon the character and quality of landscape. All proposals should aim to complement the character of the local landscape.
- 5.4.20 Visual impacts can be generated. To avoid the scheme from becoming a dominant feature within the landscape; they should be sited on relatively level ground. Where possible, schemes should be screened from view by using the existing landscape or vegetation. It may also be a requirement of a scheme that additional planting is incorporated to better screen a site and enhance its visual appearance.
- 5.4.21 Additionally, glint and glare reflecting off solar panels could have cumulative impacts in the surrounding vicinity if not carefully assessed. A Landscape and Visual Impact Assessment (LVIA) must be submitted with all planning applications for solar power farms to assess the likely landscape and visual impacts of the proposal.

Ecological considerations

- 5.4.22 The construction of solar facilities can be placed, either on buildings or on large areas of land such as fields. In the case of solar farms careful consideration needs to be given to site selection to minimise adverse impacts upon the environment. If

agricultural land is selected, the proposal should allow for the continued agricultural use of the land.

- 5.4.23 Solar energy schemes can have numerous environmental impacts; such as by fragmenting biodiversity and natural habitats.
- 5.4.24 To minimise environmental impact, vegetation and hedgerows should be maintained and enhanced where possible. Security fencing surrounding the development should enable access for species, such as badgers to continue to access the area. Lighting will only be permitted where absolutely necessary, and must be kept to a minimum where allowed and should not adversely impact upon protected species such as bats.
- 5.4.25 A Phase 1 Ecological Survey will be required as part of any planning application to identify any potential impacts and recommend mitigation. Developers should consult with the Council in relation to impacts upon protected species in and around the application site.
- 5.4.26 The use of large areas of land for solar farms and any subsequent soil compaction may alter the way surface water flows. Development in areas at risk of flooding may also increase the risk.
- 5.4.27 A Flood Risk Assessment (FRA) must be submitted with all planning applications for solar power that cover an area greater than 1ha or are outside Flood Zone 1. The FRA should identify and assess the risk on all forms of flooding and demonstrate how these risks will be managed or mitigated in conformity with Policy D5: Flood Risk and Coastal Management of the Approved LDP.

Culture and heritage impacts

- 5.4.28 The District has a number of designated and undesignated heritage and cultural assets, locally, nationally and internationally recognised, including Scheduled Monuments, Conservation Areas and listed buildings. The physical attributes of all solar energy systems can cause adverse impacts upon the District's heritage and built environment, - permitted development rights will not apply to such proposals.
- 5.4.29 For solar schemes within the setting of, or near the setting of a heritage asset an assessment of its impact must be undertaken and submitted with a planning application along with details of how any identified negative impacts have been mitigated.

Green infrastructure

- 5.4.30 Solar farms are usually a larger scale covering a large land area, so are usually found in rural areas, and use agricultural land. Policy D4 requires that impacts upon the best and most versatile agricultural land are considered through the planning application process. Therefore applications for solar farms on Grade 1, 2 and 3a agricultural land must be accompanied by an appropriate assessment which sets out why the development needs to be located on this land and not on lower grade agricultural land and the benefits the development would have that would outweigh the loss of the agricultural land.
- 5.4.31 All solar developments must conform to Policy N1 and N3 of the Approved LDP, whereby there is a presumption against any development which may lead to

the loss, degradation, fragmentation and/or isolation of existing or proposed green infrastructure. Therefore cycle paths and/or Public Rights of Way such be maintained: if this is not practicable an application should be made to divert the route.

Aviation issues

- 5.4.32 Glint and glare can be produced via solar reflections. There is the possibility that those reflections could be a nuisance to residents, pilots and drivers. These issues should be considered by a glint and glare assessment at an early stage in the application process and should consider the likely reflective capacity of the materials and any impacts. If identified early on in the application process, the potential issues can be rectified.

Operational considerations

- 5.4.33 Site access will be required for the construction and maintenance of the development. In addition, security fencing and lighting may be required. If any works are required to the highway or any other land this should be identified in the planning application.
- 5.4.34 Noise can arise from larger operational solar PV systems. Consideration must be given to this when identifying a site for development, particularly upon noise sensitive developments, such as residential properties that are nearby. A noise assessment may be required to address any impacts identified. This will be determined on a site-by-site basis.
- 5.4.35 To maintain an optimal level of operational efficiency, solar PV panels will need to be cleaned regularly to avoid dust and dirt making contact with the surface of the panels. To mitigate these issues, nanotechnology solar protector treatments are available. These coatings are applicable to solar panels, pre and post installation, and create a high performance long lasting protective coating for all forms of solar PV panels, improving the energy production of each panel over a long period of time by up to 10 percent.

Decommissioning and site restoration

- 5.4.36 When solar panels are no longer needed for generation they should be removed as soon as reasonably possible. This will be secure via planning condition attached to a planning permission. A decommissioning plan should be created for the overall scheme; it should have regard to the decommissioning and reclamation section of this SPD.
- 5.4.37 It is proposed that the main planning considerations when determining an application regarding solar energy developments are:
- Cumulative landscape and visual impacts
 - Ecology
 - Heritage asset impacts
 - Noise impacts
 - Air traffic and safety

- Transport and access
- Infrastructure design and implementation; and
- Decommissioning and site restoration

5.5 Biomass and energy crops

Overview of technology

- 5.5.1 Biomass can be either used directly or indirectly to create energy. A direct source of energy would be burning biomass products, such as wood, energy crops or animal waste to produce heat. Indirect forms of energy production via biomass are created through the conversion of various forms of biomass into electricity at a combustion plant.
- 5.5.2 The domestic use of a biomass system (wood-fuelled heating systems) provides a direct source of energy to households by burning wood pellets, chips or logs. Adaptive to suit the needs of each individual household, biomass systems can heat a single room via a log-burning stove or heat multiple spaces and appliances via a biomass boiler. The cost of wood burning stoves and boilers are relatively low, therefore biomass has one of the lowest costs of all the low carbon technologies. Wood burning stoves can create smoke unless chimney/flu filters are installed (See 5.5.24).
- 5.5.3 Larger biomass systems used to heat commercial premises or large buildings will require planning permission if the boiler is to be sited outside the building, or in a new building or extension.
- 5.5.4 Wood fuel boiler systems are subsidised by the UK Government under the Renewable Heat Incentive (RHI). Information regarding this scheme can be found in Chapter 5.10 National Incentive Schemes (Domestic and Non-Domestic).
- 5.5.5 Non-domestic biomass systems and energy crop operations are predominantly used to indirectly produce electricity and biofuels for domestic purposes. Specifically, biomass products are formed by solid, gas and liquid state.
- 5.5.6 Industrial biomass sources for mass energy production include plant matter and a variety of tree species. These energy production units are either self-serving to a business's needs or produce energy on a large-scale for input into the national grid.
- 5.5.7 Biomass heating from burning wood is considered to be a low carbon energy source, as only the carbon that has been absorbed by the wood is released. If the trees are replanted, the use of wood as a fuel is almost carbon neutral as the new trees will absorb the equivalent amount of carbon released.
- 5.5.8 There is high potential for biomass and energy crop production within the District. The large amount of agricultural land available offers the potential for an array of uses; from the production of crops needed to be used for biomass consumption to the siting of biomass plants themselves.
- 5.5.9 Biomass from forestry harvesting, agricultural sources and energy crops require local input due to the short lifespan of biomass materials. Therefore logistics must be thoroughly planned, with the aim of locating the production plant and generation plant in close proximity of each other.

Availability of resource

- 5.5.10 Biomass production comes from crop and livestock sources, it is also indigenous meaning it can be produced at a local scale.
- 5.5.11 Biomass for fuel can be gathered or grown. Common biomass fuels sources include:
- Biodegradable waste: municipal and agricultural
 - Forestry residues and timber processing waste
 - Crop residues, such as straw, leaves and seed pods; and
 - Energy crops: specifically grown on demand to be used as a biomass energy source
- 5.5.12 The District is predominantly rural and has the potential to provide for all of these sources, therefore assessing the availability of this resource should be based around an evaluation of viability to the energy market rather than its physical availability.

