



WASTE STRATEGY FOR ESSEX

Strategic Environmental Assessment (SEA) Scoping Report

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Ricardo reference:

ED15623100

Contact:

Lorna Pannett, Gemini Building, Fermi Avenue, Harwell, Didcot, OX11 0QR, UK

T: +44 (0) 1235 753 000

E: Lorna.Pannett@ricardo.com

Author:

Simone Medonos, Connor Fulham

Approved by:

Chris Hoy

Signed:

John Woodruff



Date:

14/02/2023

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1. INTRODUCTION

1.1 BACKGROUND AND PURPOSE OF REPORT

This Strategic Environmental Assessment (SEA) Scoping Report sets out the approach to the SEA of the Waste Strategy for Essex. The Waste Strategy will provide a strategic framework for waste management in Essex to enable the delivery of the Essex Waste Partnership's (EWP) vision for waste.

Essex County Council (ECC) is the statutory Waste Disposal Authority (WDA) for Essex and is obligated under the Environmental Protection Act 1990 to provide a range of waste services for the treatment and disposal of Local Authority Collected Waste (LACW).

To optimise the delivery of its statutory waste functions ECC works in partnership with the twelve Essex Waste Collection Authorities (WCAs) (comprising the district, city and borough councils of Essex), collectively known as the Essex Waste Partnership (EWP). There is a stated ambition that effective partnership working as the EWP will ensure that:

- appropriate infrastructure can be provided and utilised
- complimentary systems and services can be implemented to deliver effective waste operations
- resources can be used in a manner which maximises beneficial impacts.

Essex County Council (ECC) is obliged to maintain a Joint Strategy setting out how household and similar wastes are to be managed. The current Joint Municipal Waste Management Strategy (JMWMS) was adopted in 2008, and was expected to be in place until 2032. The development of new legislative and policy drivers by government have resulted in the current JMWMS becoming outdated; ECC have therefore taken the decision to review, update and develop the Strategy to ensure it better reflects current needs and legislative requirements. As with the development of the current JMWMS, it is intended that, although the project will be led by ECC, it will be carried out in partnership with EWP members, including engagement with wider stakeholders facilitating 'buy-in' at all levels of the Partnership.

The current JMWMS needs to be refreshed to take account of new targets for waste management that go beyond 2020. This project is designed to assist the EWP in producing a refreshed Joint Strategy, the "Waste Strategy for Essex" which will provide a clear, concise and target-driven guide on how waste is to be managed for the next 25 years. The refreshed Strategy will consider national waste policy, the latest legislation, performance targets and define a collective EWP ambition. The Strategy will be based on a good understanding of current waste flows and how these may change over the lifetime of the plan to ensure that a sustainable resource management solution is delivered.

1.1.1 Strategic Framework

A series of workshops was held, involving various EWP stakeholders, in order to shape and guide the vision, objectives and priorities for the Waste Strategy for Essex, with the goal of understanding and capturing the diverse views across the EWP and to identify areas where there is consensus already within and across the groups.

The workshops supported the shape of the proposed strategic framework for the Waste Strategy for Essex, as presented in Figure 1.1.

The Vision Statement "*Zero waste, zero carbon, more impact*" was broken down into five main themes:

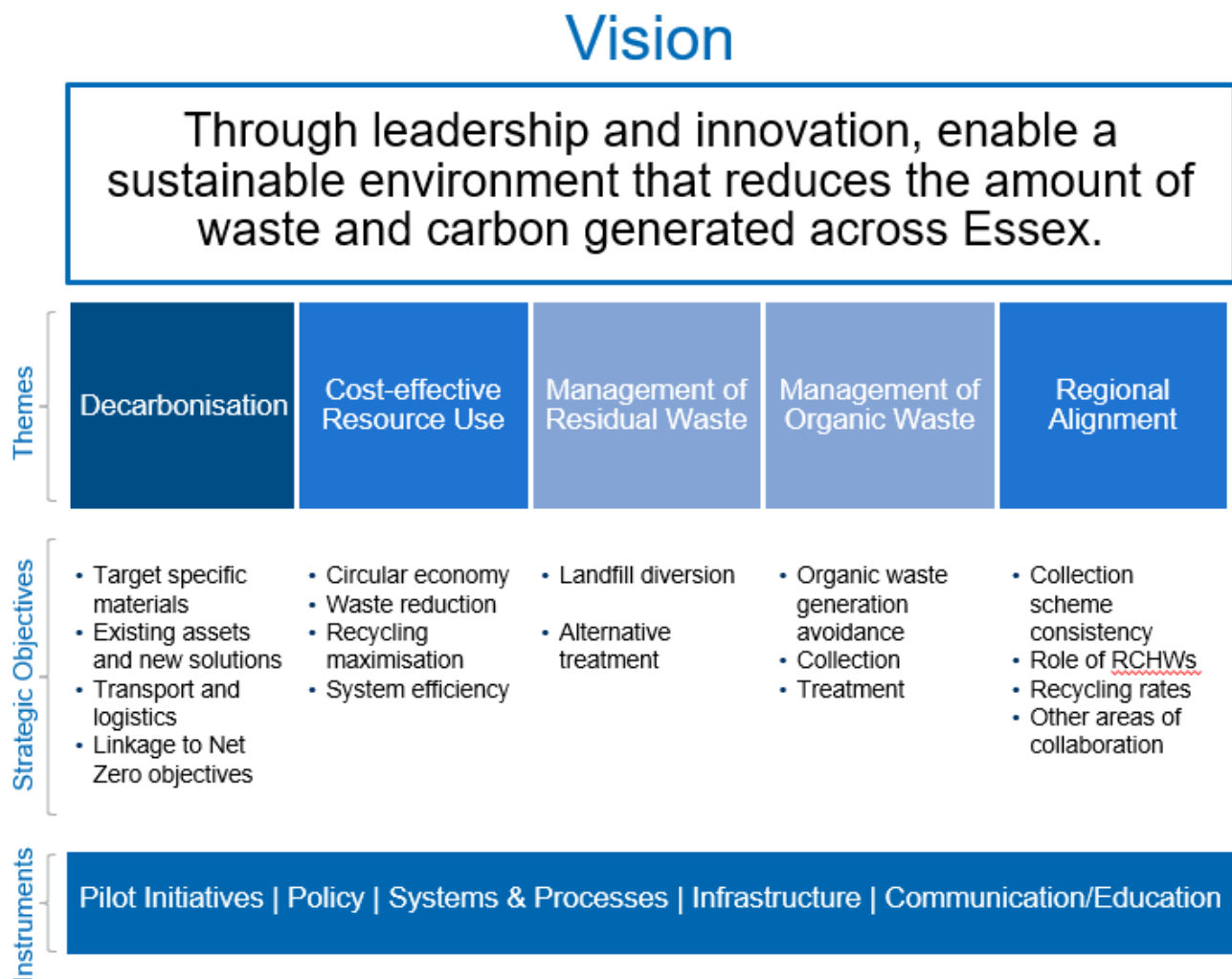
- decarbonisation
- cost-effective resource use
- management of residual waste
- management of organic waste
- regional alignment

For each theme, strategic objective areas were identified as listed with any targets or objectives to be achieved. The chart also represents the instruments and tools that will enable the implementation of the Waste Strategy for Essex.

It should be noted that the elements presented as part of the Strategic Framework summarise what was discussed during the workshops and are not an exhaustive list of the themes and objectives that will be included in the Strategy. It is expected that further conversations will take place during the development of the Waste Strategy for Essex. The workshop sessions were used as a starting point to agree the whole system collection and treatment options to be modelled.

Further information regarding the development of the Strategy and the options to be assessed is provided in Section 4.2.

Figure 1.1: Strategic framework



1.2 STRATEGIC ENVIRONMENTAL ASSESSMENT

SEA is a statutory requirement under the SEA Regulations¹. SEA became a statutory requirement following the adoption of Directive 2001/42/EC (the SEA Directive) on the assessment of effects of certain plans and programmes on the environment as transposed into national legislation by the Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633) (hereafter referred to as "the SEA Regulations"). From December 31 2020, following the exit of the UK from the European Union, the SEA Regulations are now the principal legal basis for SEA.

This report has been prepared in accordance with the SEA Regulations. The SEA Regulations require all qualifying policies, plans, programmes and strategies (referred to generally as plans) to undergo a SEA. The

¹ The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633) apply to any plan or programme which relates solely or in part to England.

SEA process provides a systematic process for identifying, reporting and mitigating the environmental impacts of the proposed plan.

The SEA process comprises the following distinct stages:

- **Screening** – determining whether a plan requires a SEA;
- **Scoping** – establishing significant environmental topics, setting the environmental baseline, developing appropriate SEA objectives and consulting via a Scoping Report;
- **Environmental Assessment** – assessing the potential environmental impact of the Strategy and consulting on both the draft plan and Environmental Report;
- **Post Adoption Statement** – how the assessment and the consultation results have been considered within the finalised plan. Developing the monitoring strategy to assess progress once adopted;
- **Monitoring**- monitoring significant environmental effects and taking appropriate remedial action for any unforeseen significant environmental effects

The objective of SEA is:

“to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development.”

The SEA Regulations require certain plans and programmes to undergo environmental assessment, and as criteria for consideration includes biodiversity, flora and fauna, population and human health, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the inter-relationships between these issues.

The UK Government has produced SEA guidance² that sets out the stages of the SEA process.

The Strategy is a qualifying plan in accordance with the SEA Regulations and therefore a SEA is required (see Figure 1.2). This report sets out the findings of the SEA Scoping undertaken on the Waste Strategy for Essex.

1.2.1 Purpose of the Scoping Report

This Scoping Report represents the first formal output of the SEA process. The purpose of the report is to provide sufficient information to statutory consultees to enable them to comment on the proposed scope of the SEA. Specifically, the Scoping Report sets out:

- The main objectives and contents of the Waste Strategy for Essex.
- A summary of other relevant plans, programmes or strategies that can influence the Strategy.
- A summary of the environmental characteristics of the area covered by the plan.
- A statement about whether any environmental topics are being scoped out of the assessment and the reasons why.
- A brief description, of the type and range of reasonable alternatives that are considered.
- A summary of the intended approach to the assessment and its level of detail.
- The proposed period of consultation on the Environmental Report.

1.3 REQUIREMENTS FOR SEA OF THE WASTE STRATEGY FOR ESSEX

The UK Government's SEA guidance³ sets out the stages of the SEA process. Under the SEA Regulations, as a Responsible Authority, Essex County Council is required to determine whether the Waste Strategy falls within the scope of the SEA Regulations and whether an SEA must be undertaken.

² Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

³ Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

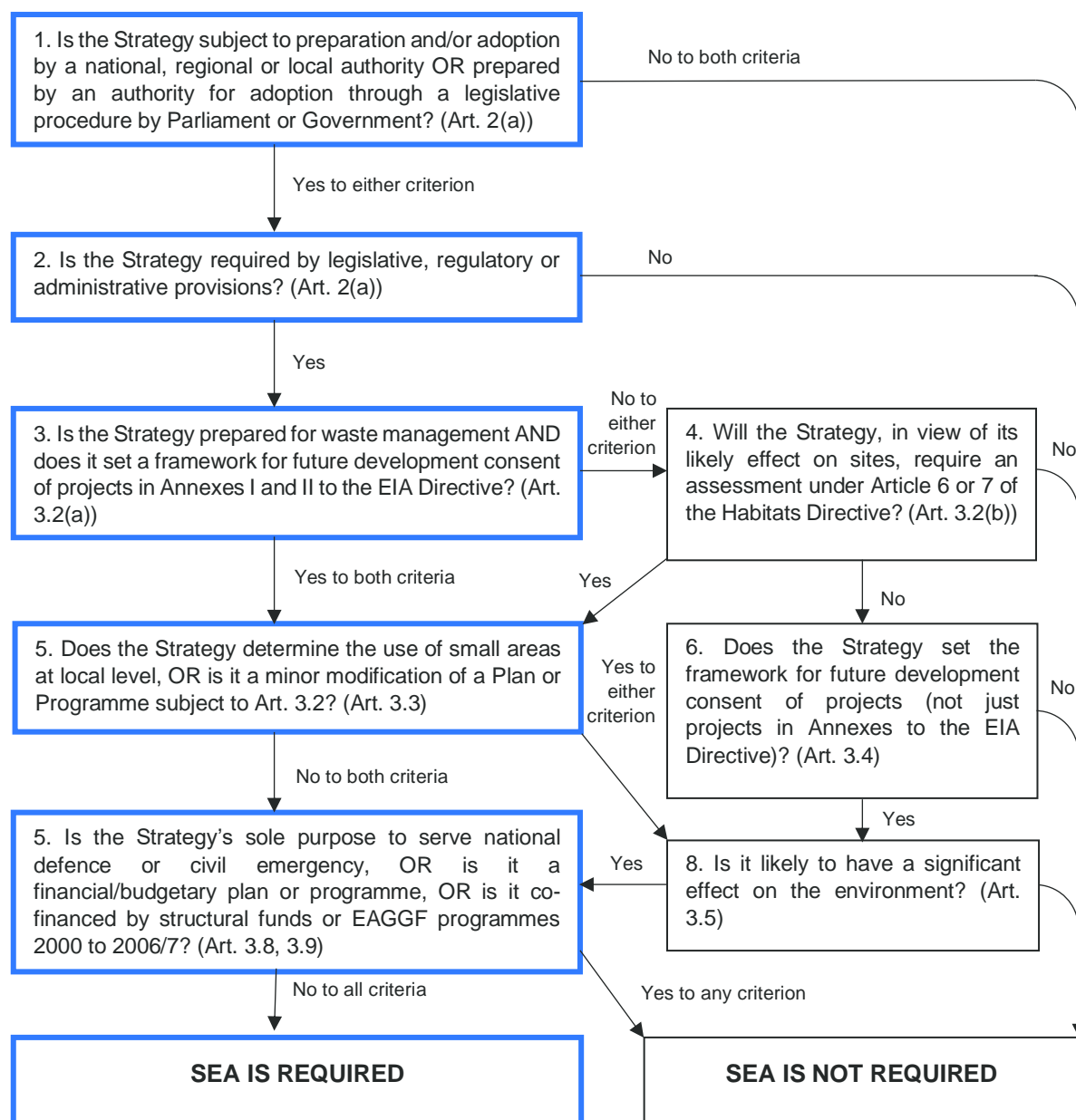
The SEA Guidance, from which Figure 1.2 is adapted, provides directions as to how the requirement for SEA should be determined. The boxes and arrows highlighted in blue on Figure 1.2 describe the provisions and route through the flow chart applicable to the Waste Strategy for Essex and demonstrate that the Strategy falls within the scope of the SEA Regulations.

1.4 SEA AND WASTE MANAGEMENT

The purposes of the SEA of the Strategy are to:

- identify the potentially significant environmental effects of the strategy in terms of the waste strategy options being considered by Essex County Council;
- help identify the best practicable environmental option (BPEO) from the 6 short-listed options to best avoid, reduce or manage potentially adverse effects and to enhance beneficial effects associated with the implementation of the Strategy where possible;
- give the statutory SEA bodies, stakeholders and the wider public the ability to comment upon the effects that the draft Strategy may have on them, their communities, and their interests, and encourage them to make responses and suggest improvements; and inform Essex County Council of waste strategy options to be taken forward into the final Strategy.

Figure 1.2 SEA Requirement in relation to the Waste Strategy for Essex



1.5 SEA APPROACH

SEA incorporates the following generic stages:

- Stage A: Setting the context, identifying objectives, problems and opportunities, and establishing the environmental baseline (scoping)
- Stage B: Developing and refining options and assessing effects (impact assessment)
- Stage C: Preparing the Environmental Report (recording results)
- Stage D: Consulting on the Draft Plan and the Environmental Report (seeking consensus)
- Stage E: Monitoring the significant effects of the plan or programme on the environment (verification)

Table 1.1 is an extract from the ODPM Practical Guide⁴ that sets out the main stages of the SEA process and the purpose of each task within the process. This Scoping Report represents Stage A: Tasks A1 to A4 of the SEA process.

Table 1.1 SEA Stages and Tasks

SEA Stages and Tasks	Purpose
Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope	
Task A1. Identifying other relevant plans, programmes and environmental protection objectives	To establish how the plan or programme is affected by outside factors to suggest ideas for how any constraints can be addressed, and to help identify SEA objectives.
Task A2. Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives.
Task A3. Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Task A4. Developing SEA Objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.
Task A5. Consulting on the scope of the SEA	To ensure the SEA covers the likely significant environmental effects of the plan or programme.
Stage B: Developing and refining alternatives and assessing effects	
Task B1. Testing the plan or programme objectives against SEA objectives	To identify potential synergies or inconsistencies between the objectives of the plan or programme and the SEA objectives and help in developing alternatives.
Task B2. Developing strategic alternatives	To develop and refine strategic alternatives.
Task B3. Predicting the effects of the plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and its alternatives.
Task B4. Evaluating the effects of the plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme.
Task B5. Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered.
Task B6. Proposing measures to monitor the environmental effects of plan or programme implementation	To detail the means by which the environmental performance of the plan or programme can be assessed.
Stage C: Preparing the Environmental Report	
Task C1. Preparing the environmental report	To present the predicted environmental effects of the plan or programme, including alternatives, in a form suitable for public consultation and use by decision-makers.

⁴ Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

SEA Stages and Tasks	Purpose
Stage D: Consulting on the Draft Plan or programme and the Environmental Report	
Task D1. Consulting the public and consultation bodies on the draft plan or programme and the Environmental Report	<p>To give the public and the consultation bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme.</p> <p>To gather more information through the opinions and concerns of the public</p>
Task D2. Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account.
Task D3. Making decisions and providing information	To provide information on how the Environmental Report and consultees opinions were taken into account in deciding the final form of the plan or programme to be adopted.
Stage E: Monitoring the significant effects of the plan or programme on the environment	
Task E1. Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects.
Task E2. Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified.

1.6 STRUCTURE OF THE SCOPING REPORT

This Scoping Report sets out the activities required under Stage A of the SEA process as described in Section 1.4. It has been prepared to facilitate consultation and agreement on the scope and approach of the SEA of the Waste Strategy for Essex. The Scoping Report is structured as follows:

- Section 1 (this section) – describes the requirement for, purpose and process of the SEA, and its context in relation to the Waste Strategy.
- Section 2 – policy context; identifies key messages and environmental protection and social objectives from a review of relevant policies and plans.
- Section 3 – environmental baseline review; draws out the key environmental and social issues that Essex County Council intends to consider in the SEA. Identifies the current and future baseline conditions within the area of potential influence of the Waste Strategy.
- Section 4 – proposed assessment framework; develops the basis of the assessment, and introduces the assessment approach and framework to consider the environmental and social effects of the options, and the Waste Strategy.
- Section 5 – next steps; sets out the next stages and tasks in undertaking the SEA, and presents a proposed structure for the Environmental Report.

2. PLANS AND PROGRAMMES

2.1 OVERVIEW

The SEA Regulations require a report containing “an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes” (Schedule 2(1)) as well as “The environmental protection objectives, established at international, (European) Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation” (Schedule 2(5)),

Identifying other relevant plans, policies and programmes, as well as environmental protection and social objectives, is one of the first steps in undertaking SEA. The review demonstrates how the Waste Strategy for Essex might be influenced by other plans, policies, programmes and identifies other objectives which the Waste Strategy should consider. This information helps to identify and inform the assessment framework for the SEA process.

Relevant plans, policies and programmes have been identified from the wide range that has been produced at an international, national, regional and local level. Plans and programmes that have no likely interaction with the Waste Strategy (i.e. they are unlikely to influence the Waste Strategy, or be influenced by it), have been excluded from the review.

A review of relevant plans, policies and programmes is presented in **Appendix 1**. A summary of key messages derived from the review is presented in Table 2.1.

Alongside the current and future baseline information reviewed in Section 3, the key messages have been used to develop proposed assessment framework for the SEA (see Section 4).