Landscape and visual impacts

- 5.5.13 Domestic biomass systems are unlikely to have visual or landscape issues unless external flues are required. If required they should be designed and sited to have the minimum effect on the appearance of the building. In this regard, it will be beneficial to the applicant if discussions take place with the Council's Environmental Health department. If new-builds are required to house a boiler or store fuel, they should be located close to the existing building and be designed with consideration to the surrounding area.
- 5.5.14 Large-scale, non-domestic biomass systems would however have a larger impact on their surrounding area due to their industrial-like aesthetics and should be appropriately placed within an industrial setting. A landscape and visual impact assessment may be required by the Council, in order to understand all cumulative impacts created by the development.

Ecological considerations

- 5.5.15 Siting proposals for larger schemes must outline designated areas and habitats within the vicinity of the proposed development, and would have to comply with national and local policies regarding natural environments, geodiversity and biodiversity. Specifically within the Approved LDP: Policy N2, whereby developments should seek to deliver net biodiversity and geodiversity gains where possible.
- 5.5.16 Considerations must be given to the possibility that development may negatively impose flood risk to potential sites. Legitimate assessment methods must be outlined if there is evidence to suggest there is a flood risk and must conform to Policy D5: Flood Risk and Coastal Management of the Approved LDP.
- 5.5.17 The District has a number of designated and undesignated ecological assets, locally, nationally and internationally recognised, such of those include Ramsar Convention Designation for Wetlands, National Nature Reserves and Specific Sites of Scientific Interest (SSSI). Siting considerations must include the observation of these important sites and methods of mitigation must be adhered to.

Culture and heritage impacts

- 5.5.18 If an applicant wants to deploy a biomass system with a flue in a Listed Building or within a Conservation Area then planning permission and/or listed building consent might be required. The flue should be designed to have minimal effect on the appearance of the listed Building and Conservation Area otherwise planning permission will not be granted.
- 5.5.19 The District has a number of designated and undesignated heritage and cultural assets, locally, nationally and internationally recognised, including Scheduled Monuments, conservation areas and listed buildings. The physical attributes of biomass energy systems that do not fall under permitted development can cause adverse impacts upon the District's heritage and built environment. Siting considerations must include the identification of these important sites and methods of mitigation must be adhered to. There is a presumption against biomass or energy crop development which may lead to the loss or degradation of historic assets within the District.

Green infrastructure

- 5.5.20 All developments must conform to Policy N1 and N3 of the Approved LDP, whereby there is a presumption against any development which may lead to the loss, degradation, fragmentation and/or isolation of existing or proposed green infrastructure. Thus meaning no development shall inhibit current or new infrastructure facilities such as cycle paths or Public Rights of Way. Non-domestic schemes will need to take these factors into consideration at the planning stage in order to avoid complications that may arise at a later stage if due diligence is not conformed to.

Operational considerations

- 5.5.21 Dependent on the size and scale of development, site access will be required for the construction and maintenance of the development, which may result in the need for an access road leading up to the biomass scheme. The appropriate assessments regarding construction of the scheme and to provide the correct cabling from the development site to the sub-station where generated electricity is sent will also need to be undertaken. If any works are required to the highway or any other land this should be identified in the planning application.
- 5.5.22 Larger biomass systems should be located in close proximity to a fuel source if possible and should plan for sufficient storage facilities on site so that fewer deliveries are required. This will minimise transport movements and the impact upon the environment.
- 5.5.23 The potential noise impacts throughout construction, operation (including fuel deliveries) and decommissioning stages of the development life cycle, particularly for larger systems will need assessing as part of the planning application. Applications should include a noise assessment demonstrating that the noise will not cause an unacceptable degree of disturbance to local amenity. Therefore the assessment must identify mitigation to address any impacts identified.
- 5.5.24 Biomass systems can create odour, particularly in larger systems. The impacts of odour and mitigation controls must be detailed in the planning application to ensure there is no undue harm to residential amenity.

5.5.25 Domestic scale biomass boilers may require a flue which can be fitted to existing chimneys. Careful consideration should be given to the type and scale of system to suit the applicant’s needs. Wood burning stoves should be correctly sized for the room it will serve.

Decommissioning and site restoration

5.5.26 The applicant should outline, at the pre-application stage, the post-operational and decommissioning activities for the scheme. A decommissioning plan should accompany the application: this enables the developer to proactively outline the steps necessary for either site restoration or alternative land use scenarios. The decommissioning plan should build in flexibility to reflect the length of time between the application stage and implementation at the end of the development life cycle.

5.5.27 It is proposed that the main planning considerations when determining an application relating to biomass and energy crops include:

- Cumulative landscape and visual impacts
- Ecology
- Heritage asset impacts
- Noise impacts
- Environmental impacts
- Emissions
- Transport and access
- Infrastructure design and implementation; and
- Decommissioning and site restoration

5.6 Small Hydro

Overview of technology

5.6.1 Hydro-power uses flowing water from a higher to a lower level to drive a turbine, thus producing mechanical energy. This mechanical energy is then converted via a generator to form electricity. A domestic hydro power unit is illustrated below.



DOMESTIC SMALL HYDRO POWER UNIT INSTALLATION (SOURCE: GOOGLE)

5.6.2 The energy generated from a hydro-power generator is proportionate to the volume of water and the vertical distance it falls. Therefore the potential for hydro power in the Maldon District will be mostly limited to small-scale river schemes with low energy production, typically ranging between 10kW and 50kW. For domestically viable sites, the minimum requirements are outlined in Table 5.1.

	Maximum Power Output (kW)				
	5	10	25	50	100
Head (m)	Flow required (m3/sec)				
2	0.340	0.680	1.699	3.398	6.796
5	0.136	0.680	0.680	1.359	2.718
10	0.068	0.272	0.340	0.680	1.359
50	0.014	0.136	0.070	0.136	0.272
100	0.006	0.014	0.340	0.068	0.136

TABLE 5.1: MINIMUM FLOW RATES REQUIRED FOR A RANGE OF (GROSS) HEADS

5.6.3 In the UK there are two main methods for generating hydroelectricity:

- Storage schemes – where a dam collects water in a reservoir, then releases it to drive turbines, producing electricity
- Run-of-river schemes – where the natural flow of the river or stream is used to drive a turbine

5.6.4 The benefits of hydro-electric power generation schemes must be balanced against all other uses of the river to ensure exploitation is not the outcome from the development. The scheme must work in harmony with all other functions that might come as a result of the river. The design specification must ensure that the local ecosystem or the quality of the water source is not adversely affected.

5.6.5 Hydropower is reliable and predictable and if installed correctly can produce electricity all year round. Over time, it is one of the most efficient forms of renewable energy. However, the upfront costs for hydropower can be high, but the payback of a scheme would be long-term as installations have a lengthy life-cycle. Maintenance requirements and costs are usually low. Available government subsidies can be applied to the uptake of small-hydro schemes under the Feed-in Tariff. Information regarding this scheme can be for in Chapter 5.10 National Incentive Schemes (Domestic and Non-Domestic).

5.6.6 In addition to the requirement of planning permission, small hydropower schemes require specific licenses, consents and approvals in order to operate. The Environment Agency will determine which authorisations will be required. For more guidance regarding these approvals, please visit: <https://www.gov.uk/guidance/new-hydropower-scheme-apply-to-build-one#apply-for-licences-consents-and-approvals>

Availability of resource

- 5.6.7 Hydroelectric power is the energy derived from flowing water; therefore it is usually only possible to exploit this resource where it occurs. This can be from rivers or man-made installations, where water flows from a high-level reservoir down through a tunnel and away from a dam. The availability of the water resource does not only depend on whether it is physically available, but also whether the use of the river for electricity conflicts with other functions related to the river.
- 5.6.8 Access to the National Grid is required. Discussions with the relevant electricity company should take place to identify if there are any connectivity issues to the grid and assess whether it will be cost effective. Evidence of this should be included in the planning application.