Table 2.1 Summary of Plans, Policies and Programmes

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
Material Assets and Waste Management	<p>Promote sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently.</p> <p>Contribute to a resource efficient, green and competitive low carbon economy.</p> <p>Minimise the production of waste, ensure waste management is in line with the waste hierarchy, and eliminate waste sent to landfill.</p> <p>Promote the sustainable management of natural resources.</p> <p>Promotion of the ‘waste hierarchy’ of ‘reduce, re-use, recycle and recover’ with the aim of reducing the proportion of waste sent to landfill.</p> <p>Maintaining consistently high recycling rates.</p> <p>Identify steps to promote a circular economy.</p>	<p><i>International</i></p> <p>United Nations Economic Commission for Europe (1998) Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters</p> <p>Paris Agreement (2015)</p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>European Community (EC) Directive 1999/31/EC on the landfill of waste</p> <p>European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC)</p> <p>European Commission, Urban Waste Water Treatment Directive (1991/271/EC)</p> <p>United Nations (2002), Commitments arising from the World Summit on Sustainable Development, Johannesburg</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>Waste Management Plan 2021</p>

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
		<p>Resources and Waste Strategy</p> <p>Industrial Strategy White Paper (2017)</p> <p>DCLG (2012) National Planning Policy Framework (as amended 2019)</p> <p>Department for Energy and Climate Change (2020) Energy White Paper: Powering our Net Zero Future</p> <p>Department of energy and climate change (2011) Planning our electric future: a White Paper for secure, affordable and low carbon electricity</p> <p>Defra (2011) Government Review of Waste Policy in England (2011)</p> <p>HM Government (2018) Our Waste, Our Resources: A Strategy for England</p> <p>Defra (2002) The Strategy for Sustainable Farming and Food – facing the future</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>The Energy Act 2013</p> <p>Environment Act, 2021</p> <p>Environment Act, 1995</p> <p>The Environmental Damage (Prevention and Remediation) (England) Regulations 2015</p> <p>HM Government (2016) National Infrastructure Delivery Plan 2016-2021, Infrastructure Projects Authority</p> <p>National Policy Statement for Wastewater (2012)</p> <p>Circular Economy Package, 2020</p> <p>Integrated Radioactive Waste Strategy, 2019</p> <p>National Planning Policy for Waste, 2014</p> <p>Control of Pollution Act 1974</p> <p>National Policy Statement: Hazardous Waste, 2013</p> <p>The Waste Regulations, 2011</p> <p>Resource and Waste Strategy, 2018</p> <p><i>Regional</i></p> <p>Essex and Southend on Sea Waste Local Plan, 2017</p> <p>Relevant waste collection authority (WCA) waste plans/strategies</p>
Biodiversity, Flora and Fauna	Conservation and enhancement of the natural environment, in particular internationally and nationally designated sites, priority habitats and species, taking into account future climate change.	<p><i>International</i></p> <p>Ramsar Convention: The Convention on Wetlands of International Importance (1971)</p> <p>The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)</p> <p>The Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)</p>

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
	<p>Avoid activities likely to cause irreversible damage to natural heritage.</p> <p>Support the function of ecosystems and enhance ecological networks and resilience.</p> <p>Protection, conservation and enhancement of natural capital. Ecosystem services from natural capital contributes to the economy and therefore should be protected and, where possible, enhanced.</p> <p>Avoidance of activities likely to cause the spread of Invasive Non-Native Species (INNS).</p> <p>A need to protect the green infrastructure network.</p>	<p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>European Commission (2011), Our life insurance, our natural capital: an EU biodiversity strategy to 2020</p> <p>European Commission, Environmental Liability Directive (2004/35/EC)</p> <p>European Commission (1992), Habitats Directive (1992/43/EC)</p> <p>European Commission (2009), Birds Directive (2009/147/EC)</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>Conservation of Habitats and Species Regulations 2017 (Amendment) (EU Exit) Regulations (2019)</p> <p>The Natural Environment and Communities Act 2006 (NERC Act)</p> <p>Defra (2004) Rural Strategy</p> <p>Defra (2002) The Strategy for Sustainable Farming and Food – facing the future</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>Defra (2020), The Draft Environment Bill 2020, and content related to the development of Nature Recovery Networks (parts 6 and 7)</p> <p>Environment Act, 2021</p> <p>Environment Act, 1995</p> <p>Wildlife and Countryside Act, 1981 (as amended)</p> <p>Natural Capital Committee (2020) State of Natural Capital Annual Report 2020</p>
Population and Human Health	<p>To ensure all communities have a clean, safe and attractive environment in which people can take pride.</p> <p>Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and wellbeing of communities.</p> <p>Promotion of healthy communities and protection from risks to health and wellbeing.</p> <p>Promotion of sustainable economy supported by access to essential utility and infrastructure services.</p>	<p><i>International</i></p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>The Environment Noise Directive (Directive 2002/49/EC)</p> <p>European Commission, Environmental Liability Directive (2004/35/EC)</p> <p>United Nations (2002), Commitments arising from the World Summit on Sustainable Development, Johannesburg</p> <p><i>National</i></p>

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
	To promote sustainable growth.	<p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>The Countryside and Rights of Way (CROW) Act, 2000</p> <p>DCLG (2012) National Planning Policy Framework (as amended 2019)</p> <p>Defra (2005) Securing the Future: Delivering UK Sustainable Development Strategy</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>Environment Act, 2021</p> <p>Environment Act, 1995</p> <p>The Environmental Damage (Prevention and Remediation) (England) Regulations 2015</p> <p>HM Treasury (2020) National Infrastructure Strategy</p> <p>Build Back Better: our plan for growth, 2021</p> <p><i>Regional</i></p> <p>Essex Green Infrastructure Strategy, 2020</p> <p>Levelling Up Essex Strategy, 2022</p> <p>Essex Joint Health and Wellbeing Strategy, 2022-2026</p> <p>Economic Plan for Essex, 2014</p>
Water	<p>Promote sustainable water resource management.</p> <p>Improve the quality of the water environment and the ecology which it supports.</p> <p>Prevent deterioration of water quality status.</p> <p>Promote measures to enable and sustain long term improvement in water efficiency.</p> <p>Develop a resilient and flexible water management approach to cope with changing climate, population and economic conditions.</p> <p>Reduce flood risk to people, residential and non-residential properties, community facilities and key transport links, as well as designated nature conservation sites and heritage assets and landscapes of value.</p>	<p><i>International</i></p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>European Commission, Urban Waste Water Treatment Directive (1991/271/EC)</p> <p>European Commission, Directive on the Assessment and Management of Flood Risks (2007/60/EC)</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>Environment Act, 2021</p> <p>Environment Act, 1995</p> <p>Environment Agency (2009), Water Resources Strategy for England and Wales</p> <p>The Environmental Damage (Prevention and Remediation) (England) Regulations 2015</p> <p>Environment Agency (2018) The Environment Agency's approach to groundwater protection</p> <p>The Water Act, 2003 (as amended)</p>

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
		<p>The Water Environment (WFD) (England and Wales) Regulations, 2003</p> <p>National Flood and Coastal Erosion Risk Management Strategy for England (2020)</p> <p>National Policy Statement for Wastewater (2012)</p> <p><i>Regional</i></p> <p>Essex County Council, Local Flood Risk Management Strategy, 2018</p>
Soil, Geology and Land-use	<p>Ensure that soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.</p> <p>Encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value.</p> <p>To reduce the reliance on landfill sites.</p>	<p><i>International</i></p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>European Community (EC) Directive 1999/31/EC on the landfill of waste</p> <p>Council of Europe (2003) European Soils Charter</p> <p>European Commission (2006) Thematic Strategy for Soil Protection</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>Defra (2009) Safeguarding our soils – A Strategy for England</p> <p>Defra (2004) The First Soil Action Plan for England</p> <p>Defra (2004) Rural Strategy</p> <p>Defra (2002) The Strategy for Sustainable Farming and Food – facing the future</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>Environment Act, 2021</p> <p>Environment Act, 1995</p> <p>Integrated Radioactive Waste Strategy, 2019</p> <p>Resource and Waste Strategy, 2018</p>
Air and Climate	<p>Reduce greenhouse gas emissions. Targets include:</p> <p>Reduce the UK's greenhouse gas emissions by at least 80% (relative to 1990 levels) by 2050.</p> <p>Reduce the effects of air pollution on ecosystems. Improve overall air quality.</p> <p>Minimise energy consumption, support the use of sustainable / renewable energy and improve resilience to climate change.</p>	<p><i>International</i></p> <p>The Cancun Agreement (2011) & Kyoto Agreement (1997)</p> <p>Paris Agreement (2015)</p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>European Commission (2008) The 2008 ambient air quality directive (2008/50/EC)</p> <p>European Commission, Thematic strategy on air pollution (2005)</p>

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
	<p>Build in adaptation to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly.</p> <p>Achieve and sustain compliance with and contribute towards national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.</p>	<p>European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC)</p> <p>European Commission, Directive on the Assessment and Management of Flood Risks (2007/60/EC)</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>The Climate Change Act 2008</p> <p>The Climate Change Act 2008 (2050 Target Amendment) Order 26 June 2019</p> <p>DCLG (2012) National Planning Policy Framework (as amended 2019)</p> <p>Department for Energy and Climate Change (2020) Energy White Paper: Powering our Net Zero Future</p> <p>Department of energy and climate change (2011) Planning our electric future: a White Paper for secure, affordable and low carbon electricity</p> <p>Defra (2017) The UK Climate Change Risk Assessment 2017 Evidence Report</p> <p>Defra (2007) The Air Quality Strategy for England, Scotland and Wales</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>The Energy Act 2013</p> <p>Environment Act, 2021</p> <p>Environment Act, 1995</p> <p>UK Climate Projections UKCP18. UKCIP, 2018</p> <p>Defra (2018), The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting</p>
Archaeology and Cultural Heritage	<p>Promote the conservation and enhancement of the historic environment, including the promotion of heritage and landscape as central to the culture of the region and conserve and enhance distinctive characteristics of landscape and settlement.</p> <p>Conserve and enhance the historic environment, heritage assets and their settings.</p>	<p><i>International</i></p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>Charter for the Protection and Management of Archaeological Heritage (1990)</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>DCLG (2012) National Planning Policy Framework (as amended 2019)</p>

SEA Topic	Key Messages and Objectives	Plans, Policies and Programmes
		<p>Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment</p> <p>Planning (Listed Buildings and Conservation Areas) Act 1990</p> <p>Ancient Monuments and Archaeological Areas Act 1979</p> <p>Defra (2004) Rural Strategy</p> <p>Department for Culture, Media and Sport (2001) The Historic Environment – A Force for the Future</p> <p>Historic England (2020) Heritage at Risk 2020</p> <p>Historic England (2008) Climate Change and the Historic Environment</p> <p>Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment</p> <p>Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3</p> <p>Historic England (2017) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, 2nd Edition</p>
Landscape and Visual Amenity	<p>Protection and enhancement of landscape (including designated landscapes, landscape character, distinctiveness and the countryside).</p> <p>Enhance the value of the countryside by protecting the natural environment for this and future generations.</p> <p>Improve access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders.</p>	<p><i>International</i></p> <p>European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)</p> <p>Council of Europe (2006), European Landscape Convention</p> <p><i>National</i></p> <p>The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)</p> <p>The Countryside and Rights of Way (CROW) Act, 2000</p> <p>DCLG (2012) National Planning Policy Framework (as amended 2019)</p> <p>Defra (2004) Rural Strategy</p> <p>Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper</p> <p>Natural England (2016), Conservation 21 – Natural England's Conservation Strategy for the 21st Century</p> <p>UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment</p> <p>Natural Capital Committee (2020) State of Natural Capital Annual Report 2020</p>

3. ENVIRONMENTAL BASELINE REVIEW

3.1 INTRODUCTION

The SEA Regulations require a report containing:

“Relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme” (Schedule 2(2));

“The environmental characteristics of areas likely to be significantly affected” (Schedule 2(3));

“Any existing environmental problems which are relevant to the plan or programme” (Schedule 2(4)).

An important part of the SEA process is to identify the current baseline conditions, and how they might change over time, in absence of the Strategy. With the knowledge of baseline conditions potential impacts of the Strategy can be identified, monitored, and if necessary mitigated.

The temporal period covered by the Strategy is 25 years, which may introduce uncertainty in considering future baselines.

The analysis of baseline information is presented for the SEA assessment area (hereafter referred to as the ‘assessment area’) for the following topics:

- Material Assets and Waste Management
- Biodiversity, Flora and Fauna;
- Population and Human Health;
- Water;
- Soils, Land Use and Geology;
- Air Quality and Climate;
- Archaeology and Cultural Heritage; and
- Landscape and Visual Amenity.

Baseline data has been drawn from a range of sources, including a number of the plans, policies and programmes reviewed and summarised in Table 2.1 and Appendix 1. The sections below also summarise the likely future baseline (where information is available). The key issues arising from the baseline review are summarised at the end of each sub-section.

3.1.1 Limitations of the data and assumptions made

Principal limitations which surround the future social and environmental baseline are where there are substantial differences in the availability and temporal resolution of robust projections across the various SEA topic areas. For example, the Strategy is intended to cover 25+ years and climate change estimates extend to up to 80 years, regional population and housing projects only extend up to the 2040s. Forecasts of changes in the natural environment are shorter still, and subject to considerable uncertainty.

The area under consideration for this SEA covers different geographical and social regions, which makes establishing an all-encompassing baseline challenging. There are also challenges around extrapolating information from data collated at differing spatial resolutions. Relevant spatial data have been used where appropriate to summarise the extensive datasets involved. In some instances, reporting cycles mean that the available information may have been superseded.

SEA is a high-level assessment aimed at highlighting potential environmental concerns. The environmental data to be used in this assessment is based on that which is readily available from existing sources such as statutory organisations. No primary research or survey work has been carried out specifically to inform the SEA and therefore it is possible that at the individual option level additional environmental issues could influence a Waste Strategy option. At a later stage during implementation of the options, some schemes, that have the potential to give rise to likely significant environmental effects and depending on their extent and nature, would be subject to further environmental appraisal including EIA where appropriate.

The baseline information presented within this report may not identify specific, localised issues that are reflective of the general trends of the region. For example, this may include locally important sites for recreation or nature conservation.

3.2 MATERIAL ASSETS AND WASTE MANAGEMENT

3.2.1 Baseline

3.2.1.1 Resource use and waste

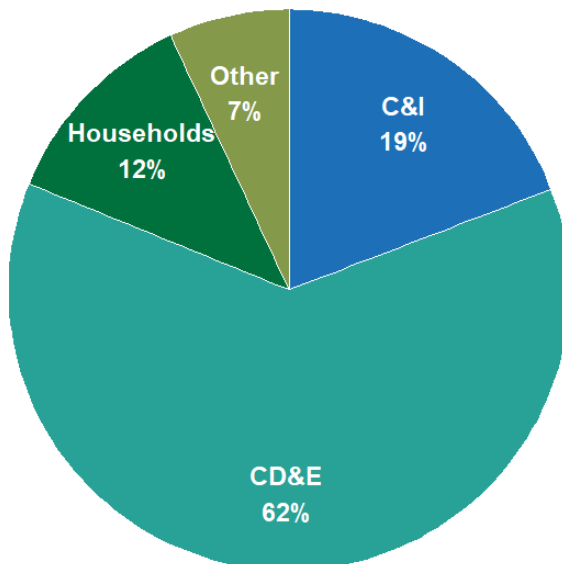
There is a need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced in order to achieve sustainable living.

The majority of municipal waste which is received at landfill is classified as 'mixed' waste (i.e. waste that cannot be routinely identified as being a part of a certain waste stream e.g. food waste). In 2020, a total of 10,425 thousand tonnes of municipal waste were sent to landfill in England⁵. Biodegradable municipal waste (BMW) is municipal waste which will decompose within landfill producing greenhouse gases such as methane. Typically, BMW includes food waste, green waste, cardboard and paper. In the UK BMW has reduced each year since 2010 (except in 2016), with 6.1 million tonnes of BMW sent to landfill in 2020⁶.

Household recycling rates in England have climbed to almost 45% (from 11.2% in 2000). In 2020, the recycling rate for England was 44% which has seen no significant change from 2015 (44.3%); waste generated by businesses declined by 29% in the six years to 2009 and business recycling rates were above 50% in 2011⁷. Approximately, 37.2 million tonnes of commercial and industrial (C&I) waste were generated in 2018 in England⁸.

A total of 2,886 thousand tonnes of waste were collected in the East of England with the region having the smallest proportion of waste sent for incineration. Through 2018-2020, the East of England had the second highest recycling rates across the UK with approximately 47%, with the South West, the highest, having an approximate 49% recycling rate¹⁰. In line with the widely adopted 'waste hierarchy', best practice for waste management is to prevent, re-use, recycle and recover¹¹, and only then should disposal (or storage) in landfill be considered.

Figure 3.1 Waste generation split by source in 2018



Data on waste arisings is collected in a range of categories; Commercial and Industrial; Construction, demolition and excavation (CD&E); Households; and Other [consisting of waste from mining, agriculture,

⁵ Defra (2022) [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-statistics-on-waste)

⁶ Defra (2022) [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-statistics-on-waste)

⁷ Defra (2011) Government Review of Waste Policy in England 2011. [pb13540-waste-policy-review110614.pdf \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/pb13540-waste-policy-review110614.pdf)

⁸ [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-statistics-on-waste) Section 4, Table 1

⁹ Defra (2022) [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/uk-statistics-on-waste)

¹⁰ Defra (2021) [Statistics on waste managed by local authorities 2019 \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/statistics-on-waste-managed-by-local-authorities-2019)

¹¹ [Waste hierarchy evidence summary \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/waste-hierarchy-evidence-summary)

forestry and fishing]. Table 3.1 and Table 3.2¹² outline the waste generation from each of these categories in the UK. Construction, demolition and excavation generated approximately 62% of total UK waste in 2018, with Commercial and Industrial (C&I) accounting for 19%¹³.

Table 3.1 Waste generation split by responsible economic activity in the UK [million tonnes]¹⁴

Year	Commercial & Industrial	Construction, demolition & excavation (includes dredging)	Households	Other	Total
2016	39.8	136.2	27.3	15.0	218.3
2018	42.6	137.8	26.4	15.4	222.2
Change	7.0%	1.2%	-3.3%	2.8%	1.8%

The Essex County Council and Southend-on-Sea Borough Council Waste Local Plan (2017) outline the existing waste management capacity with data from the Plan presented in Table 3.2¹⁵.

Table 3.2 Summary of Existing Waste Management Capacity in Essex

Facility Type	Operating and Under Construction			
	Number	Number (tonnes)	Estimated	Capacity
Transfer	116	1,776,928		
Non-Inert Materials Recovery	120	2,262,963		
Biological Treatment	13	280,938		
Inert Materials Recovery	39	2,072,073		
Energy Recovery	2	21,792		
Disposal Landfill	12	17,964,802		
Hazardous Landfill	0	Previous facility closed in April 2014		
Total	168	22,602,560		

The East of England is a large consumer of electricity, with a total domestic consumption in 2020 of 11,344GWh, the 4th highest region in the UK. Non-domestic electricity consumption follows a similar trend, being the 4th highest region in the UK. Renewable electricity generation in the UK fell by 9.3% in 2021 compared to 2020. The East of England is a large producer of renewable electricity generation having a capacity of 6,269GW (56% from wind and 34% from Solar PV). Two new large schemes were also set to be installed in 2021 in Eastern England and are both now operational^{16,17}; Little Staughton Solar PV (50MW) which and Colony Farm Anaerobic Digestion (4MW)¹⁸. It is important to note that neither of these new schemes are within the Essex County Council area.