Landscape and visual impacts

- 5.6.9 Considerations must be given to integrating the scheme into the landscape as far as possible. Sites on hillsides and in open landscape are likely to have more visual impact: such schemes should be sensitively sited and designed so that they integrate into the landscape through the careful use of landform, materials, vegetation and tree cover. Where possible, existing buildings should be used to house machinery. Placement and design of pipes and power lines should also be considered carefully at the planning stages of the scheme for minimal visual impact.
- 5.6.10 The Council will require all hydropower applications to assess the landscape and visual impacts of a proposal through a Landscape and Visual Impact Assessment.

Ecological considerations

- 5.6.11 Changes in river flow fluctuations and water quality will need to be assessed in order to fully understand the risks associated to the environment and on wildlife, particularly fish. It is possible to mitigate such issues if they arise by implementing flexible programming, both in the short and long term. The Environment Agency will advise whether the scheme should include structures such as fish passes to protect fish and other freshwater animals from the turbines. In setting targets, development should take into consideration; the protection of vegetation and forestry, soil erosion and the protection of habitats and species.
- 5.6.12 In accordance with Policy N2, proposals must ensure designated areas and habitats within the vicinity of the proposed development are not adversely affected. Developers should consult with the Council regarding the presence of important habitats or protected species in and around the proposed scheme. An ecological survey must be submitted with all planning applications assessing any potential impacts and identifying appropriate mitigation. Developments should also seek to deliver net biodiversity and geodiversity gains where possible.
- 5.6.13 If the proposal lies within or close to a sensitive area such as SSSI, an EIA may be required. If this applies the Council will provide a Screening Opinion which will advise the applicant as to whether an EIA is required. EIA assesses the possible impacts that a proposed project may have on the environment, including environmental, social and economic impacts. Where EIA is required, an Environmental Statement will be also needed to accompany the planning application, which assesses the impact a project will likely have on the local environment.

- 5.6.14 Where an EIA is not required the Council may still request certain issues are addressed, such as the cumulative impacts of the proposal or the impact of the proposal on nearby designations if the application site is adjacent but not within a designation. An Environmental Statement will be required if this is the case.
- 5.6.15 Some hydropower schemes can lead to reduced flows in rivers which can increase flood risk or affect land drainage. A flood risk assessment must be submitted to the Council with every planning application. It must identify and assess the risks on all forms of flooding to and from the development and demonstrate how the flood risks will be managed or mitigated so that the development remains safe throughout its lifetime.

Culture and heritage impacts

- 5.6.16 The District has a number of designated heritage and cultural assets, locally, nationally and internationally recognised, such as Scheduled Monuments, Registered Battlefields, Registered Parks and Gardens, Listed Buildings and Conservation Areas, as well as undesignated heritage assets. Consideration must be given to the impact of hydropower on these important sites. If proposals are proposed within the setting of, or near to the setting of one of the above types of heritage asset, an assessment of its impact on the heritage asset are required along with details of how any negative impacts will be mitigated. Further details are found in Policy D3: Conservation and Heritage Assets.

Green infrastructure

- 5.6.17 All proposals must not inhibit existing functions of a river. In accordance with Policies N1 and N3 of the Approved LDP, development should not lead to the loss, degradation, fragmentation and/or isolation of existing or proposed green infrastructure. Thus meaning no development shall inhibit current or new infrastructure facilities such as cycle paths or Public Rights of Way.
- 5.6.18 Hydro power systems can create conflicts relating to ownership and access rights for both water and land including for agriculture and social activities such as fishing and walking. It is vitally important that all issues are thoroughly examined as early as possible to ensure that all potential conflicts can be resolved.

Operational considerations

- 5.6.19 All small hydropower systems require routine maintenance to ensure reliable operational function. The frequency of servicing depends on the scale, complexity and type of scheme in operation. Whilst it is considered that development and construction costs are high, operating costs are much lower. With the added knowledge that the life-cycle of hydropower systems exceed 50 years, investment costs are recovered once the system is in operation.
- 5.6.20 The operational activities of a hydropower system can produce noise via number of processes. This type of impact can have a detrimental effect if residential areas are located in the vicinity of the development. In these cases, the Council may require a noise assessment to be submitted with the planning application, demonstrating that the scheme will not have a negative impact on local amenity. In addition, design and mitigation strategies will further reduce noise pollution to levels required by national legislation. Noise limits can be imposed if necessary as a condition on the planning permission.

Decommissioning and site restoration

- 5.6.21 The applicant should outline, at the pre-application stage, the post-operational and decommissioning activities for the scheme. A decommissioning plan should accompany the application: this enables the developer to proactively outline the steps necessary for either site restoration or alternative land use scenarios. The decommissioning plan should build in flexibility to reflect the length of time between the application stage and implementation at the end of the development life cycle.
- 5.6.22 It is considered that the main planning considerations when determining a planning application for hydro-electric power generation are:
- Cumulative landscape and visual impacts
 - Water supply and discharge/flow rates
 - Ecology
 - Heritage asset impacts
 - Noise impacts
 - Environmental impacts
 - Fisheries interests
 - Construction disturbances
 - Operational disturbances
 - Transport and access
 - Infrastructure design and implementation; and
 - Decommissioning and site restoration

5.7 Micro combined heat and power (CHP)

Overview of technology

- 5.7.1 Micro-Combined heat and power (CHP) enables one single fuel to be converted into both electrical and heat energy in a single process at the point of use. Micro-CHP is highly efficient due to its use of thermal energy as a source of productive energy use as well as generating electricity. By generating heat and electricity simultaneously, micro-CHP can reduce carbon emissions by up to 30% in comparison to alternative means such as the use of a conventional boiler and power station.
- 5.7.2 Micro-CHP or micro cogeneration is most commonly used by domestic households, shared living spaces such as residential flats or by small businesses to support individual energy requirements. Instead of burning fuel to boil water or heat space, surplus energy is converted into electricity in addition to heat. CHP achieves combined efficiencies in the region of 80% through thermal recovery and the generation of electricity.
- 5.7.3 The financial incentives available for this particular technology ensure a sufficient rate of return for consumers and businesses as micro-CHP is eligible for the Feed-in Tariff incentive, setup and subsidised by the UK Government. Users will receive a tariff for each kWh of electricity generated and an additional tariff for each kWh generated and exported to the national grid. Information regarding this scheme can be found in Chapter 5.10 National Incentive Schemes (Domestic and Non-Domestic).

Availability of resource

- 5.7.4 Micro-CHP technologies can use conventional fuels such as gas or biomass in order to cogenerate both heat and electricity. Instead of using fuel to heat water or space separately, micro-CHP efficiently converts energy that would have been lost into electricity, in addition to heat. There are opportunities to implement a hybrid system whereby small-scale CHP systems can operate in combination with renewable technologies such as solar PV or micro wind power schemes.
- 5.7.5 When there is little heat demand and in the summer, CHP boilers in theory will not generate adequate electricity for domestic use as the boiler will not be operating at sufficient capacity. Therefore it is beneficial to combine a domestic CHP unit with other renewable energy sources such as solar PV. This will ensure electricity generation can optimise heat and electricity throughout the year rather than on a seasonal basis.
- 5.7.6 CHP is adaptable and can be considered at any site where there is sufficient energy demand in the form of heating and cooling, particularly if the demand is for long periods. The scale of the scheme will depend on the energy demand and availability of space.

Landscape and visual impacts

- 5.7.7 As Micro-CHP systems are located within a building systems will not pose any landscape and visual impacts unless an external flue is required. If required they should be designed and sited to have the minimum effect on the appearance of the building. If new buildings are required to house the CHP unit and related equipment they should be located close to the existing building and be designed sensitively to complement the adjacent buildings and surrounding area.
- 5.7.8 The installation of a CHP unit in a Listed Building or in a Conservation Area will require planning permission and Listed Building Consent if a flue is required outside. The flue should be designed to have minimal effect on the appearance of the heritage assets otherwise planning permission will not be granted.
- 5.7.9 Micro-CHP systems may require a flue which can be fitted to existing chimneys. Careful consideration should be given to the type and scale of system to suit the applicant's needs. Wood burning stoves should be correctly sized for the room it will serve. Considerations should also be given to the impacts of any plumes that are emitted from chimney stacks.

Ecological considerations

- 5.7.10 CHP systems are highly efficient in comparison to alternative and separate methods of heat and electricity production, there are however environmental impacts that relate to flue-gas emissions and by-products, such as ash. Micro-CHP systems can reduce the output of Greenhouse gas emissions as it can sustain its own generation of electricity which would otherwise be generated via conventional power plants, therefore should be classified as a low carbon energy source.

Culture and heritage impacts

- 5.7.11 The District has a number of designated heritage and cultural assets, locally, nationally and internationally recognised, such as Scheduled Monuments, Registered Battlefields, Registered Parks and Gardens, Listed Buildings and Conservation Areas, as well as undesignated heritage assets. Consideration must be given to the impact of hydropower on these important sites. If proposals are proposed within the setting of,

or near to the setting of one of the above types of heritage asset, an assessment of its impact on the heritage asset are required along with details of how any negative impacts will be mitigated. Further details are found in Policy D3: Conservation and Heritage Assets.

Operational considerations

- 5.7.12 Micro-CHP systems require a similar level of maintenance as a conventional boiler, with an annual inspection including a change of the engine oil in the case of internal combustion engines.

Decommissioning and site restoration

- 5.7.13 The applicant should outline, at the pre-application stage, the post-operational and decommissioning activities for the scheme. A decommissioning plan should accompany the application: this enables the developer to proactively outline the steps necessary for either site restoration or alternative land use scenarios. The decommissioning plan should build in flexibility to reflect the length of time between the application stage and implementation at the end of the development life cycle.
- 5.7.14 It is considered that the main planning considerations when determining a planning application for micro CHP are:
- Visual impacts
 - Heritage asset impacts
 - Emissions
 - Infrastructure design; and
 - Relevant building standards and regulations

5.8 Ground and air source heat pumps

Overview of technology

- 5.8.1 Ground source heat pumps consist of pipes being laid underground to extract heat from the ground. This heat can be used to heat radiators, underfloor heating systems and hot water. Circulating a mixture of water and antifreeze around a loop of pipe called a ground loop, this loop is buried underground and absorbs heat from the ground into the fluid and passed through a heat exchanger into the heat pump. They can also be used in reverse to cool a building in summer.
- 5.8.2 Air source heat pumps absorb heat from the outside air. Similar to ground source heat pumps, this heat can then be used to heat domestic heating air to air systems. Air source heat pumps can extract heat from temperatures as low as -40 degrees with the use of refrigerant R410a. They can also be used for cooling, and work in a similar way to air conditioning. They are considerably cheaper to install than ground source heat pumps but are not usually as efficient. This is because they use the heat from the air, which in the UK is colder in the winter when heating is needed.
- 5.8.3 Ground and air source heat pumps do have impacts on the environment as they need electricity to operate the pumps. However, the heat extracted via the air or ground is abundant. The consumption of electricity can be mitigated by the use of solar PV panels or other renewable energy source that generates electricity. This can enable heat pump users to become self-sustaining with their energy demands.

- 5.8.4 Heat pumps work most effectively where the temperature of the air/ground is higher. In the summer, an air source heat pump will take in warm air and therefore the heat pump itself will operate at minimal operational capacity in order to generate heat. Conversely, in the winter season, when there is a higher demand for heat generation, the heat pump will have to operate at an increased rate. With the contribution of colder air temperatures, air source heat pumps will need to work near, or at, full operational capacity to meet demand.
- 5.8.5 Ground source heat pumps, on the other hand, do not experience extreme fluctuations in temperatures unlike air source heat pumps. Ground temperatures are fixed, on average, at 10 degrees Celsius annually. Comparatively, in relation to air source heat pumps, ground source heat pumps provide the same hot water requirements with a lower electricity consumption rate.
- 5.8.6 Ground and air source heat pumps operate at maximum efficiency when supplemented by additional renewable and low carbon technologies such as solar photovoltaics and wind energy. Additionally, supplementary technologies will reduce reliance on the national grid to supply heat pumps with electricity.
- 5.8.7 Heat pumps (Ground to water and Air to water) are currently subsidised by the UK Government under the Renewable Heat Incentive (RHI) scheme. Information regarding this scheme can be found in section 5.10 National Incentive Schemes (Domestic and Non-Domestic).
- 5.8.8 Planning permission may be required when fitting a heat pump, most commonly when development takes place in a conservation area or on listed buildings.

Availability of resource

- 5.8.9 Heat pumps require a small amount of electricity to operate; this can be sourced from either the national grid or renewable sources. Heat pumps are considered highly efficient as they do not source heat from combustion methods and can operate throughout the year, even at temperatures of -40 degrees Celsius/ Fahrenheit with the use of refrigerant R410a.

Landscape and visual impacts

- 5.8.10 Heat pumps are usually placed on the outside of buildings and therefore will have a physical presence and can affect the appearance of a building. Similar in design as an air conditioning unit, the placement of heat pumps should be so that they limit their visual impact and appearance.
- 5.8.11 Dependent on the scale of development, heat pumps may need planning permission if their prominence does not meet the conditions set out in the Town and Country Planning (General Permitted Development) (England) Order 2015 Part 14. This would include the installation of a heat pump system on a Listed Building or in a Conservation Area.
- 5.8.12 Ground source heat pumps require the installation of pipes beneath the ground. During the construction phase there may be landscape and visual impacts. The ground must be restored following installation to ensure there are no permanent landscape and visual impacts.

Ecological considerations

- 5.8.13 For the deployment of ground source heat pumps, drilling and excavation will need to be undertaken which can cause risks of pollution to groundwater, if the land or soil is contaminated. Before submitting a planning application, the site must be assessed in order to determine if there is land contamination via a Groundwater Risk Assessment.
- 5.8.14 Ground disturbances has the potential to impact habitats and wildlife. Considerations should be given to the extent of those impacts and whether the site has ecological value. The Council will request, where necessary, the appropriate assessments to determine the impacts of a development on habitats.

Culture and heritage impacts

- 5.8.15 All proposals should be consistent with Policy D3: A planning application for an air source heat pump on a listed building will be assessed against the extent to which it would interfere with the appearance, structure, design or character of the listed building. Should a proposal have a negative effect on a listed building or a conservation area, listed building consent and planning permission will not be granted.
- 5.8.16 Furthermore, heat pump systems will not be considered permitted development (Town and Country Planning (General Permitted Development) (England) Order 2015 Part 14) if it is proposed on land within a conservation area.
- 5.8.17 When excavating trenches for pumps outside the curtilage of a dwelling, considerations must be given to archaeological interests on the land. Before any work takes place, the applicant must identify whether there are any archaeological interests on site and mitigation required if so.

Operational considerations

- 5.8.17 Ground source heat pumps can be installed in most locations but may not be suitable for every building. Pumps can vary in size but are often a similar size to a domestic fridge-freezer, therefore sufficient space must be available.
- 5.8.18 Heat pumps do not work well with conventional central heating systems that use radiators as they will not heat the water high enough for the radiators or provide enough heat, so a new system may be required. They work best with underfloor heating systems.
- 5.8.19 Heat pumps need an electrical supply in order to operate, this can be provided via conventional fuels sourced from the national grid, or alternatively via supplementary renewable resources, thus developing a hybrid system whereby both heat and electricity are created sustainably.
- 5.8.20 Air source heat pumps are fitted to a wall or on the ground outside a building and need sufficient surround space to allow good air flow.
- 5.8.21 Air source heat pumps can generate noise via the external fan. Applicants will need to demonstrate that noise will not be an issue for the surrounding vicinity.
- 5.8.22 Maintenance is ongoing once the scheme is set up, services are most commonly on an annual basis but would be determined by the installer. This is an important process as, although the system is efficient and environmentally sound in

comparison to alternative non-renewable sources of heat, some of the fluids used for the transfer of heat pose significant dangers to the environment. Therefore to remove any risk that might present itself to the environment, correct maintenance procedures should be applied when using a heat pump.