¹² Defra (2022) [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

¹³ Defra (2022) [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

¹⁴ Defra (2022) [UK statistics on waste - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

¹⁵ Essex County Council and Southend-on-Sea Borough Council (2017) [waste-local-plan-2017-compressed.pdf \(ctfassets.net\)](https://www.ctfassets.net)

¹⁶ [Colony Farm - CNG Services](https://www.colonyfarm.co.uk)

¹⁷ [Staughton Solar PV Park, UK \(power-technology.com\)](https://www.staughton-solar.co.uk)

¹⁸ BEIS (2021) [Regional renewable electricity in 2021 \(publishing.service.gov.uk\)](https://publishing.service.gov.uk)

3.2.2 Future Baseline

The Government's National Infrastructure Strategy¹⁹ (2020) outlines a legal commitment to decarbonise the economy by 2050, strategies to rebuild the economy following the COVID-19 pandemic and plans to 'level-up' UK cities and regional powerhouses. Throughout the strategy, waste is a prominent theme with focus on investment in the waste sector. Plans for green-growth clusters in formerly industrial areas and investment via the Towns Fund²⁰ could benefit the Essex region in terms of the economy, industry, resource usage and the built environment. The UK Government also plans to accelerate the deployment of green technology through private sector investment in the retrofitting of existing stock, carbon capture and low-carbon hydrogen²¹.

The 25 Year Environment Plan (2018)²² runs alongside the Industrial Strategy (2017)²³ and outlines the government's approach to safeguarding the environment and sustainable management of the economy. A prominent theme within the plan is "Increasing resource efficiency and reducing pollution and waste". Specific commitments made in the 25 Year Environment Plan are:

- Make sure resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing and recycling
- Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2042
- Reduce pollution by tackling air pollution in the Clean Air Strategy and reduce the impact of chemicals

The Resources and Waste Strategy (2018)²⁴ sets out actions, in line with the 25-Year Environment Plan, on how the UK will preserve stock of material resources by minimising waste, promote resource efficiency and move towards a circular economy. This overall aim of the strategy is to set out a blueprint for *"eliminating avoidable plastic waste over the lifetime of the 25 Year Plan, doubling resource productivity, and eliminating avoidable waste of all kinds by 2050"*²⁵.

3.2.3 Key Issues

The key sustainability issues arising from the baseline assessment for Material Assets and Resource Use are:

- The need to minimise the consumption of resources, including water and energy.
- The need to follow the 'waste hierarchy' of 'reduce, re-use, recycle and recover' with the aim of reducing the proportion of waste sent to landfill.
- The need to maintain consistently high recycling rates.
- The need to promote and move towards a regenerative circular economy.
- The need to support regional and national commitments to decarbonisation.

¹⁹ HM Treasury Infrastructure UK (2020). National Infrastructure Strategy

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938539/NIS_Report_Web_Accessible.pdf

²⁰ Ministry of Housing, Communities and Local Government (2019). Towns Fund Prospectus.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/924503/20191031_Towns_Fund_prospectus.pdf

²¹ HM Treasury Infrastructure UK (2020). National Infrastructure Strategy

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938539/NIS_Report_Web_Accessible.pdf

²² HM Government (2018) A Green Future: Our 25 Year Plan to Improve the Environment.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

²³ HM Government (2017) Industrial Strategy. Building a Britain fit for the future. <https://www.gov.uk/government/publications/industrial-strategy-building-a-britain-fit-for-the-future>

²⁴ Defra (2018) Our waste, our resources: a strategy for England.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/765914/resources-waste-strategy-dec-2018.pdf

²⁵ Defra (2018) Resources and waste strategy: at a glance. <https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england/resources-and-waste-strategy-at-a-glance>

3.3 BIODIVERSITY, FLORA AND FAUNA

3.3.1 Baseline

Biodiversity is the variety of plants (flora) and animals (fauna) in an area, and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity has importance in its own right, and has value in terms of quality of life and amenity. The Essex region has a number of valuable and rare habitats for flora and fauna, including coastal saltmarshes, mudflats, wetlands, ancient woodlands and veteran trees.

The Essex County area includes a number of sites that are designated as important for biodiversity at an international level, namely 13 Special Protection Areas (SPA)²⁶, 3 Special Areas of Conservation (SAC)²⁷ and 11 Ramsar²⁸ sites.

86 Sites of Special Scientific Interest (SSSI)²⁹ and 7 National Nature Reserves (NNRs)³⁰ are located within the County area. SSSIs and NNRs relate to the country's best wildlife and geological sites. Local Natural Reserves (LNRs (51)) together with areas of Ancient Woodland are also located throughout the Essex County Council region. A number of non-statutory designated sites are also present in the region including 1,600 local wildlife sites (LWSs).

3.3.2 Future Baseline

The Defra 25 Year Environment Plan³¹ includes a commitment to restoring 75% terrestrial and freshwater protected sites to favourable condition and to create or restore 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits. The 25 Year Plan also proposed an adoption of 'Biodiversity Net Gain'³² approach to development, an approach introduced into national planning policy in 2019 and which is mandated in the Environment Act.

The 25-year Plan also includes a commitment to support land management at landscape and catchment level and to support the adoption of long-term sustainable land management practices to significantly expand wildlife habitat and provide opportunities for species and ecosystem recovery.

Climate change is anticipated to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. It is acknowledged that there is a need to allow wildlife to adapt to the impacts of climate change. Climate may limit species' distributions indirectly though the impact of invasive species on native species along climatic gradients³³. It will affect the abundance and diversity of natural enemies, competitors and species that constitute resources, as well as a species' ability to compete for resources or resist natural enemies.

3.3.3 Key Issues

The key sustainability issues arising from the baseline assessment for biodiversity are:

²⁶ Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), also known as the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. www.jncc.org.uk

²⁷ Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). www.jncc.org.uk

²⁸ Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

²⁹ Natural England has responsibility for identifying and protecting the SSSIs in England under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). www.naturalengland.org.uk

³⁰ NNRs are protected under Sections 16 to 29 of the National Parks and Access to the Countryside Act, 1949 and the Wildlife and Countryside Act, 1981.

³¹ <https://www.gov.uk/government/publications/25-year-environment-plan>

³² Biodiversity Net Gain is an approach in which biodiversity enhancement can be embedded into a development or project to demonstrate the importance of biodiversity's vital function in society and the economy. An important feature of BNG is avoiding and minimising biodiversity loss as much as possible, and then achieving net gains that are measurable which contribute towards local and strategic biodiversity priorities (CIEEM (2019) Biodiversity net gain. Good practice principles for development. <https://cieem.net/wp-content/uploads/2019/02/C776a-Biodiversity-net-gain.-Good-practice-principles-for-development.-A-practical-guide-web.pdf>)

³³ Pateman & Hodgson (2015) Biodiversity Climate change impacts report card technical paper. Available from: <http://www.nerc.ac.uk/research/partnerships/lwec/products/report-cards/biodiversity/papers/source06/>

- The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation.
- The need to avoid activities likely to cause irreversible damage to natural heritage.
- The need to take opportunities to improve ecological resilience.
- The need to control the spread of Invasive Non-Native Species (INNS).
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

3.4 POPULATION AND HUMAN HEALTH

3.4.1 Baseline

3.4.1.1 Population

The East of England has centres of densely populated areas, many of which are located within the Essex region. Essex has the highest population of counties in the East of England. As per the first results of the 2021 census, the administrative county of Essex is estimated to have a population of 1,503,300, one of the largest non-metropolitan county populations in the United Kingdom^{34,35}.

Table 3.3 Population and Household Statistics (based on administrative area of Essex)

Region	2011 Population	2011 Households	2021 Populations	2021 Households	Population Change (%)	Household Change (%)
Essex	1,393,587	581,589	1,503,300	626,500	7.8%	7.7%
East England	5,846,965	2,423,035	6,334,500	2,628,700	8.3%	8.5%
England	53,012,456	22,063,368	56,489,800	23,435,700	6.6%	6.2%

Population change is the function of natural change (difference between births and deaths) and net migration (the difference between the number of people moving into and out of an area). The balance of factors underlying population change varies by region. Table 3.3 presents the population and household change over ten years since 2011.

3.4.1.2 Human Health and Deprivation

The Waste Strategy has the potential to influence quality of life, including human health, well-being, amenity and community, through actions to improve waste collection systems and recycling practices.

In comparison to other regions of England, Essex has a higher-than-average life expectancy at birth for both males and females.

It has been shown that, in some cases, people in disadvantaged areas experience greater exposure to negative impacts on human health including air pollution, flooding, and proximity to large industrial and waste management sites³⁶. The Index of Multiple Deprivation combines a number of indicators, chosen to cover a range of economic, social and housing issues³⁷, into a single deprivation score for each Lower Super Output Area³⁸ (LSOA) in the UK. This allows each area to be ranked relative to one another according to their level of deprivation. The Indices are used widely to analyse patterns of deprivation, identify areas that would benefit from special initiatives or programmes and as a tool to determine eligibility for specific funding streams.

³⁴ ONS (2022) [Population and household estimates, England and Wales: Census 2021 - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/populationandhousehold/populationandhousehold/populationandhouseholdestimatesenglandandwales/census2021)

³⁵ ONS (2011) [Population and household estimates - Office for National Statistics \(ons.gov.uk\)](https://www.ons.gov.uk/populationandhousehold/populationandhousehold/populationandhouseholdestimatesenglandandwales/census2011)

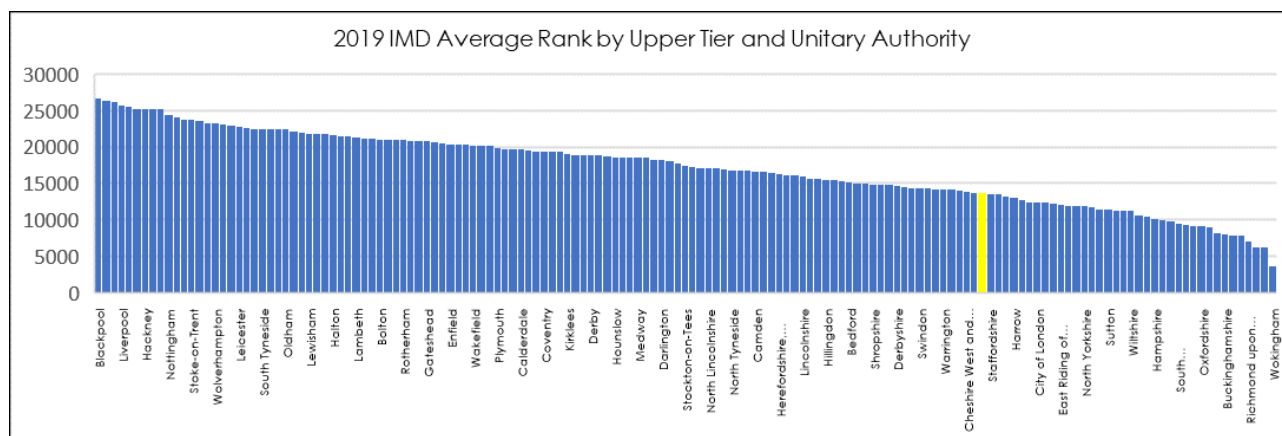
³⁶ Defra (2006) Air Quality and Social Deprivation in the UK: an environmental inequalities analysis

³⁷ Income Deprivation, Employment Deprivation, Health Deprivation and Disability, Education Skills and Training Deprivation, Barriers to Housing and Services, Living Environment Deprivation, and Crime.

³⁸ Super Output Areas (SOAs) are a set of geographical areas developed following the 2001 census. The aim was to produce a set of areas of consistent size, whose boundaries would not change, suitable for the publication data of such as the Indices of Deprivation. They are an aggregation of adjacent Output Areas with similar social characteristics. Lower Layer Super Output Areas (LSOAs) typically contain 4 to 6 OAs with a population of around 1500.

The 2019 Indices of Deprivation show that Essex compares favourably with other Local Authority regions. Essex has lower levels of deprivation than 70% of upper tier authority areas (County Councils in England). Compared to other counties in the south-east of England, the percentage of Essex residents living in the most deprived 20% of areas is amongst the highest in the south east. There is also a reported large gap between the most and least deprived districts with significant structural factors such as income and employment affecting deprivation in Essex. 75 neighbourhoods (LSOAs) in Essex, home to 120,000 Essex residents, are among the 20% most deprived nationally³⁹. Figure 3.2⁴⁰ shows the county level rank for overall deprivation. Compared to other upper tier and unitary authorities in England, Essex is within the 30% least deprived areas nationally.

Figure 3.2 County level rank for overall deprivation



3.4.1.3 Human Health and Waste

Mismanagement of waste can have significant negative effects on human health through factors such as air pollution, water and soil contamination, increased risk of infection and transmissible disease, and direct interaction with dangerous substances from waste material (e.g. electronic and industrial waste).

Globally, around 54 million tonnes of e-waste (e.g. TVs, computers) are generated annually with this figure expected to increase to 75 million tonnes by 2030⁴¹. The United Kingdom has significantly higher recycling rates of e-waste compared to other international regions: global e-waste recycling rates were 17.4% in 2019 with the UK 67% in 2018^{42,43}. Exposure to poorly managed e-waste has been reported to cause adverse health and developmental impacts in young children⁴⁴.

A report commissioned by the Environment Agency⁴⁵ identified evidence of socially unequal distribution of IPC sites (Integrated Pollution Control). It was found that significant sources of pollution are disproportionately situated in the more deprived areas in England. Waste sites, in particular, are disproportionately located in those areas with higher deprivation levels. Although there is evidence of a relationship between proximity to IPC sites and areas of deprivation, this study was commissioned by the Environment Agency in 2003 with no recent, updated research carried out.

Hazardous waste or unsafe waste treatment can directly harm waste workers or vulnerable groups residing in local communities⁴⁶. Improper waste collection has the potential to increase the risk of water borne diseases through the excess creation of environmental and marine pollution entering water bodies subsequently

³⁹ Essex County Council (2019) Changes in the Index of Multiple Deprivation for Essex: IMD 2019.

⁴⁰ Essex County Council (2019) Changes in the Index of Multiple Deprivation for Essex: IMD 2019.

⁴¹ WHO (2019) Compendium of WHO and other UN guidance on health and environment. [who_compendium_chapter4_v2_01092021.pdf](#)

⁴² ITU (2020) Global E-waste monitor 2020. [Global E-waste Monitor 2020 \(itu.int\)](#)

⁴³ Statista (2022) Recycling rate of electrical and electronic waste in the United Kingdom (UK) [UK: e-waste recycling rate 2010-2018 | Statista](#)

⁴⁴ WHO (2019) Electrical/electronic waste and children's health. Training for health care providers. Geneva (<https://apps.who.int/iris/handle/10665/331057>)

⁴⁵ Walker et al (2003). Environmental Quality and Social Deprivation. [1 \(publishing.service.gov.uk\)](#)

⁴⁶ WHO (2019) Compendium of WHO and other UN guidance on health and environment. [who_compendium_chapter4_v2_01092021.pdf](#)

impacting drainage networks^{47,48}. Extreme flooding events may increase the potential for direct impact pathways between contaminated waste and human health if waste is not managed in the correct manner.

Waste management industries are required to tackle environmental controls including noise pollution under the Environmental Permitting Regulations 2016. Material recovery facilities have processes which can emit noise levels exceeding 80dB (Lower Exposure Action Value) and 85dB (Upper Exposure Action Value) which require action to be taken under the Control of Noise at Work Regulations 2005⁴⁹. Managing these risks can be achieved through controlling the noise at the source whilst also adopting reasonable practicable controls such as spatial management of site locations and adopting vehicles which contain 'quiet cabs'⁵⁰.

3.4.2 Future Baseline

In response to recent studies, access to the recreational resources, green spaces and the historic environment will have greater importance in future planning. The National Planning Policy Framework⁵¹ suggests a range of areas that should be taken into account, including the provision of appropriate facilities for recreation that preserve the openness of the green belt.

The National Ecosystem Assessment⁵² and the Marmot Review⁵³, *Fair Society, Healthy Lives*, demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a Green Infrastructure Partnership with civil society to support the development of green infrastructure in England.

3.4.3 Key Issues

The key sustainability issues arising from the baseline assessment for population and human health are:

- The need to ensure waste sites and waste management are not disproportionately impacting deprived or vulnerable communities.
- The need to protect human health.
- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.
- The need to ensure waste is not mismanaged so as to impact upon human health through chemicals, air pollution, land contamination and increased risk of infection and/or disease.
- The need to ensure high recycling rates are maintained.
- The need to accommodate an increasing population.
- The need to contribute towards maintaining sustainable growth in the region.

3.5 WATER

3.5.1 Baseline

In the context of the Water Framework Directive (WFD), the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. There are 5 operational catchments in the Essex combined management region; Blackwater; Chelmer; Colne Essex; Crouch and Roach; and Stour OC.

Provision and management of water resources is vital to human health, social wellbeing, and economic stability. Pollution and flooding events can have a significant impact on the economy, society and environment making it vitally important to manage, monitor and protect water resources. Water quality is assessed in

⁴⁷ Ibid

⁴⁸ Solid Waste Management (MOOC). Open learning campus. Washington: World Bank Group; 2020 (<https://olc.worldbank.org/content/solid-waste-management-mooc>).

⁴⁹ [Noise in the waste management and recycling industry \(hse.gov.uk\)](https://www.hse.gov.uk/noise/)

⁵⁰ [Noise in Material Recovery Facilities \(MRFs\) \(hse.gov.uk\)](https://www.hse.gov.uk/noise/)

⁵¹ Department for Levelling Up, Housing and Communities (2012) National Planning Policy Framework <https://www.gov.uk/guidance/national-planning-policy-framework>

⁵² National Ecosystem Assessment Initiative (2022) [NEA Initiative \(ecosystemassessments.net\)](https://ecosystemassessments.net/)

⁵³ Marmot, M (2010) Fair society, healthy lives : the Marmot Review : strategic review of health inequalities in England post-2010. Department for International Development. <https://www.gov.uk/research-for-development-outputs/fair-society-healthy-lives-the-marmot-review-strategic-review-of-health-inequalities-in-england-post-2010>

England based on the General Quality Assessment classification which takes into account, chemical (e.g. dissolved oxygen, ammonia and biochemical oxygen demand) and biological (e.g. macroinvertebrates)⁵⁴ factors. Recent (2019) water quality statistics have found that nationally, only 16% of waters meet the criteria for 'good ecological status' [unchanged from 2016]. New monitoring techniques have been adopted to classify water bodies more accurately⁵⁵. The 25 Year Environment Plan and Environment Act have now set ambitious water quality objectives and legally binding targets to improve the state of water bodies and concentrate on pollutants impacting the water environment.

The Essex Rivers Hub Partnership works to ensure rivers, wetlands and water resources are “resilient to changing climate and population growth, are richer in biodiversity, support a thriving economy and contribute to the well being of the citizens of Essex”⁵⁶. Current challenges identified in the region include:

- Pollution from agriculture and rural areas
- Pollution from waste water
- Physical modifications: removal of redundant structures and modifications to increase ecological resilience

One of the wider challenges identified by the Essex Rivers Hub Partnership relevant to the Waste Management Strategy is to remove plastics and litter from the water environment.

Leachate is a liquid which drains or leaches from a landfill and has the potential to cause significant issues to human health, and the quality of surface water and groundwater due to leachate's chemical composition (dissolved organic chemicals, ammonia and metals). Infiltration due to rainfall can encourage leachate to enter water bodies and groundwater and must therefore be monitored and managed appropriately through groundwater risk assessments, and leachate management plans⁵⁷. Liners can be used to create a seal against the liquid attempting to escape, mitigating against leachate entering water bodies.

Fly-tipping also poses a risk to watercourses. For 2020/2021, local authorities in England dealt with an increase of 16% since 2019/2020. Fly-tipping incidents to watercourse, compared to other land types is relatively low, however still poses a risk⁵⁸.

3.5.1.1 Flood Risk

The Essex Local Flood Risk Management Strategy⁵⁹ outline 9 objectives to inform, understand and manage flooding in the county. These include: ensuring people understand the risk of flooding; how flood risk is assessed and prioritised; ensure planning decisions consider flooding and future impact of any development; highlight detailed information and legislation regarding flooding. A measure set out by the local flood risk strategy is keeping a record of structures of features which form part of local drainage strategies. This database has approximately 10,000 records and can be used to ensure flood planning is transparent and supported by data.