Decommissioning and site restoration

- 5.8.23 The applicant should outline, at the pre-application stage, the post-operational and decommissioning activities for the scheme. A decommissioning plan should accompany the application: this enables the developer to proactively outline the steps necessary for either site restoration or alternative land use scenarios. The decommissioning plan should build in flexibility to reflect the length of time between the application stage and implementation at the end of the development life cycle.
- 5.8.24 It is considered that the main planning considerations when determining a planning application for heat pumps are:
- Cumulative landscape and visual impacts
 - Ecology
 - Heritage asset impacts
 - Noise impacts
 - Construction disturbances
 - Operational disturbances
 - Geotechnical
 - Transport and access; and
 - Decommissioning and site restoration

5.9 Community ownership schemes (community energy)

- 5.9.1 Community ownership or 'community energy', defined by the government, focuses on community projects or initiatives for; reducing energy consumption, managing energy more efficiently, generating energy and securing energy through purchase. The SPD will look at these four pathways of community involvement in more detail.
- 5.9.2 Community ownership covers aspects of collective action to reduce, purchase, manage and generate energy. Community energy projects have an emphasis on local engagement, local leadership and control and the local community benefiting collectively from the outcomes.
- 5.9.3 Community-led action can often tackle challenging issues around energy; local knowledge and common goals can often bring communities together with aspirations to deliver a more sustainable community.
- 5.9.4 The Community Energy Strategy: Full Report (2014), aims to help both existing groups form decentralised energy strategies and inspire more communities to set up and expand. The potential for communities to take control of their own energy resources would provide profound benefits, whether it be securing energy for those who are vulnerable or reducing a community's carbon footprint and offering a more sustainable path to decarbonisation.

- 5.9.5 The report also found that communities are more effective in reaching the vulnerable in society and may be more trusted by sceptical consumers. Also, best placed to maximise the benefits of certain renewable technologies, such as district heating, communities can opt for those technologies that are favoured by all. Wider benefits can be felt by the strengthening of local economies and a greater sense of community.

Partnerships

- 5.9.6 The ability for the private, public and third sector to work in partnership together, aiming towards a common goal can be an effective way for communities to achieve their objectives. Not only would community aspirations align with organisation investment opportunity, but local interest and reach would enable the correct development to be situated in the preferred locations, with the support of the community.
- 5.9.7 The uptake in community-led ownership schemes is low; transforming local ambition into purposeful development is a difficult task when organisation and resourcefulness need be voluntary. But collaborating organisations would benefit most groups aiming to achieve their goals.
- 5.9.8 The challenge therefore is being able to identify the correct methods of communication and connection between community and organisation. Organisations include renewable energy developers, other energy and non-energy businesses, local enterprise partnerships (LEPs), housing associations, third sector organisations, farmers and other landowners.
- 5.9.9 However, the NPPF (2012) states that Local Planning Authorities should recognise the responsibility on all communities to contribute to energy generation from renewable and low carbon sources, and support community-led initiatives for renewable and low carbon energy sources.
- 5.9.10 Neighbourhood plans are a real opportunity for communities to engage with their Local Planning Authority and actively plan for community-led developments. Specifically within Neighbourhood Plans, Neighbourhood Development Orders and Community Right to Build Orders can be used to grant planning permission for renewable and low carbon energy development. In addition, as part of a Neighbourhood Plan, communities can initiate the development of a community energy plan to underpin the Neighbourhood Plan.
- 5.9.11 For more information about Neighbourhood Plans and/or community-led planning initiatives, please go to the Maldon District Council website: https://www.maldon.gov.uk/info/20048/planning_policy/8112/community_led_planning_and_neighbourhood_plans/2

Collating an evidence base for community energy

- 5.9.12 A sound and robust evidence base is important for any community energy strategy.
- 5.9.13 At a local level, the ability to evaluate and compare different community-led energy initiatives can help maximise the chances of a successful programme and produce maximum efficiency. Although there are no such initiatives in Maldon at the moment examples exist elsewhere in Essex, and interested local organisation would benefit from gaining knowledge relating to both successful as well as unsuccessful projects.

- 5.9.14 For more information and guidance regarding Community Energy, please visit: <https://www.gov.uk/guidance/community-energy>
- 5.9.15 As with all renewable energy projects, monitoring and evaluation of community projects is important, and can also help inform other interested groups about the benefits of schemes. Simple measures can include: power output of chosen technology, income generated, expenditure on the project and number of community members that participated in the engagement process. Social impacts are more difficult to calculate but are most commonly sought through surveys with local residents. Feedback can prove invaluable when aiming to identify the positive and negative social impacts of each scheme.
- 5.9.16 Similarly, it is difficult to measure the environmental impacts of community energy projects. A brief description of how a community-led scheme may impact its surrounding environment can be viewed with value.
- 5.9.17 Whilst monitoring and evaluation can be sought immediately after a scheme is fully operational, it is also as important that a review of the scheme is undertaken over a longer period of time. This is so the benefits and output data can be collected and validated over a longer timescale.

Accessing channels of investment

- 5.9.18 Access to investment is a fundamental factor in the success of community energy projects. The feasibility and planning stage, the initial starting point for any project, is the most difficult stage of the entire project as it is at this point communities must attract financial investment that is usually entirely 'at risk'. This means if the project does not move past the planning stage, all investment is lost.
- 5.9.19 It may be difficult for communities to source finance due to the limited number of project financiers for the community energy sector, however there are government schemes in place to help smaller projects that might not be able to source funding via alternative means.
- 5.9.20 Community share offers are the most recognised approach to securing finance for community-led ownership schemes. Investment through a community share offer can vary from project to project, but can have a profound effect on enabling community members to feel more involved in the process as they actively seek to gain from their investment. Although entry levels of investment can be difficult for less affluent members of the community, many projects develop creative approaches to addressing these issues so social exclusion does not occur.
- 5.9.21 Alternatively, there are also opportunities for groups to work with other partners and funders to offer instalment schemes, and equity-matching products to help boost social inclusion within communities.

Generating energy

- 5.9.22 The opportunity to generate electricity and heat on a local level, with the added ability to supply the national grid with surplus energy poses many advantages for community-led initiatives whereby sustainability is achieved on many levels. There are however fundamental differences in how the generation of electricity and heat can be optimised at a local level.

- 5.9.23 The ability for community energy schemes to optimise electricity generation within a community and the ability to transfer additional supply to the national grid for a specified tariff fee allows communities to collectively make returns on their investments. Section 5.10 will focus specifically on electricity generation tariff schemes that are available for both individual and community-led renewable energy projects.
- 5.9.24 Unlike generating electricity, generating heat is most commonly distributed at a local level only as it is difficult to distribute over larger distances. Therefore, in regards to community energy schemes, there is great potential for a cost effective and quick implementation of renewable heat.
- 5.9.25 However, as with all renewable and low carbon technologies, there are certain barriers that must be overcome in order for their expansion amongst communities and domestic households. Renewable heat technologies are very much in the early phase of their roll-out in domestic markets. Low awareness levels can make it hard for communities to engage in discussion, especially without some form of leadership or incentive.
- 5.9.26 The benefits of renewable heat strategies are plenty:
- Developing community heat networks can enable efficient methods of heat sharing amongst a collective
 - Reduces energy costs for individual households with the generation of heat energy from one source
 - Helps identify and support vulnerable people within communities that might not be able to access adequate heating or be recognised as living in fuel poverty
- 5.9.27 Communities can generate renewable heat through a variety of means, the most common include:
- The development and installation of renewable heating systems on communal premises, such as community centres or library's
 - The installation of individual renewable heating systems, such as biomass boilers, heat pumps or solar thermal systems
 - The development of community heating systems, providing shared heat to individual households within a community from a fixed source
- 5.9.28 There are certain barriers inhibiting investment in community ownership programmes. Enabling the development of renewable energy schemes on a community level requires collective engagement and realistic ambition. Creating an awareness of the opportunities available on a local level is the most realistic route towards an increased uptake in community ownership schemes such as district heating.

5.10 National incentive schemes (domestic and non-domestic)

- 5.10.1 Alone, energy markets cannot deliver the desired level of renewable energy uptake. As a result of market and regulatory inefficiencies such as low levels of competition internally and unfair competition with other fuels externally, national incentive schemes are required in order to encourage market growth.

5.10.2 There are currently a variety of initiatives available within England, these vary on a regional and local level. The three most prominent schemes available are:

- Domestic Renewable Heat Incentive (DRHI)
- Non-Domestic Renewable Heat Incentive (NDRHI)
- Feed-in Tariff (FIT)

DOMESTIC RENEWABLE HEAT INCENTIVE (DRHI)

5.10.3 The DRHI is a government financial incentive that promotes the production and use of renewable heat via specific renewable and low carbon technologies. The use of such technologies can help contribute towards reducing the UK's dependence on non-sustainable heating fuels and as a result reduce its carbon emissions whilst meeting renewable energy targets.

5.10.4 Launched in April 2014, DRHI provides financial support to owners of renewable heating systems for seven years. The amount received by participants varies, dependent on the technology installed and the latest tariffs available for each technology. The Department for Business, Energy and Industrial Strategy is responsible for the overall budget and the tariffs.

5.10.5 The renewable and low carbon technologies available under the DRHI scheme are:

- Biomass (wood fuelled) boilers
- Ground to water heat pumps
- Air to water heat pumps
- Solar thermal panels (for solar thermal panels to be eligible for the scheme, they can only provide hot water for the domestic household, not space heating).

5.10.6 Those eligible for DRHI include:

- Those applying within one year of commissioning their renewable heating system
- Single domestic dwellings; and
- Owner-occupiers, self-builders, private landlords and registered providers of social housing

5.10.7 Section 5 of the Renewable and Low Carbon Technology SPD provides further guidance on each of the technologies identified above, enabling users to choose the right method of renewable energy.

5.10.8 For more information regarding the Domestic Renewable Heat Incentive, please visit: <https://www.ofgem.gov.uk/environmental-programmes/domestic-rhi>

NON-DOMESTIC RENEWABLE HEAT INCENTIVE (NDRHI)

5.10.9 The NDRHI is similar to the DRHI, a governmental initiated financial incentive inclined to increase uptake of renewable heat. The NDRHI however is for businesses, public sector and non-profit organisations, rather than domestic schemes which are solely supplied by the DRHI. These two schemes, although under one title: Renewable Heat Incentive, have separate tariffs, joining conditions, rules and application processes.

- 5.10.10 This scheme offers financial support to those eligible over a 20 year period based on the amount of heat generated. The amount received by participants of the scheme varies, dependent on the technology installed and the latest tariffs available for each technology. The Department for Business, Energy and Industrial Strategy is responsible for the overall budget and tariffs.
- 5.10.11 The renewable and low carbon technologies available under the NDRHI scheme are:
- Biomass (solid fuel) boilers
 - Heat pumps (ground source, water source and air source)
 - Deep geothermal
 - Solar thermal panels
 - Biomethane and biogas
 - Combined heat and power (CHP) systems
- 5.10.12 The NDRHI is available to industrial, commercial, the public sector and non-profit organisations. Specifically, such organisations include schools, hospitals and small businesses, as well as district heating schemes where one development or installation can supply multiple homes.
- 5.10.13 Section 5 of the Renewable and Low Carbon Technology SPD provides technical guidance on the above technologies.
- 5.10.14 For more information regarding the Domestic Renewable Heat Incentive, please visit: <https://www.ofgem.gov.uk/environmental-programmes/non-domestic-rhi>

FEED-IN TARIFF SCHEME (FIT)

- 5.10.15 A tailored government initiative designed to promote renewable and low carbon electricity generation technologies, the FIT scheme requires participants to produce electricity via renewable and low carbon technologies and feed surplus electricity into the national grid for an agreed tariff rate.
- 5.10.16 Participants of the FIT scheme receive quarterly payments for electricity generated and then exported to the national grid from their renewable and low carbon technology. Payments are based on the meter reading that equates to a fixed rate set out in the tariff, paid to consumers by energy suppliers enlisted on a government register.
- 5.10.17 The renewable and low carbon technologies available under the FIT scheme are:
- Solar photovoltaic (Solar PV)
 - Wind
 - Micro combined heat and power (CHP)
 - Hydro power
 - Anaerobic digestion (AD)
- 5.10.18 FIT support is provided via two support streams, dependent on size and type of installation:

- For small installations (<50kW) such as domestic or small business set-ups, applications are made to an energy supplier under the title Microgeneration Certification Scheme (MCS). Technologies of particular relevance to the MCS include Solar PV, Wind and Micro Combined Heat and Power (CHP). Statistics from Ofgem indicate that the average home-scale Solar PV installation is 4kW
- For large installations greater than 50kW and a total installed capacity up to and including 5MW pertaining Solar PV and wind power technologies, applications must be submitted under the scheme ROO-FIT directly to Ofgem

5.10.19 Support is available for up to 20 years dependent on which technology is chosen by prospective applicants. Applicants that choose to install CHP will be supported through the FIT scheme for 10 years. For more information regarding the Feed-in Tariff Scheme and the available tariff rates, please visit: <https://www.ofgem.gov.uk/environmental-programmes/fit>.



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Appendices

- 1 BREEAM
non domestic new construction
- 2 BREEAM
domestic new construction –
home quality mark
- 3 Pre-application advice

BREEAM UK Non-Domestic New Construction

BREEAM Assessment

To achieve a particular BREEAM rating, the minimum overall percentage score must be achieved and the minimum standards, detailed below in Table 3.1, applicable to that rating level complied with.

Minimum standards by BREEAM rating level					
BREEAM issue	Pass	Good	Very Good	Excellent	Outstanding
Man 01: Project brief and design	None	None	One credit (stakeholder consultation (project delivery))	One credit (stakeholder consultation (project delivery))	One credit (stakeholder consultation (project delivery))
Man03: Responsible construction practices	Criterion 2 None	Criterion 2 None	Criterion 2 None	Criterion 2 One credit (considerate construction)	Criterion 2 Two credit (considerate construction)
Man 04: Commissioning and handover	None	None	None	Criterion 9	Criterion 9
Man05: Aftercare	None	None	None	One credit (Seasonal commissioning)	One credit (Seasonal commissioning)
Ene01: Reduction of energy use and carbon emissions	None	None	None	Five credits	Eight credits
Ene02: Energy monitoring	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat01: Water consumption	None	One credit	One credit	One credit	Two credits
Wat02: Water monitoring	None	Criterion 1 only	Criterion 1 only	Criterion 1 only	Criterion 1 only
Mat 03: Responsible sourcing of materials	TBC	TBC	TBC	TBC	TBC
Wst 01: Construction waste management	None	None	None	None	One credit
Wst 03: Operational waste	None	None	None	One credit	One credit
LE03: Minimising impact on existing site ecology	None	None	One credit	One credit	One credit

TABLE 3.1: MINIMUM STANDARDS BY BREEAM RATING LEVEL

Environmental

A BREEAM Assessor must determine the BREEAM rating using the appropriate assessment tools and calculators .