3.5.2 Future Baseline

Originally, the WFD set a target of aiming to achieve at least 'good status' in all waterbodies by 2015. However, provided that certain conditions are satisfied, it was acknowledged that in some cases the achievement of good status may be delayed until 2021 or 2027. The primary objective in the short-term is to ensure no deterioration in status between status classes: the 2015 water body classification is the baseline from which deterioration between classes is assessed; no deterioration between status classes is permitted unless certain and specific conditions apply.

⁵⁴ Defra (2010) [River water quality indicator - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/river-water-quality-indicator)

⁵⁵ Defra (2020) [Latest water classifications results published - Defra in the media \(blog.gov.uk\)](https://www.blog.gov.uk/2020/07/latest-water-classifications-results-published/)

⁵⁶ Environment Agency (2022) [Essex Rivers Hub | Catchment Data Explorer](https://www.essexrivershub.org/catchment-data-explorer/)

⁵⁷ Gov.uk (2022) Landfill operators: environmental permits. <https://www.gov.uk/guidance/landfill-operators-environmental-permits/manage-leachate>

⁵⁸ Defra (2021) Fly-tipping statistics for England, 2020-2021. <https://www.gov.uk/government/statistics/fly-tipping-in-england/fly-tipping-statistics-for-england-2020-to-2021#total-number-of-fly-tipping-incidents-in-england>

⁵⁹ Essex County Council (2018) [essex-local-flood-risk-management-strategy.pdf](https://www.essex.gov.uk/media/10000/Essex-Local-Flood-Risk-Management-Strategy.pdf)

The UK Climate Change Risk Assessment (CCRA3) 2021 Evidence Report⁶⁰ draws together and interprets the evidence gathered CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Findings of all CCRA assessments include:

- Changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology (including water scarcity, flooding and saline intrusion)
- Increasing pressure on the UK's water resources due to changes in hydrological conditions and regulatory requirements to maintain good ecological status
- Increases in water demand for irrigation of crops
- A reduction in public water supplies due to increasing periods of water scarcity
- Lower summer river flows across the UK due to warming and drying conditions
- An increase in precipitation in winter months due to a combination of greater depths and more frequent heavy rainfall events – suggesting larger volumes of runoff with potential negative impacts on flood risk and sewer overflows in urban environments
- Flash-flooding associated releases from combined sewer overflows (CSO) could in turn increase associated illnesses at the coast due to the varying occurrence of microbial pathogens in the marine environment.

3.5.3 Key Issues

- The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD objectives and designated sites objectives (i.e. assessment against Common Standards Monitoring Guidance, where relevant).
- The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply.
- The need to ensure that people understand the value of water.

3.6 SOIL, GEOLOGY AND LAND-USE

3.6.1 Baseline

3.6.1.1 Geology

The Essex County region is diverse and with a geology relatively young. A significant proportion of the region is made up of London clay in the East and South of the area, with Glacial Till being in the North/North West⁶¹. The geodiversity of Essex is typically subdued relief with gentle slopes resulting in a soft, young underlying geology. This geology generally produces, arable and fertile soil⁶².

Three National Character Areas (NCAs) dominate the Essex region and their characteristics, geology and features are discussed below:

Greater Thames Estuary – predominantly a remote, tranquil landscape with shallow creeks, drowned estuaries, low-lying islands, mudflats, tidal salt march and reclaimed grazing marsh lying between the North Sea and rising ground inland. This NCA contains some of the least settled areas on the English coasts with few major settlements and medieval patterns of small villages and hamlets on higher ground. Sea defences

⁶⁰ Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

⁶¹ GeoEssex (2022) [Essex Geology - GeoEssex](#)

⁶² GeoEssex (2013) [essex_lgap_final_march_2013.pdf \(geoexsex.org.uk\)](#)

are present which protect large areas of reclaimed grazing marsh. A number of historic military landmarks characterise the coastal landscape⁶³.

Northern Thames Basin – the area is diverse extending from Hertfordshire to the Essex coast. Included in the NCA are suburbs of North London with historic and planned new towns and cities throughout the area. Arable agriculture is a dominant industry in the area with soil quality ranging from good to poor quality. The London Clay proves poor quality soil becoming waterlogged in the winter and cracking/shrinking in the summer. Good quality soil is found in alluvial deposit areas from the Thames and other rivers. There is a rich geodiversity, archaeology, history and diverse landscape in the area. Urban expansion is a feature of the area with significant pressure on the area in terms of housing, schooling and other critical infrastructure⁶⁴.

South Suffolk and North Essex Clayland – the NCA covers four counties including Essex. The ancient landscape is wooded arable countryside with a character of gently undulating, chalky boulder clay plateau. A complex network of species-rich hedgerows, ancient woods and parks, meadows with streams and rivers characterise the area. Traditional irregular field patterns are discernible over the area despite field enlargements in the 20th century. The soil is moderately fertile, chalky clay giving the vegetation a calcareous character. Gravel and sand deposits are important geological features typically exposed during mineral extraction which also provide a great deal of evidence in understanding ice-age environmental change⁶⁵.

3.6.1.2 Landfill

There are 534 landfill facilities in England, 24 more than in 2016. In the Essex region, there are 33 permitted landfill sites that are currently operating. Historically, landfills in the United Kingdom were the most common option for waste disposal and for certain waste types are still recognised as the Best Practicable Environmental Option (BPEO). However, certain rules apply to waste before they are disposed in landfill, such as classifying of the waste, treatment, and confirmation that waste can be accepted⁶⁶. UK biodegradable municipal waste (BMW) sent to landfill has fallen from approximately 6.6 million tonnes in 2019 to around 6.1 million tonnes in 2020.⁶⁷

‘Soils’ make up 58% and ‘mineral wastes’ 6% received by landfills. The two other features of waste at landfills are ‘household & similar wastes’ (10%) and ‘other wastes’ (26%) [includes ‘sorting residues’, typically mixed wastes following processing to remove recyclates⁶⁸].

3.6.2 Future Baseline

One of the core planning principles of the NPPF is to encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value. The NPPF also places great importance with respect to Green Belt policy, the aim of which is to prevent urban sprawl by keeping land permanently open. Green Belt serves five purposes: to check the unrestricted sprawl of large built-up areas; to prevent neighbouring towns merging into one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns; and to assist in urban regeneration, by encouraging the recycling of derelict and other urban land. Although the NPPF promotes a presumption in favour of sustainable development, this does not apply where proposed developments may affect European or other designated sites covered by specific policies.

3.6.3 Key Issues

The key sustainability issues arising from the baseline assessment for soil, geology and land use are:

- The need to encourage effective use of the land, benefitting landowners, other stakeholders, the environment and sustainability of natural resources.
- The need to apply the Waste Hierarchy; prioritising prevention, enhancing recycling and reducing the amount of waste going to landfill.

⁶³ [NCA Profile: 81 Greater Thames Estuary - NE473 \(naturalengland.org.uk\)](#)

⁶⁴ [NCA Profile: 111 Northern Thames Basin - NE466 \(naturalengland.org.uk\)](#)

⁶⁵ [NCA Profile: 86 South Suffolk and North Essex Clayland - NE515 \(naturalengland.org.uk\)](#)

⁶⁶ Gov.uk (2021) Dispose of waste to landfill. <https://www.gov.uk/guidance/dispose-of-waste-to-landfill>

⁶⁷ Defra (2022) UK Statistics on waste. [UK statistics on waste - GOV.UK \(www.gov.uk\)](#)

⁶⁸ Defra (2022) UK Statistics on waste. [UK statistics on waste - GOV.UK \(www.gov.uk\)](#)

3.7 AIR AND CLIMATE

3.7.1 Baseline

The options in the waste strategy may include increased numbers of vehicles on the road, operational and process changes at existing locations and development of new infrastructure. Therefore, there is potential for adverse effects on air quality and climate through emissions associated with construction (on site and transport) or through the operation of the schemes.

3.7.1.1 Greenhouse Gases and Climate Change

Robust information on climate change and variability is required to adapt, build resilience and inform decision making. UK Climate Projections 2018 (UKCP18) are the latest national climate projections and provide the most recent scientific evidence on projected climate changes.

The average temperature over the past decade has been on average 0.3°C warmer than the 1981-2010 average and 0.9 °C warmer than the 1961-1990 average. All the top ten warmest years for the UK, in the series from 1884, have occurred since 2002⁶⁹. The highest ever summer temperature was recorded in the East of England with 38.7°C at Cambridge Botanic Gardens (2019). The UK is experiencing wetter days than the previous decade, with an increase of 5% more rain than 1961-1990 and average UK extreme rainfall increasing. However, given the geography of the East of England, there are not significant total rainfall increases seen during extreme rain events.

The UK Climate Change Risk Assessment (CCRA3) 2021 Evidence Report, which is required to conduct its assessment every five years⁷⁰, draws together and interprets evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Overall, the findings of the CCRA3 have identified eight priority areas for Government and other organisations to address within the next five years:

- Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards
- Risks to soil health from increased flooding and drought
- Risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions
- Risks to crops, livestock and commercial trees from multiple hazards
- Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks
- Risks to people and the economy from climate-related failure of the power system
- Risks to human health, well-being and productivity from increased exposure to heat in homes and other buildings
- Multiple risks to the UK from climate change impacts overseas.

The UK Climate Change Act 2008 set legally binding targets for the UK to reduce greenhouse gas emissions by at least 80% by 2050, and CO₂ emissions by at least 26% by 2020, both set against a 1990 baseline. Under the requirements of the Act, the Government has set five year carbon budgets to set out a trajectory for emissions reductions to 2050. Budgets have been set covering the periods 2008-12, 2013-17, 2018-22, 2023-27 and 2028-32, equivalent to 22%, 28%, 34%, 50% and 57% reductions in carbon emissions compared to 1990 levels respectively. The National Adaptation Programme (NAP)⁷¹ is currently in its second period [2018-2023] which sets out the actions that government and others will take to adapt to climate change challenges in England. The NAP addresses climate risks which could affect the natural environment, critical infrastructure, communities and businesses and consequently explains associated actions and future responses on risks such as flooding and coastal change, risks to health from high temperatures, and risk of public water supply shortages⁷².

⁶⁹ Met Office (2022) [ukcp18 headline findings v4 aug22.pdf \(metoffice.gov.uk\)](https://www.metoffice.gov.uk/news/2022/08/22/ukcp18-headline-findings-v4-aug22)

⁷⁰ Defra (2021) The UK Climate Change Risk Assessment 2021 Evidence Report. Available at: <https://www.theccc.org.uk/wpcontent/uploads/2021/07/Independent-Assessment-of-UK-Climate-Risk-Advice-to-Govt-for-CCRA3-CCC.pdf>

⁷¹ Defra (2018) The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf

⁷² DEFRA (2018) The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting. Available at: [nationaladaptation-programme-2018.pdf \(publishing.service.gov.uk\)](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf)

3.7.1.2 Landfills and Greenhouse Gases

The IPCC, in the latest Climate Change Report, identified that waste management as a sector is a significant global producer of methane and an important contributor to global warming⁷³. Landfill sites contain biodegradable waste which produces greenhouse gases such as methane and carbon dioxide⁷⁴. Emissions from landfill do not arise immediately and can take place at differing timescales dependent on the greenhouse gas and waste type. Greenhouse gas emissions from UK landfill in 2020 were 12.8 million metric tonnes CO_{2e}, down from 24.3 in 2010⁷⁵. Landfill gas emissions make up 3.1% of the total UK greenhouse gas emissions with Waste Management as a whole making up 4.2% (2019)⁷⁶.

Climate mitigation models have suggested that strong decreases of CO₂ emissions and other 'Short-lived Climate Forcers' are dependent on reductions in methane production from waste activities⁷⁷.

3.7.1.3 Air Quality

The air quality baseline can be best described through reference to information produced by the local authorities in Essex that have declared Air Quality Management Areas (AQMA). A local authority declares an AQMA when UK National air quality objectives are unlikely to be met. The majority of the AQMAs in the UK have been declared because of emissions from road transport.

Options within the waste strategy may include a change in waste vehicle types or frequency of vehicles on the roads which may have an impact on vehicle emissions and associated local air quality. Reference to AQMAs will be made when considering any adverse impacts on air quality of the waste strategy options.

30 AQMAs are located within the Essex County Council region and are presented in Figure 3.3.

⁷³ IPCC (2021) Short-lived Climate Forcers: Chapter 6 https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf

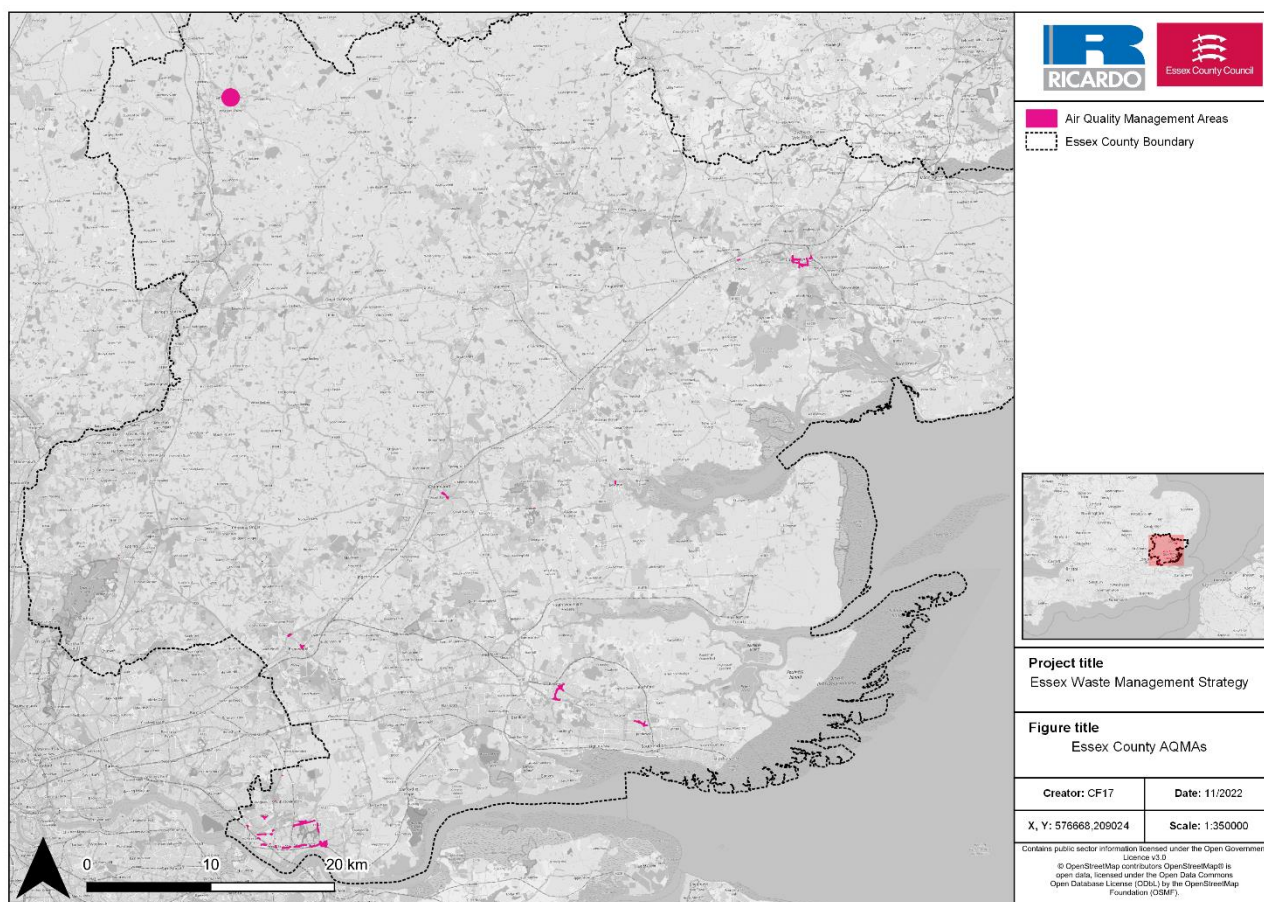
⁷⁴ Defra (2004) Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69391/pb9052a-health-report-040325.pdf

⁷⁵ [UK: landfill greenhouse gas emissions 2010-2020 | Statista](#)

⁷⁶ BEIS (2019) [final-greenhouse-gas-emissions-tables-2019.xlsx \(live.com\)](#)

⁷⁷ IPCC (2021) Short-lived Climate Forcers: Chapter 6 https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf

Figure 3.3 AQMAs located in the Essex County Council region



3.7.2 Future Baseline

Government and international targets will require significant cuts in greenhouse gas emissions by 2027. The UK met the first and second carbon budgets with headrooms of 36 and 384 MtCO₂e respectively and is currently projected to meet the third carbon budget with a headroom of around 26 MtCO₂e (until 2022)⁷⁸. Objectives are being achieved for many air pollutants (lead, benzene, 1,3-butadiene and carbon monoxide (CO)). However, measurements show that long-term reducing trends for NO₂⁷⁹ and PM₁₀⁸⁰ are flattening or even reversing at a number of locations, despite current policy measures.

The Government's Net Zero ambition is to "*reduce emissions by 78% by 2035 compared to 1990 levels, taking the UK more than three-quarters of the way to reaching net zero by 2050*"⁸¹. Measuring waste management activities using the generation of carbon emissions as a key metric will be required to monitor performance against this target.

Future climate change is projected (UKCP18) to cause a change in the seasonality of extremes through an extension of the convective season from summer to autumn, with increases in heavy rainfall intensity in the autumn. Although an overall summer drying trend is to be expected in the future, data from the Met Office's UK Climate Projections (UKCP18 [Local 2.2km] projections) suggest increases in heavy summer rainfall event intensity⁸². The UKCP18 also estimates that summers in central England are likely to be between 1.1°C to

⁷⁸ DECC (2020) Updated energy and emissions projections 2019. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/931323/updated-energy-and-emissions-projections-2019.pdf

⁷⁹ Nitrogen Dioxide

⁸⁰ Particulates with a diameter of 10µm or less

⁸¹ [UK enshrines new target in law to slash emissions by 78% by 2035 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-percent-by-2035)

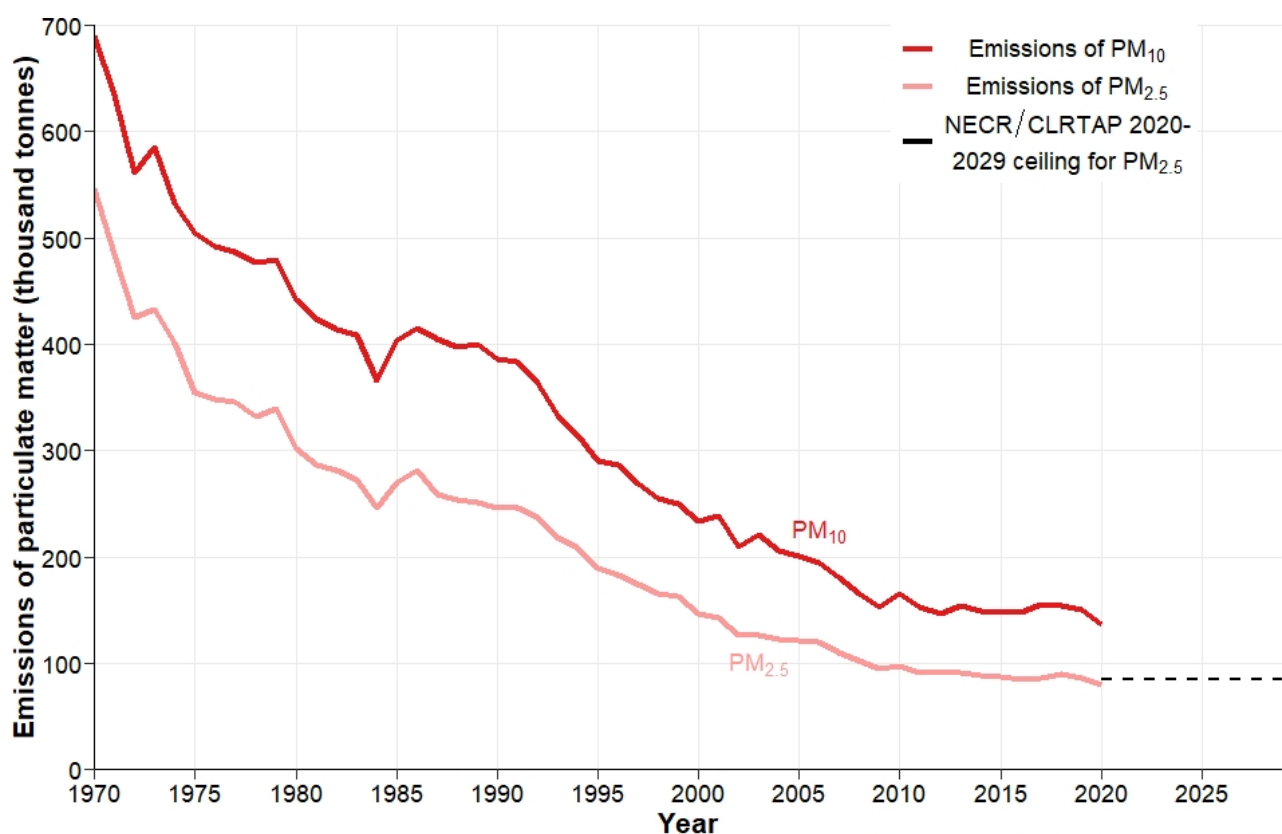
⁸² Met Office (2021) UK Climate Projections: Headline Findings

5.8°C warmer, 57% drier and 9% wetter⁸³.

Emissions of PM₁₀ and PM_{2.5} have been relatively stable since 2009. The Government's aim was to reduce emissions of PM_{2.5} against the 2005 baseline by 30% by 2020, and 46% by 2030. The trends in total annual emissions from 1970 to 2020⁸⁴ are shown in Figure 3.4.

There is a target to decrease emissions of NO₂ against the baseline of 2005 by 55% by 2020. There has been an average decline of 1.3% between 1997 and 2021⁸⁵. Targets to reduce emissions of sulphur dioxide against the 2005 baseline have been set at decreases of 59% by 2020, moving to 88% by 2030⁸⁶. Emissions of sulphur dioxide have fallen by 98 per cent since 1970, to 136 thousand tonnes in 2020⁸⁷.

Figure 3.4 Annual emissions of PM₁₀ and PM_{2.5} in the UK: 1970-2020



Source: Ricardo Energy & Environment

Residual waste in landfill sites can remain in situ for multiple years. The degradation process of landfill waste releases greenhouse gases such as methane and carbon dioxide and can take place over a long period of time. Future baseline of landfill emissions is therefore variable and uncertain. Landfill emissions can also be affected by the influence of climate change through decomposition rates being affected by higher temperatures and rainfall variations⁸⁸. Other waste management activities can be affected by changing climate with examples shown in Table 3.4⁸⁹.

⁸³ Defra, BEIS, the Met Office and the Environment Agency (2018) – UKCP18 Climate Change Over Land: <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-infographicheadlinefindings-land.pdf>

⁸⁴ [Emissions of air pollutants in the UK – Particulate matter \(PM₁₀ and PM_{2.5}\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290358/sx1-042-tr-e-e.pdf)

⁸⁵ [Concentrations of nitrogen dioxide - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290358/sx1-042-tr-e-e.pdf)

⁸⁶ Defra (2019), Clean Air Strategy 2019

⁸⁷ [Emissions of air pollutants in the UK – Sulphur dioxide \(SO₂\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/290358/sx1-042-tr-e-e.pdf)

⁸⁸ Environment Agency (2003) Potential Impacts of Climate Change on Waste Management. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/290358/sx1-042-tr-e-e.pdf

⁸⁹ Environment Agency (2003) Potential Impacts of Climate Change on Waste Management. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/290358/sx1-042-tr-e-e.pdf

Controlling landfill gas is important to minimise local environmental issues and limit the contribution of greenhouse gases. Best practice in England for managing landfill gas is to collect the gas and use it as an energy source to generate electricity or simply burnt as a flare. These two approaches involve the process of oxidation of methane to carbon dioxide. As gas yields and methane concentrations vary over time in light of climatic change, these common oxidation techniques become less effective. In light of this, waste managers should use guidance and framework to identify the best technology available (e.g. heat and power generation; high temperature flares; micro power generation; biofilters; biocovers) relevant to individual scenarios. Key variables include: methane concentrations, whether a landfill site has an active extraction system; whether a landfill site has an electrical grid connection; technical performance of technology; capital and operational costs; emissions from the technology (noise, air quality, odour)⁹⁰.

Table 3.4 Climate Change Impacts on Waste Management Processes

Climate Variation	Waste Management Change
Higher Temperatures	Alter waste decomposition rates
	Reduced water availability altering site hydrology and leachate production
	Reduced water availability increasing the strength of leachate as a result of dilution reductions
	Increased risk of water borne disease transmission
Reduced Precipitation in summer	Increased risk of odour nuisance
	Reduce waste decomposition rates
	Increase leachate strength
	Reduce water availability for site management
Increased Precipitation in Winter	Increase risk of shrinkage in clay lining and capping layers
	Increased waste decomposition rates
	Increased risk of flooding and pollution incidents
	Increase leachate production
Increase of extreme weather (e.g. storms)	Lead to increased incidents of windblown litter and debris
	Increased infrastructure damage and risk of pollution incidents.

3.7.3 Key Issues

The key sustainability issues relevant to the Waste Strategy and the SEA, arising from the analysis of the air quality and climate baseline are:

- the need to minimise emissions of pollutant gases and particulates and enhance air quality;
- the need to reduce the need to travel and promote sustainable modes of transport;
- the need to reduce greenhouse gas emissions arising from implementation of the Waste Strategy;
- the need to take into account, and where possible adapt to, the potential effects of climate change;
- the need to increase environmental resilience to the effects of climate change.

⁹⁰ Environment Agency (2017) Landfill methane oxidation techniques.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/650318/Landfill_methane_oxidation_techniques_-_report.pdf

3.8 ARCHAEOLOGY AND CULTURAL HERITAGE

3.8.1 Baseline

Table 3.5: Designated heritage assets in Essex outlines the designated heritage assets in the Essex County region⁹¹.

Table 3.5: Designated heritage assets in Essex

Asset	Essex
World Heritage Site	0
Scheduled Monuments	303
Conservation Areas	210
Listed Buildings	13992
Registered Parks and Gardens	39
Registered Historic Battlefields	1
Protected Historic Wrecks	0

3.8.2 Future Baseline

Core planning principles in the NPPF include those aiming to protect heritage assets, including “conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations”⁹². Recent and ongoing national economic difficulties may have a negative effect on removing heritage assets from the heritage at risk register. Climate change could have variable impacts on heritage assets in the future. Some types of assets and landscapes have already experienced and survived significant climatic changes in the past and may demonstrate considerable resilience in the face of future climate change. However, many more historic assets are potentially at risk from the direct impacts of future climate change⁹³.

3.8.3 Key Issues

The key sustainability issue arising from the baseline assessment for archaeology and cultural heritage is:

- The need to conserve or enhance sites of archaeological importance and cultural heritage interest.

3.9 LANDSCAPE AND VISUAL AMENITY

3.9.1 Baseline

The landscape character network⁹⁴ defines landscape character as 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. The National Character Areas have been identified in the Essex County region in Section 3.6.

3.9.1.1 Nationally Designated Sites

Some landscapes are special because they have a particular amenity value, such as those designated as Areas of Outstanding Natural Beauty (AONB). Others may have an intrinsic value as good examples or be the only remaining examples of a particular landscape type. There are however, no AONB in the Essex region and are therefore not applicable to this scoping report. Some landscapes are more sensitive to development whereas others have a greater capacity to accommodate development. Assessments of landscape character

⁹¹ [Historic England - Championing England's heritage | Historic England](#)

⁹² CLG (2012) National Planning Policy Framework, Communities and Local Government.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

⁹³ English Heritage, now known as Historic England, (2010) Climate Change and the Historic Environment

⁹⁴ www.landscapecharacter.org.uk

and landscape sensitivity enable decisions to be made about the most suitable location of development to minimise impacts on landscapes. Another important protected landscape assets in the UK are National Parks, however no National Parks are located within the Essex County area and therefore not applicable to this scoping report.

3.9.1.2 Green Belt

The main characteristics of Green Belt are its openness and permanence. The main aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open. The Green Belt therefore aims to check the unrestricted sprawl of large built-up areas; prevent neighbouring towns merging into one another; assist in safeguarding the countryside from encroachment; preserve the setting and special character of historic towns; and assist in urban regeneration while encouraging the recycling of derelict and other urban land.

Large areas of the South and South West of the council region are Green Belt, with no Green Belt areas in the Northern reaches of Essex. A total of 16 Green Belts are located in Essex.

3.9.2 Future Baseline

The NPPF highlights the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it. The NPPF states that great weight should be given to conserving landscape and scenic beauty in National Parks and AONBs, which have the highest status of protection. It identifies that planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest.

3.9.3 Key Issues

The key sustainability issue arising from the baseline assessment for landscape and visual amenity is:

- Landscape and designated sites should be maintained and enhanced for the enjoyment of the public.

3.10 INTER-RELATIONSHIPS

Schedule 2 (6) of the SEA Regulations requires the assessment and reporting of the likely significant effects on the following topics: “biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues.” This will be undertaken through the assessment of cumulative effects of individual options. Secondary, cumulative and synergistic effects will be assessed as part of the SEA. Inter-relationships that result in changes to individual effects will be considered through the assessment of synergistic effects.

3.11 SCOPING OF SEA TOPICS

The review of the baseline with respect to the proposed Waste Strategy for Essex has highlighted that likely significant environmental effects are anticipated across all SEA topics except Archaeology and Cultural Heritage. Table 3.6 summarises the reasons for scoping in/out the SEA topics. Following the scoping consultation, this table and inclusion or exclusion of topics may be revised.

Table 3.6: Scoping of topics into the SEA

SEA Topic	Scoped in/out	Justification
Material Assets and Waste Management	In	Actions within the Waste Strategy are likely to have both positive and negative effects on Waste Management given the nature of the options focussing on waste.
Biodiversity, Flora and Fauna	In	There are potential pathways for waste management practices and operation to impact upon biodiversity and associated designated sites and species.

SEA Topic	Scoped in/out	Justification
Population and Human Health	In	The strategy is likely to have an effect on the local population given the options may impact upon waste management for households in the area. There is potential for negative effects from the options to arise given the association between waste management and human health.
Water	In	The strategy options have the potential to impact upon watercourses within the Essex region.
Soil, Geology and Land-use	In	Options from the waste strategy may have both positive and negative effects on waste treatment sites and local soil quality.
Air and Climate	In	Air Quality impacts could arise from vehicle use and potential change in waste management methodology associated with strategy options. Waste from landfill has the potential to contribute to climate change as well as being impacted by climatic variations.
Archaeology and Cultural Heritage	Out	Due to the strategy focusing on changes to collection methodologies and frequencies, there are no obvious pathways for archaeological or cultural heritage assets to be significantly affected by the waste strategy.
Landscape and Visual Amenity	In	The waste strategy options assessed focus on the methodology and frequency of waste collections and the strategy is not looking to identify sites or infrastructure gaps. However, due to the potential change in waste disposal methodology, there is potential for significant impacts to landscape designations or the visual amenity of the local environment.

There are some non-spatial aspects to the Strategy which means that some likely significant effects may not be identified. Existing regulatory frameworks will manage impacts of the Strategy as it is taken forward, and the potential for environmental effects arising from individual waste proposals will continue to be assessed and mitigated, where appropriate through existing mechanisms, including through the EIA process, application of standards and guidelines and consenting where relevant.

For example, where future actions have the potential to introduce land use change, individual projects will be subject to consideration through the relevant statutory regimes including EIA to ensure any likely significant environmental effects are identified and opportunities to avoid, reduce or offset these are considered.

4. APPROACH TO ASSESSMENT

4.1 INTRODUCTION

This section outlines the assessments that will be carried out as part of the SEA to identify environmental effects of the options considered in the Waste Strategy for Essex.

The SEA of the Waste Strategy options will be 'objectives led'. Establishing assessment objectives is a recognised way of considering the environmental effects of a plan and comparing the effects of possible alternatives. SEA objectives are often derived from environmental and social objectives that are already established in UK law, international, national or local policy, or other plans and programmes. The other source of information is environmental conditions or issues that arise from review of baseline information.

An assessment framework of objectives has been developed including supporting guide questions to help prompt a robust assessment across all options. This framework is based on:

- The key policy messages and environmental and social protection objectives identified in the review of policies and plans (See Section 2 and Appendix 1). It is important that the assessment takes these objectives into account as this will help to highlight any area where the Waste Strategy will help or hinder the achievement of the objectives of other plans (either at a local, national or international scale).
- The current state of the environment in the assessment area and the key environmental issues identified (see Section 3).

4.2 DEVELOPMENT OF OPTIONS FOR ASSESSMENT

Extensive analysis has been carried out on the current waste management landscape across the EWP area. This includes the development of baseline (current) models of the collection services for each of the EWP members. Models have been developed outlining a series of deliverable waste collection, treatment and disposal options for the management of all LACW in Essex. These were developed in collaboration with EWP members through a series of Workshops where the options to be considered, the assumptions to be made, and the evaluation criteria to be used were agreed. Each of the options are illustrated by accompanying waste-flow models and financial models to estimate both the cost and likely performance of each waste collection methodology. The models are provided for each Collection Authority, and then combined to illustrate a Whole System Cost across the EWP, including collection, reprocessing and disposal costs to show the net cost of each option to the county.

A Best Practicable Environmental Option (BPEO) lifecycle assessment has been carried out for each of the options to enable them to be considered in terms of:

- emissions to air (including climate change impacts), water and land;
- deliverability;
- performance against national targets;
- performance against EWP vision; and
- financial cost

A workshop was held in November 2021 with Officers and Members of the Essex Waste Partnership Authorities to agree and approve a long-list of collection and treatment options, and evaluation criteria weightings. The long-list evaluation stage was used to assess the relative performances of the long-list of collection and treatment technology options. The long-list was then assessed against the evaluation criteria to determine a short-list of options. The long-list collection options are shown in Figure 4.1 with the long-list technology options shown in Figure 4.2. An explanation of the collection methodologies is provided in Box 4.1: Explanation of collection methodologies with an explanation of the treatment/disposal technology types in Box 4.2.

Box 4.1: Explanation of collection methodologies

Dry recycling includes the following materials: paper, card, plastic bottles, pots tubs and trays, cartons, aluminium and steel cans, glass. Plastic film and flexible packaging are also included in this stream based on the current direction of government policy through the Environment Act.

In the UK there are currently three primary approaches to dry recyclate collections:

Co-Mingled: Where all dry recyclate is collected in a single container and then separated at a Materials Recovery Facility (MRF) before onward transport to reprocessors. A standard refuse collection vehicle (RCV) can be utilised for collections, and transfer, storage and transport of the recyclate.

Twin-stream: Collections in which one material stream (in general glass or paper and card) is collected in a separate container from the rest of the dry recyclate. In general, either glass or paper and card (co-collected) are the material streams collected separately. The remaining co-collected materials are separated at a MRF before onward transport to re-processors. Twin-stream collections require residents to segregate their recyclate and use two containers. This uses split bodied vehicles and/or additional staff.

Source segregated / Multi-stream: Requiring residents to fully segregate their recyclate into different containers. This requires more complex vehicles with multiple compartments (often with lower capacity) and/or additional staff. Multiple streams of material are involved. Multi-stream collections commonly involve separate collection of

1. paper and card
2. glass
3. Plastics, plastic film and cans collected as three streams.
4. Other materials: Small WEEE, batteries, textiles

The more separation occurs at the kerbside the higher the collection costs. However, this can be offset against reduced mechanical separation and consequent MRF gate fees and potentially improve material qualities and incomes.

Collection frequency can influence the yields collected for recycling and organic treatment. Reducing residual waste collection frequencies can reduce collection costs and increase recycling yields. More frequent recycling collections can also improve yields.

Figure 4.1 Long-list collection options

Dry recycling collection	Food waste collection	Garden waste collection	Dry recycling frequency	Organic waste frequency	Residual waste frequency
<ul style="list-style-type: none"> • Commingled • Twin stream: commingled recycling and separate paper&card • Twin stream: commingled recycling and separate glass collection • Multi-stream 	<ul style="list-style-type: none"> • Separate food collections • Co-collected food and garden waste 	<ul style="list-style-type: none"> • Separate - without subscription • Separate - with subscription • Co-collected with food waste 	<ul style="list-style-type: none"> • Weekly • Fortnightly • Three-weekly 	<ul style="list-style-type: none"> • Weekly • Fortnightly 	<ul style="list-style-type: none"> • Weekly • Fortnightly • Three-weekly • Four-weekly

Box 4.2: Explanation of the treatment/disposal technology types

Combustion (EfW): Combustion (also referred to as incineration) encompasses those processes where waste feedstock undergoes complete oxidation (combustion) in a furnace with excess oxygen, releasing heat into the gaseous exhaust and solid combustion products.

- moving grate: Moving grate refers to the action of the furnace grate, which moves the waste feedstock through the combustion area to facilitate complete combustion.
- fluidised bed: pre-treated waste is combusted within a reactor chamber containing very hot sand, which is fluidised by an air stream, thus promoting rapid heat transfer between particles.
- oscillating kiln: waste is loaded into a hopper and mechanically pushed into the top of a tapering cylinder or kiln. To pass the waste through the kiln and control the rate of combustion, the kiln oscillates from side to side, passing the waste between paddles set into the internal walls of the kiln.

Advanced Thermal Treatment (ATT): Advanced Thermal Treatment (ATT) is an umbrella term applied to a wide range of technologies, all of which involve the conversion of waste into a combination of gas, liquid and solid products which can be upgraded and used for various purposes.

- plasma gasification: Gasification is the thermal breakdown/partial oxidation of waste under a controlled oxygen atmosphere, producing syngas, which primarily consists of carbon monoxide (CO) and hydrogen (H₂) (the oxygen content is lower than necessary for full combustion). Some gasification processes (including plasma assisted processes) operate at very high temperatures to melt the ash and other residues, with potential to use in construction.
- pyrolysis: Pyrolysis is the thermal breakdown of waste in the absence of oxygen. Waste is heated to high temperatures (>400°C) without the addition of oxygen.

Clean material recovery facility (MRF): MRFs use a combination of processing equipment including screens, separators and conveyors to recover recyclable material streams from single stream waste materials.

- single stream: processing a single co-mingled feedstock
- two stream: processing two streams of material segregated at source
- multi-stream: processing multiple streams of material segregated at source

Mechanical biological treatment (MBT): Dirty MRF is a term used for the processing of residual municipal solid waste (MSW) or other non-dry mixed recycling (DMR) streams through a mechanical sorting process. Dirty MRFs are often used in combination with biological treatment processes which is collectively known as MBT.

- autoclave: high pressure rotating vessels which effectively “cook” the waste at high pressure and temperature
- enzyme reactor: involves loading the organic material into a large rotating drum and adding water and an enzyme mixture which partially breaks down the organic fraction, allowing it to be separated from the other materials and accelerating the AD process

Aerobic Composting: Composting is the biological treatment of waste by aerobic microorganisms in the presence of air.