BREEAM UK Domestic New Construction – Home Quality Mark

The Home Quality Mark (HQM) is a voluntary and customer focused assessment and certification scheme, having been created to serve the UK's house builders and the householders who buy and rent new homes. HQM enables house builders to demonstrate high quality builds, differentiating them within the marketplace. For house buyers, they can be confident that the houses they buy are well designed and built, and cost effective in the long term.

The Home Quality Mark will do this by providing impartial information from independent experts on a new home's quality, recognising where performance meets best practice standards that are often significantly above that required by regulation.

Developed and operated by BRE and part of the BREEAM series of quality and sustainable development, HQM has been developed using 25 years of specialised knowledge and skills within a continually developing industry.

What can HQM assess?

The Home Quality Mark can be used to assess the life cycle environmental, social and economic impacts of new builds in the United Kingdom. A new-build itself is one that is a new standalone structure or a part of one that will come into operation and is for the first time after its completion.

The HQM is not appropriate for the refurbishment of existing homes or for new build projects containing rooms for multiple residential purposes such as student and key worker accommodation, care homes, sheltered housing or other multi-residential building types. The BREEAM UK Domestic Refurbishment and BREEAM UK Non-Domestic New Construction schemes can be used to assess these types of project respectively.

When does the HQM assessment take place?

Timing is key for any HQM assessment to be conducted successfully. It is essential that there is a seamless process of integration between the period of construction and the assessments that take place by HQM. This is to make sure any issues summoned by the relevant stakeholders are taken into consideration and addressed without impacting on costs or performance in other areas of the development.

An HQM assessment is a two stage process to ensure that opportunities are identified during the design stage (initial assessment and certificate) and implementation is confirmed during construction (conclusive assessment and certificate).

If you wish to understand, in greater detail, the technical content concerning the Home Quality Mark, you can find more information at: http://www.homequalitymark.com/filelibrary/HQM-Beta--England--2015_SD232_r1.0.pdf.

BREEAM New Construction is a performance based assessment method and certificate scheme for new buildings. The primary aim of BREEAM New Construction is to mitigate the life cycle impacts associated with new buildings on the environment in an efficient and cost effective process. As BRE states, this is predominantly achieved through integration and use of the scheme by clients and their project teams at key stages in the design and construction process.

The scheme itself can be used to assess and rate the environmental impacts arising from a newly constructed building developments at two life cycle stages. These are:

1. New Build Design Stage
2. New Build Post Construction Stage

New Build Design Stage

The Design Stage assessment and interim BREEAM rating confirms the proposed new building's performance during the construction period of the life cycle. This stage of assessment and certification would take place ideally at the beginning of the construction stage.

For any assessment to be complete at this stage, the design must be presented before a BREEAM assessor for verification and evaluation of the buildings performance against a criteria based document set out in the BREEAM UK New Construction Technical Manual.

Post-Construction Stage (PCS)

The PCS assessment and BREEAM rating confirms the final 'as-built' performance of the building at the new construction stage of the life cycle. A final PCS assessment is completed and certified after practical completion of the building works.

As stated by BREEAM, there are two alternative approaches to assessment at the post-construction stage:

1. A post-construction review (PCR) of an interim design-stage assessment
2. A post-construction assessment (PCA)

A Post Construction Review assesses a buildings performance once its development and construction stages have been complete. If an interim design-stage assessment has not been conducted i.e. certified, a full post construction stage assessment is required.

When and how to engage with the BREEAM

UK New Construction scheme

As with all schemes, timing the engagement with and use of the BREEAM UK New Construction scheme via BREEAM assessor is most important to ensure efficient transition of methodology in the new build procurement process.

If you wish to understand, in greater detail, the technical content concerning the BREEAM UK Non-Domestic New Construction, you can find more information at: <http://www.breeam.com/new-construction>.

BREEAM In-Use International Technical Standard

BREEAM In-Use International is a universally recognised assessment method which assists property investors, owners, managers and occupiers to drive sustainable improvements through operational efficiency, including how to continually manage the operation of their building effectively.

All existing commercial building types are suitable for the BREEAM In-Use scheme, however the standard does not apply to residential dwellings.

The primary aim of BREEAM In-Use is to mitigate the operational impacts of existing assets on the environment in a robust and cost effective manner. The scheme provides a holistic approach which enables assets to be assessed and benchmarked across a large range of environmental issues (management, health and wellbeing, energy, transport, water, materials, waste, land use and ecology, and pollution).

The BREEAM In-Use assessment process is broken down into three parts:

- Part 1 – Asses Performance: the performance of the asset's built form, construction, fixtures, fittings and installed services
- Part 2 – Building Management: the management of the asset
- Part 3 – Occupier Management: the management of building users and services

Part 1 and 2 of the assessments can be conducted in separate isolation, however it is recommended that part 2 be conducted in combination with Part 3 as the score for Part 2 feeds into the score for Part 3. It is advised that all 3 Parts are assessed in combination to provide an accurate understanding of the overall environmental impact of their asset.

Using an online rating tool, BREEAM In-Use allows users to register buildings, assess and certify the building performance. A dynamic scoring platform and reporting section allows the user to track and improve the performance of their building or portfolio of buildings.

If you wish to understand, in greater detail, the technical content concerning the BREEAM In-Use International Technical Manual, you can find more information at: http://www.breeam.com/filelibrary/Technical%20Manuals/SD221_BIU_International_2015_Re-issue_V2.0.pdf.

BREEAM UK Domestic Refurbishment & Fit-Out

BREEAM Domestic Refurbishment is a performance based assessment method and certification scheme for domestic buildings undergoing refurbishment. The primary aim of the Domestic Refurbishment & Fit Out scheme is to improve environmental performance of existing dwellings in a robust and cost efficient way. The performance of domestic buildings is assessed against a number of individual measures and associated criteria covering a range of environmental issues. This assessment results in a single certified BREEAM rating awarded to the refurbished dwelling.

The BREEAM Domestic Refurbishment & Fit-Out scheme has been developed in accordance with the following principles:

- Promote low cost, sustainable refurbishment
- Recognise the limitations of existing buildings including their inherent built form and location
- Drive market transformation by promoting best practice and innovation in the refurbishment of existing buildings
- Provide a holistic environmental assessment that works effectively across different building and project types
- Recognise the different starting points of our existing building stock

There are two routes to certification depending on the type of project and stage of certification required:

THIRD PARTY ASSESSMENT CERTIFICATION:

Third party certification is delivered through licensed BREEAM Domestic Refurbishment Assessors and enables interim and final certification to be obtained through BRE Global Ltd at the design stage (pre-refurbishment) and post refurbishment stages respectively. BREEAM Domestic Refurbishment Assessors can carry out assessments for both small and large scale refurbishments which may be carried out across a site (e.g. a street or an estate).

SELF-DECLARATION ASSESSMENT CERTIFICATION:

A self-declaration assessment is delivered through licenses BREEAM Domestic Refurbishment Assessors who hold a self-declaration certification (referred to as tier 2 license within the scheme) are authorised under the terms of the license to issue self-declaration certificates, for small projects, at the post refurbishment stage only. Design stage certification is not available through self-declaration however a design stage assessment is recommended in order to guide the project specification.