- open air windrow composting: a simple open-air process undertaken outside on concrete pads
- enclosed housed composting halls: composting undertaken within a building
- in-vessel composting: composting undertaken within a vessel

Anaerobic digestion (AD): a biological process through which organic material is decomposed without the presence of oxygen by micro-organisms and within an enclosed system to generate biogas

- wet-AD: with the waste as a liquid slurry of relatively low dry matter content
- dry-AD: with the waste in a solid form with a relatively high dry matter content

Landfilling: disposing of waste in an excavated pit (landfill)

Figure 4.2 Long-list technology options*

Thermal waste treatment	Mechanical Materials Recovery	Biological Treatment	Other residual treatment
<ul style="list-style-type: none"> • Combustion: moving grate • Combustion: fluidised bed • Combustion: oscillating kiln • ATT: plasma gasification • ATT: pyrolysis 	<ul style="list-style-type: none"> • Clean MRF: single-stream • Clean MRF: two-stream • Clean MRF: multi-stream • MBT: anaerobic digestion • MBT: composting • MBT: autoclave • MBT: enzyme 	<ul style="list-style-type: none"> • Aerobic: open air windrow composting • Aerobic: enclosed housed composting halls • Aerobic: in-vessel composting • Anaerobic: wet-AD • Anaerobic: dry-AD 	<ul style="list-style-type: none"> • Landfilling

*Please note combustion shown in this table is shown as Energy from Waste in Table 4.1

The evaluation criteria of the long-list options were divided into four themes; technical and deliverability; cost; environmental; and sustainability.

Outcomes from the stakeholder workshop identified that the environmental impact (first) and deliverability risk (second) were the most important criteria when assessing the proposed collection and treatment options.

As a result of the long-list scoring, six options in Table 4.1 have been proposed as the short-listed options to be assessed. The individual options comprise of a collection stream and a treatment stream with each focussing on four waste elements; Dry recycling; Food waste; Garden waste; and Residual waste.

Table 4.1 Short-listed options

Options		Dry recycling	Food waste	Garden waste	Residual waste
Option 1	Collection	Commingled, fortnightly	Separate, weekly	Separate, fortnightly (no subscription)	Fortnightly
	Treatment	MRF	Wet AD	Open Air Windrow (OAW) composting	EFW - Moving Grate
Option 2	Collection	Commingled, fortnightly	Separate, weekly	Separate, fortnightly (no subscription)	Three-weekly
	Treatment	MRF	Wet AD	OAW composting	EFW - Moving Grate
Option 3	Collection	Multistream, fortnightly	Separate, weekly	Separate, fortnightly (no subscription)	Fortnightly
	Treatment	Direct to Reprocessor	Wet AD	OAW composting	EFW - Moving Grate
Option 4	Collection	Multistream, fortnightly	Separate, weekly	Separate, fortnightly (no subscription)	Three-weekly

	Treatment	Direct to Reprocessor	Wet AD	OAW composting	EFW - Moving Grate
Option 5	Collection	Multistream, weekly	Separate, weekly	Separate, fortnightly (no subscription)	Fortnightly
	Treatment	Direct to Reprocessor	Wet AD	OAW composting	EFW - Moving Grate
Option 6	Collection	Multistream, weekly	Separate, weekly	Separate, fortnightly (no subscription)	Three-weekly
	Treatment	Direct to Reprocessor	Wet AD	OAW composting	EFW - Moving Grate

Environmental factors have been considered and modelled in the determination of the short-list options using a Waste and Resources Assessment Tool (WRATE). The WRATE model was chosen due to the ability to assess a variety of environmental criteria including, each with separate weightings:

- Quantitative assessment of Greenhouse Gas (GHG) emissions (CO_{2eq})
- Evaluation of local and wider transport impacts – distance travelled (collections & haulage)
- Acid rain potential
- Potential water pollution
- Human toxicity
- Resources depletion

In addition to the above factors modelled within WRATE, the following environmental factors were included in the options modelling:

- Waste reduction (quantitative assessment of kg/hh/yr)
- Quantitative assessment of recycling rate (Local Authority collected waste)

The results of the options modelling were put into an options appraisal model, together with some qualitative environmental and sustainability factors, to determine the BPEO.

Sustainability issues and some qualitative environmental issues are also considered within the options appraisal under separate criteria which are detailed below:

- Quantitative assessment of jobs created or sustained
- Evaluation of local energy creation and potential for useable heat
- Litter (Potential for)
- Noise (Potential for)
- Odour (Potential for)

In addition to the Environmental and Sustainability themes, Cost and Technical & Deliverability were two other themes used within the options appraisal. The four themes have been weighted based on the Vision workshops attended by ECC Members and Officers and is outlined below in Table 4.2.

Table 4.2 Theme weightings

Theme	Weighting
Sustainability	9.2%
Environmental	27.1%
Cost	41.7%

Theme	Weighting
Technical and Deliverability	22%

4.2.1.1 Sensitivities

In addition to the six options, four sensitivities are also included as part of the Options Appraisal and modelling. Modelling of additional options (or 'sensitivity' modelling) on the preferred option(s), with the intention that one option is brought forward will also be assessed as part of the SEA. The 4 sensitivities are:

- Sensitivity 1: Front-end recycling to the EfW facilities where household residual waste is taken
- Sensitivity 2: Addition of combined heat and power (CHP) at the EfW facilities
- Sensitivity 3: Addition of carbon capture and storage technology at the EfW facilities
- Sensitivity 4: Introduction of householder charges for garden waste collections

4.3 DRAFT PROPOSED SEA OBJECTIVES

This section outlines the draft proposed assessment framework that will be used to identify the environmental effects of the options identified in the Waste Strategy for Essex.

Establishing appropriate SEA objectives and guide questions as an assessment method is helpful in identifying the effects of the Strategy on the environment. Each of the waste management options will be assessed against the SEA objectives to determine the scale and significance of the effect.

The SEA objectives proposed for the assessment of the Strategy reflect the topics contained in Schedule 2 (6) of the SEA Regulations and have been informed by:

- the review of relevant plans and programmes and the associated key policy objectives and messages;
- the baseline information;
- and key issues that have been identified.

The draft assessment framework is presented in Table 4.3Table 4.3. Following responses to the scoping consultation, the assessment framework will be reviewed and revised where required.

Table 4.3 Proposed SEA Objectives

SEA Topic	Proposed SEA Objectives		Proposed Guide Questions
Material Assets and Waste Management	1.1	To support a circular economy, minimise waste arisings, promote reuse, recovery and recycling, minimising the impact of waste on the environment and communities and contribute to the sustainable use of natural and material assets.	<ul style="list-style-type: none"> • Will the draft Strategy promote the efficient use of existing infrastructure, resources and minimise waste? • Will the draft Strategy promote the re-use and recycling of waste materials and reduce the proportion of waste sent to landfill? • Will the draft Strategy promote and move towards a regenerative circular economy? • Will the draft Strategy help to minimise the consumption of resources, including water and energy? • Will the Strategy affect waste practices and behaviours in residents and businesses? • Will the draft Strategy affect community level or national capabilities to re-use, recycle and recover materials?

SEA Topic	Proposed SEA Objectives		Proposed Guide Questions
Biodiversity, Flora and Fauna	2.1	To protect and enhance biodiversity including designated sites of nature conservation interest and protected habitats and species, enhance ecosystem resilience and habitat connectivity and deliver a net biodiversity gain.	<ul style="list-style-type: none"> Will the draft Strategy protect and/or enhance sites that are designated, both nationally and internationally, for their nature conservation value? Will the draft Strategy protect and/or enhance priority species and habitats? Will the draft Strategy protect and/or enhance non-designated habitats and species including protected species? Will the draft Strategy lead to an improvement in natural capital and a net gain in biodiversity? Will the Strategy avoid further spread of invasive, non-native species?
Population and Human Health	3.1	To protect and enhance human health and wellbeing	<ul style="list-style-type: none"> Will the draft Strategy help to promote healthy communities and avoid risks to human health and wellbeing for example, due to noise, odour and dust? Will the draft Strategy promote sustainable growth and maintain and enhance the economic and social well-being of local communities? Will the draft Strategy minimise extent of litter and vermin generation? Will the draft Strategy impact vehicle movements? Will the draft Strategy minimise the health impact from waste treatment collection, sites and management e.g. through chemicals, air pollution, land contamination and increased risk of infection and/or disease?
	3.2	To minimise disturbance to local communities	<ul style="list-style-type: none"> Will the draft Strategy affect opportunities for recreation and physical activity? Will the draft Strategy ensure vulnerable communities are protected and not disproportionately impacted? Will the draft Strategy help to ensure that all residents have equal access and ability to participate in waste and resource management practices?

SEA Topic	Proposed SEA Objectives		Proposed Guide Questions
Water	4.1	To protect and enhance water quality and help achieve the objectives of the Water Framework Directive.	<ul style="list-style-type: none"> Will the draft Strategy protect and/or enhance surface, ground, estuarine and coastal water quality and quantity and ensure sustainable water resource management? Will the draft Strategy prevent the deterioration of Water Framework Directive waterbody status (or potential)? Will the draft Strategy reduce the risk of flooding?
Soil, Geology and Land-Use	5.1	To make appropriate and efficient use of land and protect and enhance soil, local geomorphology and geodiversity and contribute to the sustainable use of land.	<ul style="list-style-type: none"> Will the draft Strategy have an effect on soil quality/function? Will the draft Strategy prioritise prevention of waste, enhance recycling and reduce the amount of waste going to landfill? Will the draft Strategy increase the risk of land contamination? Will the draft Strategy protect and/or enhance Geological Conservation Sites, important geological features and geophysical processes and functions?
Air and Climate	6.1	To minimise emissions of pollutant gases and particulates and enhance air quality.	<ul style="list-style-type: none"> Will the draft Strategy affect air quality? Will the draft Strategy create a nuisance for people or wildlife (for example from dust, vibration or odours)? Will the draft Strategy help to minimise traffic volumes? Will the draft Strategy encourage alternative and sustainable means of transporting freight, waste and minerals, where possible? Will the draft Strategy help to ensure a low carbon design solution to the design and delivery of waste management services including infrastructure? Will the draft Strategy lead to an increase in low carbon energy use? Will the draft Strategy increase resilience to the effects of climate change?
	6.2	To minimise greenhouse gas emissions and embodied carbon associated with waste management and landfill	
	6.3	To adapt waste management practices to climate change and improve resilience to the threats of a changing climate	
Landscape and Visual Amenity	8.1	To protect and enhance landscape and townscape character and visual amenity.	<ul style="list-style-type: none"> Will the draft Strategy lead to detrimental visual impacts? Will the draft Strategy affect the purposes and/or special qualities of protected/designated/culturally important landscapes and their setting?

SEA Topic	Proposed SEA Objectives	Proposed Guide Questions
		<ul style="list-style-type: none"> • Will the draft Strategy provide opportunities to enhance nationally and locally designated landscapes, townscapes, seascapes and their settings? • Will the draft Strategy affect the intrinsic character or setting of local landscapes, streetscapes, townscapes and seascapes? • Will the draft Strategy help to minimise light pollution from operational activities on residential amenity and on sensitive locations and receptors? • Will the draft Strategy help reduce the likelihood of littering and fly-tipping and other waste crime?

4.4 PROPOSED FRAMEWORK FOR ASSESSMENT

The effects of the Waste Strategy will be assessed including potential cumulative effects, of the options and alternatives (from the short-list of options) and, where appropriate, help to further develop and refine the options.

The assessment of options will draw on the other assessments and studies being undertaken in support of the Essex Waste Strategy proposals such as the Best Practicable Environmental Option assessment (BPEO) and the short-list evaluation criteria which have been developed as part of the options appraisal process as outlined in Development of Options for Assessment 4.2.

Following the inclusion of SEA findings into the development of the Essex Waste Strategy, assessment of the preferred option process will be carried out which will incorporate the modelling of the chosen sensitivities. This includes identifying, describing and evaluating the cumulative effects.

The effects of each option will be assessed against all of the SEA objectives in the assessment framework. The assessment of effects will include consideration of the following:

- the nature of the potential effect (what is expected to happen);
- the timing and duration of the potential effect (e.g., short, medium or long term);
- the geographic scale of the potential effect (e.g., local, regional, national);
- the location of the potential effect (e.g., whether it affects rural or urban communities, or those in particular parts of a plan area); and
- the potential effect on vulnerable communities or sensitive sites.

A matrix similar to that shown in **Error! Reference source not found.** will be used to capture the assessment of each options in a consistent manner; a key to the significance ratings is presented in Figure 4.4.

Figure 4.3 Example Options Assessment Matrix

Example Objective	Scoring		Commentary
	-ve	+ve	
1.1 To support a circular economy, minimise waste arisings, promote reuse, recovery and recycling, minimising the impact of waste on the environment and communities and contribute to the sustainable use of natural and material assets.	-	+	Effects: A description of the likely significant effects of the option on the SEA objective. Assumptions: Any assumptions made in undertaking the assessment. Uncertainties: Any uncertainties encountered during the assessment. Further Mitigation: Mitigation and enhancement measures.

Figure 4.4: Significance Ratings

Score	Description	Symbol
Major/Significant Positive Effect	Significant positive effect of the option on this objective	+++
Moderate Positive Effect	Moderate positive effect of the option on this objective	++
Minor Positive Effect	Minor positive effect of the option on this objective	+
Neutral	Neutral effect of the option on this objective	0
Minor Negative Effect	Negative effect of the option on this objective	-
Moderate Negative Effect	Moderate effect of the option on this objective	--
Major/Significant Negative Effect	Significant negative effect of the option on this objective	---
Uncertain	The waste strategy option has an uncertain relationship to the objective or the relationship is dependent on the way in which the aspect is managed. In addition, insufficient information may be available to enable an assessment to be made.	?

The assessment will take account of any proposed mitigation measures that have been incorporated into the option conceptual design and costs, i.e. it is the residual effects after the application of mitigation that will be assessed.

4.4.1 Secondary, Cumulative and Synergistic Effects

Schedule 2(6) of the SEA Regulations requires the assessment of “The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects....”

In addition to the assessments of the plan level assessments and alternatives described above, this would also include the cumulative effects assessment of the Strategy in-combination with other plans and programmes.

5. NEXT STEPS: CONSULTATION

5.1 CONSULTATION ON THE SCOPING REPORT

Under Regulation 12 (5) of the Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations), when deciding upon the scope and level of detail of the information to be included in an Environmental Report, the authority responsible for the report is required to undertake consultation. This Scoping Report fulfils this requirement and provides the statutory consultation bodies (the Environment Agency, Historic England and Natural England), with an opportunity to provide views on the proposed scope and approach for the SEA of the Waste Strategy for Essex.

Following consultation, the scope and / or approach may be modified to take account of consultees' responses. Consultation responses, and any subsequent amendments made as a consequence of the responses, will be documented in an appendix to the SEA Environmental Report.

Comments on any aspect of the Scoping Report are welcomed, although views are particularly sought in response to the following questions:

1. Does the Scoping Report set out sufficient information to establish the context for the assessment, both in terms of the scope of the baseline analysis presented, and the plans, programmes and

strategies reviewed (Section 2 and Appendix 1)? If not, which areas do you think require baseline analysis and/or what additional plans, programmes or strategies should be included?

2. Are there any plans, programmes and strategies currently included in the review that are not relevant to this Strategy identified as being unnecessary and could be removed?
3. Similarly, are there any topics covered in the baseline that are considered to be unnecessary and can be scoped out of the assessment?
4. Do the SEA objectives and guide questions cover the breadth of issues appropriate for appraising the effects of the draft Strategy? If not, which objectives and/or guide questions should be amended and how?
5. Do you have any other comments?

Five weeks are being provided for consultees to provide comments on the scope of the SEA as described within this report, in line with SEA Regulation 12(6).

Following completion of the assessment, the draft SEA Environmental Report, will be issued alongside the draft Waste Strategy for consultation to statutory consultees, stakeholders and the wider public for a minimum of 8 weeks in the summer/autumn of 2023.

5.2 PREPARATION OF THE ENVIRONMENTAL REPORT

5.2.1 Structure and Content

The findings of the SEA will be documented in an Environmental Report. Assessments will be fully documented in the Environmental Report, to be published for consultation alongside the Strategy. The Environmental Report will also identify provisional monitoring and mitigation measures according to the significant effects identified.

The proposed structure of the report is derived from the requirements specified by the SEA Regulations⁹⁵ and set out in the Practical Guide⁹⁶. A non-technical summary of the information will be provided under the headings listed in Schedule 2 of the SEA regulations.

The Environmental Report(s) will have the following purposes:

- to ensure that the likely significant environmental effects associated with the draft Strategy are identified, characterised and assessed;
- to propose measures to mitigate the adverse effects identified and, where appropriate, to enhance potential positive effects;
- to provide a framework for monitoring the potential effects arising from the implementation of the draft Strategy; and
- to provide sufficient information to those potentially affected to enable them to contribute effectively to the public consultation.

In accordance with Schedule 2 of the SEA Regulations, the Environmental Report will indicatively consist of:

- a non-technical summary;
- a section providing an overview of the principal objectives and contents of the draft plan being assessed;
- a section providing the relevant contextual information including a review of the plans and programmes, the relevant baseline information and an outline of the evolution of the baseline without the Strategy;
- a section setting out the proposed approach to assessment including the relevant environmental protection objectives;
- a section outlining the likely significant environmental effects of the measures set out in the draft plan and any reasonable alternatives identified, including cumulative effects, mitigating measures, uncertainties and risks;
- a section presenting views on implementation and monitoring;

⁹⁵ SEA Regulations, Part 3, Regulations 2 and 3 and Schedule 2.

⁹⁶ Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

- and appendices containing the any further detailed contextual information and assessment matrices.

5.3 SEA POST-ADOPTION STATEMENT

Once the revised Strategy is published and adopted, Essex Council will publish an SEA Post Adoption Statement, describing how the SEA and the responses to consultation have been taken into account during the preparation of the Strategy. This statement will describe how environmental considerations have been integrated into the Strategy, and explain any changes made or alternatives rejected. Information will also be provided on the environmental monitoring to be carried out during implementation of the Strategy to track the environmental effects and to trigger appropriate responses where effects are identified.

5.4 QUALITY ASSURANCE

The Practical Guide contains a Quality Assurance checklist to help ensure that the requirements of the SEA Regulations (and Directive) are met. The checklist is reproduced in Appendix 2, indicating where this Scoping Report meets the requirements, and which requirements will be addressed in the Environmental Report.

APPENDICES

APPENDIX 1 REVIEW OF POLICIES, PLANS AND PROGRAMMES

Objectives identified in the Policy, Plan or Programme	Influences on the Waste Strategy and the SEA objectives
<i>International</i>	
Ramsar Convention: The Convention on Wetlands of International Importance (1971)	
The Convention on Wetlands (Ramsar, Iran, 1971) (the "Ramsar Convention") is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.	The impacts of the Waste Strategy options on important wetland habitats must be considered as part of the SEA.
The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	
International convention which aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The impacts of the strategy options on internationally designated sites, species and important Bird habitats must be considered as part of the SEA.
The Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)	
Aims to conserve terrestrial, marine and avian migratory species throughout their range. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The impacts of the strategy options on important Bird habitats (i.e. Ramsar sites and SPA designated sites) must be considered as part of the SEA.
The Cancun Agreement (2011) & Kyoto Agreement (1997)	
The agreement represents key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures. It includes a shared vision to keep global temperature rise to below two degrees Celsius.	The SEA should seek to promote a reduction in greenhouse gas emissions.
Charter for the Protection and Management of Archaeological Heritage (1990)	
The International Council on Monuments and Sites (ICOMOS) International Committee on Archaeological Heritage Management (ICAHM) created a charter to establish principles and guidelines of archaeological heritage management that are globally valid and can be adapted to national policies and conditions. This includes general principles for investigation, maintenance, and conservation as well as reconstruction of architectural heritage.	The impacts of the options on archaeological heritage sites must be considered as part of the SEA.
United Nations Economic Commission for Europe (1998) Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	
The Aarhus Convention grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary	The Convention is designed to improve the way ordinary people engage with government and decision-makers on environmental matters. It

environment. It focuses on interactions between the public and public authorities. The Aarhus Convention has been ratified by the European Community, which has begun applying Aarhus-type principles in its legislation, notably the Water Framework Directive (Directive 2000/60/EC).	helps to ensure that environmental information is easy to get hold of and easy to understand. The SEA should seek to provide easily understood information to the public on the environmental implications of the waste strategy and its constituent options.
Paris Agreement (2015)	
The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.	The SEA should take into account the need to consider impacts towards climate change i.e. contribution towards greenhouse gas emission reductions).
European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)	
This Directive ensures that individual Parties integrate environmental assessment into their plans and programmes at the earliest stages, whereby an SEA becomes mandatory for plans/programmes which are: <ul style="list-style-type: none"> Prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town & country planning or land use <u>and</u> which set the framework for future development consent of projects listed in the EIA Directive; Or Have been determined to require an assessment under the Habitats Directive. For any plans/programmes not included in the above, the Member States must carry out a screening procedure to determine whether the plans/programmes are likely to have significant environmental effects.	This directive provides the regulatory basis for an SEA being carried out as part of the strategy. From December 31 2020, following the exit of the UK from the European Union the SEA Regulations are now the principal legal basis for the SEA. However, as some of the guidance has not been updated the various SEA stages and deliverables may still refer to the SEA Directive where deemed appropriate.
European Community (EC) Directive 1999/31/EC on the landfill of waste	
The Directive requires, amongst other things, that a strategy on biodegradable waste is put in place that achieves the progressive diversion of biodegradable municipal waste from landfill (Articles 5(1) & (2)). This requirement has been implemented in England through Waste Strategy 2007 and across the UK through the Waste and Emissions Trading Act 2003	The SEA should ensure that any options for the Waste Strategy are within the guidance set out by the Landfill Directive.
Council of Europe (2003) European Soils Charter	
Sets out common principles for protecting soils across Europe and will help.	The SEA should seek to ensure that the quality of the regions land, including soils, is protected or enhanced.
Council of Europe (2006), European Landscape Convention	
European Landscape Convention (ELC) is the first international convention to focus specifically on landscape. Natural England implements the European Landscape Convention in England. The aims of the 2009/10 action plan are:	The implementation of the waste strategy may influence landscape or the enjoyment of landscapes in the Essex County Council area and as such the SEA should seek to maintain or enhance the quality of the region's landscapes and the potential enjoyment of these landscapes.

<p>Lead on improving the protection, planning and management of all England's landscapes</p> <p>Raise the quality, influence and effectiveness of policy and practical instruments</p> <p>Increase the engagement in and enjoyment of landscapes by the public</p> <p>Collaborate with partners across the UK and Europe.</p>	
The Environment Noise Directive (Directive 2002/49/EC)	
<p>The END aims to —define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise. It also aims to provide the basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.</p>	<p>The SEA assessment framework should include for the protection against excessive noise.</p>
European Commission (2008) The 2008 ambient air quality directive (2008/50/EC)	
<p>The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems.</p>	<p>The implementation of the waste strategy may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.</p>
European Commission, Thematic strategy on air pollution (2005)	
<p>This policy sets out interim objectives for air pollution in the EU and measures for achieving them.</p>	<p>The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.</p>
European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC)	
<p>This promotes the use of energy from renewable sources.</p>	<p>The SEA should seek to promote the use of renewable energy.</p>
European Commission (2011), Our life insurance, our natural capital: an EU biodiversity strategy to 2020	
<p>This is a long-term vision which was endorsed as a result of the 2010 biodiversity target not being met. It sets out the EU 2020 biodiversity target and vision for 2050. The key targets included:</p> <ul style="list-style-type: none"> • Conserving and restoring nature; • Maintaining and enhancing ecosystems and their services; • Ensuring the sustainability of agriculture, forestry and fisheries; • Combating invasive alien species; and <p>Addressing the global biodiversity crisis.</p>	<p>The implementation of the strategy should seek to facilitate achievement of the EU 2020 biodiversity target and 2050 vision, through its existing consideration of impacts towards biodiversity, set out in the SEA objectives.</p>
European Commission, Environmental Liability Directive (2004/35/EC)	
<p>The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage.</p>	<p>The SEA should seek to ensure that the waste strategy avoids causing direct or indirect damage to the aquatic environment or contamination of land that creates a significant risk to human health.</p>

European Commission, Urban Waste Water Treatment Directive (1991/271/EC)

The Directive's objective is to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors and concerns the collection, treatment and discharge of domestic waste water, mixture of waste water and waste water from certain industrial sectors.

The SEA should seek to maintain, protect and improve water quality across the region.

European Commission (1992), Habitats Directive (1992/43/EC)

The aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

The impacts of the strategy on internationally designated sites and species must be considered as part of the SEA.

European Commission (2006) Thematic Strategy for Soil Protection

The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive (a European law), and an Impact Assessment.

The SEA assessment framework should include consideration of soils and their protection.

European Commission (2009), Birds Directive (2009/147/EC)

The Directive provides a revised framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes).

The SEA should seek to protect and conserve important bird habitats.

European Commission, Directive on the Assessment and Management of Flood Risks (2007/60/EC)

This Directive requires Member States to assess whether all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.

The impacts of the strategy on existing fluvial, groundwater and coastal flood risk must be considered as part of the SEA.

United Nations (2002), Commitments arising from the World Summit on Sustainable Development, Johannesburg

The World Summit on Sustainable Development proposed broad-scale principles which should underlie sustainable development and growth.

It included objectives such as:

Greater resource efficiency

Work on waste and producer responsibility

New technology development

Push on energy efficiency

Integrated water management plans needed

Minimise significant adverse effects on human health and the environment from chemicals by 2020.

These commitments are the highest level definitions of sustainable development. The waste strategy should be influenced strongly by all of these themes and should seek to take its aims into account.

The SEA should seek to promote the achievement of the sustainable development objectives outlined in this plan.

National

The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)

This represents the transposition of the Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive).	This regulation provides the UK regulatory basis for an SEA being carried out as part of the waste strategy.
Waste Management Plan 2021	
<p>The plan set out an overview of waste management in England bringing current waste management policies into a single national plan.</p> <p>The Waste Management Plan sets out a vision and policies with the aim of moving to a circular economy.</p> <p>The following documents contain significant policies that contribute to the Waste Management Plan for England:</p> <ul style="list-style-type: none"> • the Clean Growth Strategy • the Industrial Strategy • the Litter Strategy • the UK Plan for Shipments of Wastes • the National Policy Statements for Hazardous Waste and for Renewable Energy Infrastructure (in so far as it relates to facilities which recover energy from waste). 	The Waste Strategy should promote the policies set forward in the Waste Management Plan 2021 alongside the support documents which contribute to the overall plan for England.
The Climate Change Act 2008	
This act sets carbon targets for 2050. The net carbon account for 2050 at least 80% lower than 1990 baseline.	This target needs to be taken into account in the SEA.
The Climate Change Act 2008 (2050 Target Amendment) Order 26 June 2019	
This amendment changed the UK carbon emissions reduction target from an 80% to a 100% reduction	This target needs to be taken into account in the SEA objective for energy use and greenhouse gas emissions, and adaptation to climate change.
Conservation of Habitats and Species Regulations 2017 (Amendment) (EU Exit) Regulations (2019)	
<p>These regulations consolidate all the various amendments made to the Conservation (Natural Habitats) Regulations 1994 in England.</p> <p>The regulations provide for the designation and protection of 'European sites', the protection of 'European species', and the adaptation of planning and other controls for the protection of European Sites. They are the principal means by which the Habitats Directive is transposed in England as such its main objective is to promote the maintenance of biodiversity.</p>	The impacts of the waste strategy options species diversity must be considered as part of the SEA.
Resource and Waste Strategy (2018)	
<p>The strategy sets out how we will preserve our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy.</p> <p>Initiatives within the strategy include:</p> <ul style="list-style-type: none"> • A Deposit Return Scheme for drinks containers • Extended Producer Responsibility for packaging • Consistency in household and business waste recycling 	The waste strategy should fall in line with guidance set out in the Resource and Waste strategy with options contributing to the overall aims of the policy paper.
Industrial Strategy White Paper (2017)	

<p>This White Paper sets out long-term plans to boost productivity and earning power of people throughout the UK. There is specific reference to waste with respect to moving towards a regenerative circular economy:</p> <ul style="list-style-type: none"> - promotion of recycling and strong secondary materials markets - deliver a 20% per capita reduction in food waste by 2025 - strengthen policies in line with ambitions of zero avoidable waste and doubling of resource productivity by 2050. 	<p>The waste strategy should aim to promote the plans set out in the Industrial Strategy with respect to moving towards a regenerative circular economy.</p>
<p>The Countryside and Rights of Way (CROW) Act, 2000</p> <p>The Act provides for increased public access to the countryside and strengthens protection for wildlife.</p> <p>The main provisions of the Act are as follows:</p> <p>Extends the public's ability to enjoy the countryside whilst also providing safeguards for landowners and occupiers</p> <p>Creates new statutory right of access to open country and registered common Land Use Consultants</p> <p>Modernises Right of Way system</p> <p>Gives greater protection to SSSIs</p> <p>Provides better management arrangements for AONBs</p> <p>Strengthens wildlife enforcement legislation.</p>	<p>If the waste strategy is to have an effect on public access to the countryside, the SEA should include objectives that take into account public access, protection of SSSIs and the management of relevant landscape designations.</p>
<p>The Natural Environment and Communities Act 2006 (NERC Act)</p> <p>This provides the legislative framework to extend the biodiversity duty set out in the Countryside and Rights of Way (CROW) Act to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.</p> <p>Importantly, Section 41 of the Act refers to a published list of habitats and species which are of principal importance for the conservation of biodiversity in England.</p> <p>This duty applies to all utility companies.</p>	<p>There are a range of designated Natural Environment and Rural Communities (NERC) Act Section 41 habitats within the assessment area.</p> <p>The strategy may have an effect on NERC habitats and therefore the SEA must include objectives that take these effects into account.</p>
<p>DCLG (2012) National Planning Policy Framework (as amended 2019)</p> <p>Presumption in favour of sustainable development. Core planning principles include taking account of the development needs of an area; contribute to conserving and enhancing the environment; re-use of previously developed land; conserve heritage assets; deliver sufficient community facilities to meet local needs. Delivering sustainable development includes:</p> <p>Building a strong competitive economy;</p> <p>Supporting a prosperous rural economy;</p> <p>Promoting sustainable transport; Requiring good design;</p> <p>Promoting healthy communities; Protecting green belt land;</p> <p>Meeting the challenge of climate change, flooding and coastal change;</p> <p>Conserving and enhancing the natural environment;</p> <p>Conserving and enhancing the historic environment;</p>	<p>The Waste Strategy and SEA should take account of the key components of sustainable development. Also, reservoirs contribute to recreation and visual amenity.</p>

<p>Facilitating the sustainable use of minerals.</p> <p>Reservoirs are included within the definition of open space - of public value due to opportunities for sport and recreation and providing a visual amenity.</p>	
Department for Energy and Climate Change (2020) Energy White Paper: Powering our Net Zero Future	
<p>The white paper outlines a series of policies and commitments made by the government as part of the transition to net zero carbon emissions. The strategies are three fold:</p> <ul style="list-style-type: none"> • Prioritisation of renewable sources energy generation and invest in low-carbon technologies • Supporting a green recovery from COVID-19 through investment in green industries • Creating a fair deal for consumers through facilitating competition, enhanced regulation and strategies to improve the energy performance of homes. 	<p>The implementation of the waste strategy may have an influence energy use within the Essex County Council Region. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
Department of energy and climate change (2011) Planning our electric future: a White Paper for secure, affordable and low carbon electricity	
<p>This white paper outlines a package of reforms so that by 2030 there will be a flexible, smart and responsive electricity system, powered by a range of low carbon sources of electricity. This includes engaging with consumers on energy use. Decarbonisation is important in meeting the 2050 targets.</p>	<p>The implementation of the waste strategy may have an influence energy use within the Essex County Council Region. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
Defra (2011) Government Review of Waste Policy in England 2011	
<p>The review is guided by the “waste hierarchy”, EU obligations and targets on waste management, carbon impacts, environmental objectives and the costs and benefits of different policy options.</p> <p>The Governments vision include a move beyond the current throwaway society to a “zero waste economy” in which material resources are re-used, recycled or recovered wherever possible, and only disposed of as the option of very last resort.</p>	<p>The Waste Strategy will involve options related to waste generation and recycling. The SEA should seek to enhance recycling and minimise the amount of waste going to landfill.</p>
HM Government (2018) Our Waste, Our Resources: A Strategy for England	
<p>In response to the 25 Year Environmental Plan, this document sets out a targeted strategy for preserving our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy</p>	<p>The SEA should take into account effects on resource use and waste and benefits of promoting resource efficiency.</p>
Defra (2017) The UK Climate Change Risk Assessment 2017 Evidence Report	
<p>Identifies themes that form the priorities for adaptation in the UK.</p>	<p>The SEA should take into account the need for climate change adaptation.</p>
Defra (2009) Safeguarding our soils – A Strategy for England	
<p>The new Soil Strategy for England – Safeguarding our Soils – outlines the Government’s approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range</p>	<p>The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.</p>

<p>of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them.</p> <p>The Government's vision is that: By 2030, all England's soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.</p>	
Defra (2007) The Air Quality Strategy for England, Scotland and Wales	
<p>This strategy identifies air quality objectives and policy options to further improve air quality in the UK into the long term. The options are intended to provide important benefits to quality of life and help protect the environment as well as the direct benefits to public health.</p>	<p>The implementation of the strategy may have some influence on air quality, either directly or indirectly through construction or operational activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.</p>
Defra (2005) Securing the Future: Delivering UK Sustainable Development Strategy	
<p>The strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The strategy places a focus on protecting natural resources and enhancing the environment.</p>	<p>The SEA must seek to ensure that objectives relating to sustainable development, sustainable resource use and protecting the natural environment, are considered when assessing the potential impacts of the waste management strategy.</p>
Defra (2004) The First Soil Action Plan for England	
<p>This plan is a comprehensive statement on the state of the UK's soils and how Government and other partners were working together to improve them. Ensure that England's soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.</p>	<p>The SEA should seek to ensure that the quality of the region's land, including soils, is protected or enhanced.</p>
Defra (2004) Rural Strategy	
<p>The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include supporting economic and social regeneration across rural England and enhance the value of the countryside and protect the natural environment for this and future generations.</p>	<p>The implementation of certain strategy options may have an effect upon rural communities and the countryside. The SEA should also seek to ensure that the quality of the region's landscapes, natural resources and biodiversity are maintained or enhanced.</p>
Defra (2002) The Strategy for Sustainable Farming and Food – facing the future	
<p>This strategy sets out how industry, Government and consumers could work together to secure a sustainable future for our farming and food industries. The strategy's objectives are to support the viability and diversity of rural and urban economies and communities, respect and operate within the biological limits of natural resources (especially soil, water and biodiversity) and achieve consistently high standards of environmental performance by reducing energy consumption, by</p>	<p>The implementation of the strategy may have some indirect links with the food industry. The SEA should also seek to promote the most effective use of the region's natural resources, including soil, biodiversity and energy resources.</p>

minimising resource inputs, and use renewable energy wherever possible.	
Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper	
This paper sets out a new approach for protecting and improving the natural environment, developing a green economy and reconnecting people to nature, based on the findings of the UK National Ecosystem Assessment.	The Waste Strategy and SEA should seek to ensure that the natural environment and distinctive landscapes are protected and public access to them, are maintained.
UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment	
<p>The 25 Year Plan sets out to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats, in addition to tackling the effects of climate change. The 25-year goals include:</p> <ol style="list-style-type: none"> 1. Clean air; 2. Clean and plentiful water; 3. Thriving plants and wildlife; 4. A reduced risk of harm from environmental hazards such as flooding and drought; 5. Using resources from nature more sustainably and efficiently; 6. Enhanced beauty, heritage and engagement with the natural environment; <p>In addition, managing pressures on the environment by:</p> <ol style="list-style-type: none"> 7. Mitigating and adapting to climate change; 8. Minimising waste; 9. Managing exposure to chemicals; and 10. Enhancing biosecurity. 	The Waste Strategy and SEA objectives should be consistent with the principles behind the 25-year goals of the plan. The SEA should seek to ensure that the themes included in the 25-year goals are also reflected in the SEA objectives, particularly around air quality, resource use, energy use and greenhouse gas emissions, adaptation to climate change, minimising waste.
Defra (2020), The Draft Environment Bill 2020, and content related to the development of Nature Recovery Networks (parts 6 and 7)	
<p>This policy paper provides greater clarity on some of the key changes proposed in the 25 Year Environmental Plan, including:</p> <ul style="list-style-type: none"> - The implications of the requirement for local areas to develop a Local Nature Recovery (LNR) Strategy, in driving the delivery of a National Nature Recovery (NNR) Network; - New 'biodiversity net gain' measures as part of the planning requirements for new developments; and - New measures that will support the design and delivery of strategic approaches for the protection of both species and habitats. 	The strategy and SEA objectives for biodiversity should take account of the need to consider impacts towards LNR and NNR strategies and potential for biodiversity net gain.
The Energy Act 2013	
This provides the legislative framework for delivering secure, affordable and low carbon energy. It includes provisions for decarbonisation,	The implementation of the strategy may have an influence upon Essex County Council's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.

Environment Act, 2021

<p>The Environment Act makes provisions about targets, plans and policies for improving the natural environment; creation of the Office for Environmental Protection; about waste and resource efficiency; about air quality; for the recall of products that fail to meet environmental standards; about water; about nature and biodiversity; for conservation covenants; about the regulation of chemicals; and for connected purposes.</p> <p>Section 45A outlines specific waste and resource related provisions including: 'recyclable household waste must be collected separately from other household waste for recycling or composting, recyclable streams must be collected separately, food waste must be collected weekly'.</p>	<p>The strategy and SEA should seek ensure that any options follow targets and policies set out in the Environment Act.</p>
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Environment Act, 1995

<p>The Environment Act set up the EA to manage resources and protect the environment in England and Wales</p>	<p>The SEA should seek to promote the protection and enhancement of all resources without having negative effects on other aspects of the Environment.</p>
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Environment Agency (2009), Water Resources Strategy for England and Wales

<p>This is the national EA strategy for water resource management in the long term. It looks to 2050 and considers the impacts of climate change, the water environment, water resource and valuing water. Aims and objectives include:</p> <ul style="list-style-type: none"> - Ensure water is used efficiently in homes and buildings, and by industry and agriculture - Provide greater incentives for water companies and individuals to manage demand and - Share existing water resources more effectively 	<p>The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives, particularly around water resource use and availability in the region.</p>
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The Environmental Damage (Prevention and Remediation) (England) Regulations 2015

<p>These regulations amend the 2009 regulations and provide additional protection to habitats and species identified on Annexes 1 and 2 of the EC Habitats Directive (92/43/EEC), SSSIs and, in some cases, classified waterbodies from environmental damage where an operator has intended to cause damage or been negligent to the potential for damage.</p> <p>Applies to the most serious categories of environmental damage, including:</p> <ul style="list-style-type: none"> - Contamination of land that results in a significant risk of adverse effects on human health - Adverse effects on surface water or groundwater consistent with a deterioration in the water's status - Adverse effects on the integrity of a SSSI or on the conservation status of species and habitats protected by EU legislation outside SSSIs. 	<p>The SEA should seek to ensure that the guidance provided by the regulations is considered when assessing the waste strategy.</p>
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Environment Agency (2018) The Environment Agency's approach to groundwater protection