The BREEAM Domestic Refurbishment 2012 scheme can be used to assess the environmental life cycle impacts on refurbishment projects including existing dwelling undergoing refurbishment, extensions, domestic conversions and change of use projects. Table 3.1 outlines two categories under which domestic refurbishments are scoped by BREEAM:

- Category 1: Alterations to existing dwellings and extensions
- Category 2: Domestic conversions and change of use projects

Category 1	Category 2
<p>Alterations to existing dwellings and extensions</p> <p>Where at least one thermal element (walls, roof or floor) undergoing major alteration (internal/ external insulation etc) plus a change to building services such as a new boiler, or internal refit of a room. Refurbished dwellings are within the scope of the scheme where the refurbishment results in an improvement to the dwellings Energy Efficiency Rating (EER).</p>	<p>Domestic conversions and change of use projects</p> <p>The scheme can also be applied to domestic conversions and change of use projects. This is where a new dwelling is formed by change of use from a building which was not previously used for domestic purposes. This may also include change of use through conversion of a single dwelling into multiple dwellings, or where several dwellings are converted into a single dwelling. Change of use is further detailed by Regulations 5(a), (b) and (g) of the Building Regulations 2000 for England and Wales.</p>
<p>Extensions</p> <p>Whilst existing dwellings that are being extended can be assessed under the scheme, as the scheme is a whole house assessment methodology, it would require both the extension and the existing dwelling to be included as part of the assessment. This means that in order to achieve credits under the scheme as well as the minimum standards, improvements will be required to the existing dwelling in order to achieve a rating under the scheme.</p>	<p>Newly constructed dwellings</p> <p>The scheme cannot be used for newly constructed dwellings. Newly constructed dwellings come under the scope of the Department of Communities and Local Government (DCLG), Replacement national technical standards to the now withdrawn Code for Sustainable Homes.</p>

If you wish to understand, in greater detail, the technical content concerning BREEAM UK Domestic Refurbishment & Fit-out standards, you can find more information at: http://www.breeam.com/bre_PrintOutput/BREEAM_Domestic_refurb_manual_2012.pdf.

BREEAM UK Non-Domestic Refurbishment & Fit-Out

The BREEAM UK Non-Domestic Refurbishment and Fit-Out scheme can be used to assess and determine the environmental impacts associated with non-domestic buildings at the refurbishment and fit-out stages.

The BREEAM UK Non-Domestic Refurbishment and Fit-Out scheme provides a modular set of criteria that are applied depending upon the scope of works for a particular project type including:

- Part 1: Fabric and Structure
- Part 2: Core Services
- Part 3: Local Services
- Part 4: Interior Design

The scheme is split into these assessment parts to allow the scheme to reflect the aspects of a building that are tenant or landlord responsibilities, as well as the varied life cycle stages that each component or element is upgraded. For commercial buildings, parts 1 and 2 typically reflect the aspects of a building that are landlord responsibilities, with parts 3 and 4 typically being aspects of the building that are tenant responsibilities although this will vary between specific projects.

ASSESSMENT SCOPE

Having been developed to allow a flexible approach to assessments to fit the needs of a project, this approach also allows the client/developer/assessor to select the parts of the assessment that are relevant to the scope of work being carried out. The following assessment scope provides details of when it may be appropriate to conduct an assessment against each part, depending on the nature of the refurbishment or fit-out works that are being carried out.

Part 1: Fabric and structure

A Part 1 assessment is appropriate where a refurbishment project includes one or more of the following alterations to the building fabric and where the area to renovate is greater than 50 percent of the surface of the individual element or 25 percent of the total building envelope:

- Building façade: where the external façade of the buildings is being upgraded/refurbished such as new cladding, rendering, façade system, internal dry lining etc.
- Roof: where a new roof is being installed or where significant changes are being made to the roof structure or the replacement/refurbishment of roof coverings.
- Windows: where changes are being made to the windows such as replacement, upgrade/refurbishment of existing windows with new glazing or the specification of secondary glazing.

Part 2: Core services

A Part 2 assessment may be appropriate where at least two of the following are being installed or upgraded to a level that requires compliance with the Building Regulations Compliance Guide:

- Central air handling unit
- Heating boiler
- More than 50% of heat distribution
- Chiller plant
- More than 50% of chiller distribution
- Water services (sanitary fittings in core)
- Building management system
- Community heating system (e.g. CCHP)
- Low and zero carbon technologies

A Part 2 assessment does not include the full scope of a category A fit-out, due to the fact that the specification of items such as ceiling finishes, raised floors and the zoning of local services about the lettable floor area and other Category A works are not typically finalised until the space undergoes final fit-out (often referred to as Category B fit-out) according to the tenant's specification and liable to change. These items are excluded from a Part 2 assessment with local services assessed under Part 3 and interior finishes assessed under Part 4, which covers the typical scope of a Category B fit-out. Therefore, where category A works include local service provision (e.g. lighting) it may be appropriate to also assess the project against Part 3: Local Services.

Part 3: Local services

A Part 3 assessment may be appropriate where at least two of the following fixed local building services are being installed or upgraded e.g. a replacement or new installation of local heating/cooling units.

- Replacement of more than 50% of light fittings, system and controls
- Upgrade of zone controls
- Local ventilation
- Local heating units (including sources not connected to core services)
- Local cooling units (including sources not connected to core services)
- Point of use water heaters

Local services are defined as services that supply a specific area and may connect into the distribution systems from the core services within the tenanted area.

Part 4: Interior design

A Part 4 assessment may be appropriate where the refurbishment or fit-out works involve changes to the layout and/or redecoration of the refurbishment or fit-out area, including:

- Remodelling/changes to interior spaces including two or more of the following:
 - Wall coverings (alterations to at least 50% by area)
 - Floor coverings (alterations to at least 50% by area)
 - Ceiling covering or systems (alterations to at least 50% by area)
 - Partitions (alterations to at least 50% by area)
 - Raised floor system (alterations to at least 50% by area)
 - Furniture and fittings e.g. office furniture, retail display furniture and fittings etc. (alterations to at least 50% by area)

AND at least one of the following:

- Sanitary fittings e.g. tea/coffee points, kitchenette and washrooms (alterations to at least 50% of fittings)
- Equipment e.g. Office equipment, display lighting, display chillers/freezers (alterations to at least 50% of equipment)
- Local electrical installations e.g. sub-metering

Part 4 is broadly in line with a Category B fit-out and where the fit-out works also include changes or additions to local services, a Part 3 assessment may also be relevant.

If you wish to understand, in greater detail, the technical content concerning BREEAM UK Non-Domestic Refurbishment & Fit-out standards, you can find more information at: http://www.breeam.com/ndrefurb2014manual/#02_scope_refurb/buildings_not_covered_scope_rfrb.htm%3FTocPath%3D_____8.

Pre-application advice

Pre-application advice will include a written response, in detail, considering the primary planning issues for the proposed application. The level of detail provided in the response will reflect the level of accuracy and detail provided in the information given to the Council by the applicant. A wider and more detailed scope of information provided to the Council regarding the proposal will result in a more accurate and in-depth analysis, allowing for positive feedback to be given.

Pre-application advice is encouraged as it can:

- Verify all local and national requirements, set out in both the Approved Maldon District Local Development Plan and the National Planning Policy Framework
- Allow for constructive and open dialogue with interested parties from an early stage to identify, understand and seek to resolve issues associated with the proposed development
- Provide tools for mitigation if the proposed development would produce any impacts on the surrounding environment, including any planning conditions
- Reduce the likelihood of submitting an invalid application
- Help the applicant understand how planning policies and other requirements affect a proposal

It is also important that applicants emphasise why the proposed development should be allowed to progress and gain planning permission. The planning application will be held against the relevant policies within the Local Development Plan, therefore justification will be required for any proposal if it constituted to be an exception to the plan.

The nature of pre-application engagement allows for a collaborative process that involves not only the prospective applicant and the Local Planning Authority, but also statutory and non-statutory consultees, elected members and local people. It is recognised that the parties involved at the pre-application stage will vary on a case by case basis.

All parties involved have an important role to play in ensuring the efficiency and effectiveness of pre-application engagement. Cross-party engagement will legitimately seek to identify all possible planning issues that may affect particular stakeholders or the environment.

For pre-application advice, there may be a fee applied. Please visit the Maldon District Council website for more detail at: https://www.maldon.gov.uk/info/20046/development_management/9227/planning_advice_and_information.

To view this document online

visit www.maldon.gov.uk/ldp

This document can be made available on request in larger print, braille and audio and in languages other than English.

To obtain a copy in an alternative format please contact the Planning Policy Team at Maldon District Council on 01621 876202.

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