This document contains position statements which detail the Environment Agency's approach to managing and protecting groundwater. The primary aim of all of the position statements is the prevention of pollution of groundwater and protection of it as a resource.	The strategy and SEA approach to groundwater protection should be compliant with the Environment Agency's approach.
Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.	The SEA should consider the potential effects of the strategy on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.
HM Government (2016) National Infrastructure Delivery Plan 2016-2021, Infrastructure Projects Authority	
<p>The Plan explores the Government's plans for economic infrastructure for 2016-2021 and the resultant economic benefits.</p> <p>The objective for the waste sector is to ensure that infrastructure is in place to deal with waste as efficiently as possible, with an ambition to move towards a 'circular economy' where material resources are valued and kept in circulation.</p>	The SEA objectives should take into account the objectives for the waste sector presented in this plan.
Planning (Listed Buildings and Conservation Areas) Act 1990	
Addresses listed buildings including prevention of deterioration and damage, as well as preservation and enhancement of conservation areas.	The strategy and SEA should take account of the need to protect listed buildings and conservation areas.
The Water Act, 2003 (as amended)	
<p>The Water Act 2003 is in three Parts, relating to water resources, regulation of the water industry and other provisions. The four broad aims of the Act are:</p> <ul style="list-style-type: none"> - The sustainable use of water resources - Strengthening the voice of consumers - A measured increase in competition - The promotion of water conservation. 	The implementation of the Strategy may have an effect through it's role in maintaining supplies of water. The SEA should seek to promote sustainable use of water resources.
The Water Environment (WFD) (England and Wales) Regulations, 2003	
These Regulations make provision for the purpose of implementing in river basin districts within England and Wales. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources.	The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.
Wildlife and Countryside Act, 1981 (as amended)	
<p>The Act is the principle mechanism for providing legislative protection of wildlife in Great Britain.</p> <p>Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other</p>	Some aspects of the strategy may have effects on habitats and species in the Essex County Council supply area and beyond. The SEA should seek to maintain or enhance the quality of habitats and

provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule. The Act also improved protection for the most important wildlife habitats.	biodiversity and take into regard protected species and habitats.
UK Climate Projections UKCP18. UKCIP, 2018	
<p>The UKCP18 Projections provide a basis for studies of impacts and vulnerability and decisions on adaptation to climate change in the UK over the 21st century. Projections are given of changes to climate, and of changes in the marine and coastal environment; recent trends in observed climate are also discussed.</p> <p>The methodology gives a measure of the uncertainty in the range of possible outcomes; a major advance beyond previous national scenarios</p> <p>The projections will allow planners and decision-makers to make adaptations to climate change. In order to do so they need as much good information as possible on how climate change will evolve. They are one part of a UK government programme of work to put in place a new statutory framework on, and provide practical support for, adaptation.</p>	The SEA should use UKCP18 projections in the broader assessment of climate change effects and any potential cumulative effects. For example, the ecological requirements of aquatic habitats that may be affected by the strategy will also be influenced by climate change.
Defra (2018), The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting	
<p>This second National Adaptation Programme (NAP) sets out the government's response to the second Climate Change Risk Assessment (CCRA). High level actions are presented for addressing the key risks identified, including in relation to the following areas:</p> <ul style="list-style-type: none"> - Flooding and coastal change risks to communities, businesses and infrastructure; - Risks of shortages in the public water supply for agriculture, energy generation and industry; - Risks to natural capital including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity; and <p>New and emerging pests and diseases and invasive non-native species affecting people, plants and animals.</p>	The SEA objectives of the waste strategy should take into account the key risks identified in this document, for the relevant areas.
National Flood and Coastal Erosion Risk Management Strategy for England (2020)	
<p>This updated strategy describes what needs to be done by all risk management authorities, including water and sewerage companies, involved in flood and coastal erosion risk management. It has 3 long-term ambitions:</p> <ol style="list-style-type: none"> 1. Climate resilient places: improving resilience to flooding and coastal change; 2. Making the right investment and planning decisions to secure sustainable growth, environmental improvements and infrastructure resilient to flooding and coastal change; and 3. Educating local communities to make sure that they understand their risk to flooding and coastal change. 	The SEA objectives of the strategy should take the long-term ambitions into account.
National Policy Statement for Wastewater (2012)	

<p>This document sets out Government policy for the provision of major waste water infrastructure. The seven key policy objectives include:</p> <ol style="list-style-type: none"> 1. Sustainable development; 2. Public health and environmental improvement; 3. To improve water quality in the natural environment; 4. To reduce water consumption; 5. To reduce the demand for waste water infrastructure capacity; 6. Climate change mitigation and adaptation; and 7. Waste hierarchy. 	<p>The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding maintaining, protecting and improving water quality across the region and ensure efficient use of resources.</p>
HM Treasury (2020) National Infrastructure Strategy	
<p>This Strategy sets out the government's plans to deliver on their ambition for a radical improvement in the quality of the UK's infrastructure and to put the UK on the path to net zero emissions by 2050.</p>	<p>The decision-making process for determining which schemes should be prioritised in the Waste Strategy should take this policy document into account.</p>
Circular Economy Package, 2020	
<p>The Circular Economy Package identifies steps for the reduction of waste and establishing an ambitious and credible long-term path for waste management and recycling.</p> <p>The plan sets out targets to recycle 65% of municipal waste by 2035 and to have no more than 10% municipal waste going to landfill by 2035.</p>	<p>The Waste Strategy should increase recycling rates and reduced landfill creation.</p>
Integrated Radioactive Waste Strategy, 2019	
<p>The strategic objective for radioactive waste is to manage radioactive waste and dispose of it wherever possible or by placing it in safe, secure and suitable storage ensuring the delivery of national policies.</p>	<p>The Waste Strategy should ensure that radioactive waste is managed, stored and disposed in a safe and secure manner.</p>
National Planning Policy for Waste, 2014	
<p>This policy set out detailed waste planning policies. The policy should be read in conjunction with the NPPF, Waste Management Plan for England and National Policy Statements for Waste Water and Hazardous Waste, or any successor documents.</p>	<p>All options identified within the Waste Strategy should be within the context of the National Planning Policy for Waste.</p>
Control of Pollution Act 1974	
<p>An Act to make further provision with respect to waste disposal, water pollution, noise, atmospheric pollution and public health.</p>	<p>The Waste Strategy and SEA should ensure options take this legislation into account.</p>
Build Back Better: our plan for growth, 2021	
<p>The Build Back Better plan aims to tackle long term problems to deliver growth creating high-quality jobs across the UK and strengthen the union. There is focus on levelling up the UK, supporting a transition to net zero.</p>	<p>The Waste Strategy should aim to stimulate growth in the long-term, deliver on net zero goals and provide opportunities for jobs.</p>
National Policy Statement: Hazardous Waste, 2013	

<p>The NPS sets out government policy for hazardous waste infrastructure. The statement sets out the following key objectives for the policy:</p> <ul style="list-style-type: none"> • To protect human health and the environment – stringent legislative controls are in place to control the management of waste with hazardous properties; • Implementation of the waste hierarchy – to produce less hazardous waste, using it as a resource where possible and only disposing of it as a last resort; • Self-sufficiency and proximity – to ensure that sufficient disposal facilities are provided in the country as a whole to match expected arisings of all hazardous wastes, except those produced in very small quantities, and to enable hazardous waste to be disposed of in one of the nearest appropriate installations; • Climate change – to minimise greenhouse gas emissions and maximise opportunities for climate change adaptation and resilience. 	<p>The SEA should ensure the options identified in the waste strategy are in line with the objectives set out in this National Policy Statement.</p>
The Waste Regulations, 2011	
<p>This Regulation transpose the EU Waste Framework Directive (2008/98/EC). The Waste Regulations set out the following: Waste Prevention Programmes; Waste Management Plans; Duties in relation to waste management and improved use of waste as a resource; duties of planning authorities; deposits in the sea; transfer of waste; enforcement.</p>	<p>The SEA should ensure options set out in the strategy align with Regulations set out in the legislation.</p>
Ancient Monuments and Archaeological Areas Act 1979	
<p>This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.</p>	<p>The Management Strategy and SEA should take account of the need to protect scheduled monuments and archaeological areas.</p>
Defra (2004) Rural Strategy	
<p>The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include supporting economic and social regeneration across rural England and enhance the value of the countryside and protect the natural environment for this and future generations.</p>	<p>The implementation of certain strategy options may have an effect upon rural communities and the countryside. The SEA should also seek to ensure that the quality of the region's landscapes, natural resources and biodiversity are maintained or enhanced.</p>
Department for Culture, Media and Sport (2001) The Historic Environment – A Force for the Future	
<p>This strategy outlines the Governments policy regarding the historic environment. The strategy has key aims and objectives that demonstrate the contribution the historic environment makes to the country's economic and social well-being.</p>	<p>The SEA should seek to ensure any adverse effects on heritage assets are minimised or avoided.</p>
Historic England (2020) Heritage at Risk 2020	
<p>Heritage at Risk is a national project that aims to identify the endangered sites (historic buildings and places with</p>	<p>The SEA should seek to protect and enhance heritage and landscape.</p>

increased risks of neglect and decay) and then help secure them for the future.	
English Heritage, now known as Historic England (2008) Climate Change and the Historic Environment	
Sets out the current thinking on the implications of climate change for the historic environment. It is intended both for the heritage sector and also for those involved in the wider scientific and technical aspects of climate change; in the development of strategies and plans relating to the impact of climate change; or in projects relating to risk assessment, adaptation and mitigation.	The SEA should seek to assess the implications of the waste management strategy in combination with climate change and the potential impacts on heritage and the historic environment.
Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.	The SEA should consider the potential effects of the strategy on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.
Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3	
This provides guidance on managing change within settings of heritage assets. This includes archaeological remains, historic buildings, sites, areas and landscapes.	The SEA should take into account any effects on settings of heritage assets.
Historic England (2017) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, 2nd Edition	
This replaces The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 – 1st Edition. It sets out general advice on understanding setting, and how it may contribute to the significance of heritage assets and allow that significance to be appreciated, as well as advice on how views contribute to setting.	The SEA should take into account any effects on settings of heritage assets.
Natural England (2016), Conservation 21 – Natural England's Conservation Strategy for the 21 st Century	
This strategy sets out a new approach to reverse biodiversity loss, protect natural landscapes for public enjoyment and for the services that they provide. The strategy is based on three guiding principles: <ol style="list-style-type: none"> 1. Creating resilient landscapes and seas 2. Putting people at the heart of the environment 3. Growing natural capital 	The strategy and SEA should seek to ensure that the natural environment and distinctive landscapes are protected and public access to them are maintained.
Natural Capital Committee (2020) State of Natural Capital Annual Report 2020	
This provides an overview of the progress made towards the 10 goals set out in the 25 Year Environmental Plan and reiterates the importance of embedding the natural capital approach in decision making for the areas of natural capital accounts, the National Food Strategy, review of national landscapes, and local nature and national nature recovery strategies.	The waste management strategy and SEA objectives for biodiversity and landscape and visual amenity should take account of the need to consider impacts towards natural capital and biodiversity resources, LNR and NNR strategies, protection and enhancement of designated landscapes.

Ancient Monuments and Archaeological Areas Act 1979

This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.	The strategy and SEA should take account of the need to protect scheduled monuments and archaeological areas.
Defra (2004) Rural Strategy	
<p>The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include:</p> <ul style="list-style-type: none"> - supporting economic and social regeneration across rural England; - enhancing the value of the countryside; and - protecting the natural environment for this and future generations. 	The implementation of certain strategy options may have an effect upon rural communities and the countryside. The SEA should also seek to ensure that the quality of the region's landscapes, natural resources and biodiversity are maintained or enhanced.
Department for Culture, Media and Sport (2001) The Historic Environment – A Force for the Future	
This strategy outlines the Governments policy regarding the historic environment. The strategy has key aims and objectives that demonstrate the contribution the historic environment makes to the country's economic and social well-being.	The SEA should seek to ensure any adverse effects on heritage assets are minimised or avoided.
Historic England (2020) Heritage at Risk 2020	
Heritage at Risk is a national project that aims to identify the endangered sites (historic buildings and places with increased risks of neglect and decay) and then help secure them for the future.	The SEA should seek to protect and enhance heritage and landscape.
English Heritage, now known as Historic England (2008) Climate Change and the Historic Environment	
Sets out the current thinking on the implications of climate change for the historic environment. It is intended both for the heritage sector and also for those involved in the wider scientific and technical aspects of climate change; in the development of strategies and plans relating to the impact of climate change; or in projects relating to risk assessment, adaptation and mitigation.	The SEA should seek to assess the implications of the waste strategy in combination with climate change and the potential impacts on heritage and the historic environment.
Historic England (2013) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.	The SEA should consider the potential effects of the strategy on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.
Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3	
This provides guidance on managing change within settings of heritage assets. This includes archaeological remains, historic buildings, sites, areas and landscapes.	The SEA should take into account effects on settings of heritage assets.

Historic England (2017) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, 2nd Edition

This replaces The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 – 1st Edition. It sets out general advice on understanding setting, and how it may contribute to the significance of heritage assets and allow that significance to be appreciated, as well as advice on how views contribute to setting.	The SEA should take into account effects on settings of heritage assets.
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Natural England (2016), Conservation 21 – Natural England's Conservation Strategy for the 21st Century

<p>This strategy sets out a new approach to reverse biodiversity loss, protect natural landscapes for public enjoyment and for the services that they provide. The strategy is based on three guiding principles:</p> <ol style="list-style-type: none"> 1. Creating resilient landscapes and seas 2. Putting people at the heart of the environment 3. Growing natural capital. 	The Strategy and SEA should seek to ensure that the natural environment and distinctive landscapes are protected and associated public access are maintained.
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Regional

Essex County Council, Local Flood Risk Management Strategy, 2018

<p>This strategy sets out aims and actions to reduce the impact of local flooding on the local community. The strategy is set out with the following measures:</p> <ul style="list-style-type: none"> • Investigating Floods • Mapping Local Routes for Water • Looking after our watercourses • Planning for future floods • Influencing new development and drainage • Building new flood defences 	The SEA must ensure that the options identified in the Waste Strategy do not increase the council's risk to flooding.
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Essex Green Infrastructure Strategy, 2020

The Essex Green Infrastructure Strategy enables a protection, creation and improvement of green infrastructure for the local biodiversity and people. The strategy also improves connectivity and inclusivity all whilst contributing to economic growth.	The SEA should make sure options in the Waste Strategy are have no significant impact on current or future green infrastructure creation.
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Levelling Up Essex Strategy, 2022

The strategy sets out how the council will support people living in priority areas of the county to benefit from the same opportunities and life chances as the wider Essex population.	The Waste Strategy and SEA should seek to benefit and support those people in the priority areas of Essex County.
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Essex Joint Health and Wellbeing Strategy, 2022-2026

The strategy aims to improve health and wellbeing outcomes for people of all ages in the Essex County region.	The SEA should seek to improve the health and wellbeing of those living in the Essex County region.
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Economic Plan for Essex, 2014

The economic plan for Essex outlines how the council intends to support economic growth in the region.	The SEA and waste strategy should ensure economic growth is supported in the region.
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Essex Waste Local Plan, 2017

The plan sets out how Essex and Southend-on-Sea aim to manage waste for its duration, seeking to deal with waste sustainably, encourage recycling and reduce reliance on landfill.	Options set out in the strategy should align with the Essex Waste Local Plan policies.
Relevant waste collection authority (WCA) waste plans/strategies	Options set out in the strategy should align with the WCA waste plans/strategies.

APPENDIX 2 QUALITY ASSURANCE CHECKLIST

The Practical Guide suggests a Quality Assurance checklist to help ensure that the requirements of the SEA Regulations (and Directive) are met. The checklist is reproduced here, indicating where this Scoping Report meets the requirements, and which requirements will be addressed in the Environmental Report.

Checklist Items	Comments
Objectives and Context	
The plan's or programme's purpose and objectives are made clear	The purpose of the Waste Strategy is set out in Section 1.1 and 4.2 of this Scoping Report.
Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets	Objectives of other plans and programmes are set out in Section 2 and Appendix 1.
SEA objectives, where used, are clearly set out and linked to indicators where appropriate.	Draft objectives are set out in Section 4 of this Scoping Report.
Links with other plans, programmes and policies are identified and explained	Links are identified in Section 2 and Appendix 1.
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and described.	Any such compatibility conflicts would be identified as part of the cumulative assessment completed during the assessment of options and would be presented in the Environment Report.
Scoping	
Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report	<p>This Scoping Report is part of the consultation process required to meet the requirements of the SEA Regulations and will be circulated to consultees. Further Consultation will be undertaken on the Environmental Report and Draft Waste Strategy.</p> <p>The Consultation Process is described in Section 5.1.</p>
The assessment focusses on specific issues	The proposed scope of the assessment reflects the geographic extent of Essex County Council and provides a comprehensive yet proportionate approach to assessment of potentially. Scoping of topics is outlined in section 3.11.
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit	Data limitations and assumptions are discussed in Section 3.1.1 of this Scoping Report. This will be further described as appropriate in the Environmental Report.
Reasons are given for eliminating issues from further consideration	Section 3.11 describes those topics proposed to be scoped out of the SEA.
Alternatives	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented	The assessment framework, which will be revised following consultation, will be used to assess options, alternatives and the plan. This will be set out in the Environmental Report.
Alternatives include 'do minimum' and / or 'business as usual' scenarios wherever relevant	Assessment of alternatives will be considered in the Environmental Report.

Checklist Items	Comments
The environmental effects (both adverse and beneficial) of each alternative are identified and compared	Assessment of alternatives will be considered in the Environmental Report.
Inconsistencies between the alternatives and other relevant plans, programmes and policies are identified and explained	Assessment of alternatives will be considered in the Environmental Report.
Reasons are given for the selection or elimination of alternatives	Assessment of alternatives will be considered in the Environmental Report.
Baseline Information	
Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described	The current state of the environment and predicted future baseline is set out in Section 3 of this Scoping Report for each SEA topic.
Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan	The environmental characteristics of Essex County Council, are described in Section 3.
Difficulties such as deficiencies in information or methods are explained	Difficulties and limitations are set out in Section 3.1.1 of this Scoping Report.
Prediction and evaluation of likely significant environmental effects	
Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape), as relevant; other likely environmental effects are also covered, as appropriate	Potential environmental effects will be set out in the Environmental Report.
Both positive and negative effects are considered, and the duration of effects (short, medium or long-term) is addressed	The nature and duration of potential effects will be set out in the Environmental Report, using an assessment framework based the one set out in Section 4 of this Scoping Report.
Likely secondary, cumulative and synergistic effects are identified where practicable	Potential secondary, cumulative and synergistic effects will be set out in the Environmental Report.
Inter-relationships between effects are considered where practicable	Potential inter-relationship effects will be set out in the Environmental Report.
The prediction and evaluation of effects makes use of relevant accepted standards, regulations and thresholds	Relevant standards will be used where appropriate in undertaking the assessment in the Environmental Report.
Methods used to evaluate the effects are described	The Environmental Report will include information on the methods used for evaluation of potential effects.
Mitigation measures	
Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated	Mitigation measures for potential negative effects will be incorporated into the assessment undertaken in preparing the Environmental Report.
Issues are to be taken into account in project delivery	Such mitigating measures, if required, will be highlighted against the options in the plan.
The Environmental Report	
Is clear and concise in its layout and presentation	The Environmental Report will be clear and concise.

Checklist Items	Comments
Uses simple, clear language and avoids or explains technical terms	The Environmental Report will use simple, clear language, and explain technical terms, as appropriate.
Uses maps and other illustrations where appropriate	The Environmental Report will use maps and illustration where appropriate.
Explains the methodology used	The SEA methodology will be described in the Environmental Report.
Explains who was consulted and what methods of consultation were used	The consultation strategy, including organisations and dates of consultation will be included in the Environmental Report.
Identifies sources of information, including expert judgement and matters of opinion	Sources of information will be detailed in the Environmental Report.
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA	The Environmental Report will include a non-technical summary.
Consultation	
The SEA is consulted on as an integral part of the plan-making process.	<p>This Scoping Report is a part of the consultation process required to meet the requirements of the SEA Regulations and will be circulated to consultees. Further consultation will be undertaken on the Environmental Report and draft Waste Strategy.</p> <p>The Consultation process is described in Section 5.1.</p>
Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to express their opinions on the draft plan and Environmental Report	<p>This Scoping Report is a part of the consultation process required to meet the requirements of the SEA Regulations and will be circulated to consultees. Further consultation will be undertaken on the Environmental Report and draft Waste Strategy.</p> <p>The Consultation process is described in Section 5.1.</p>
Decision-making and information on the decision	
The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme	Responses from consultation on the draft Environmental Report will be incorporated in the development of the final Environmental Report. After finalisation of the Waste Strategy, a Post-Adoption Statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the Waste Strategy.
An explanation is given of how they have been taken into account	Responses from consultation on the draft Environmental Report will be incorporated in the development of the final Environmental Report. After finalisation of the Waste Strategy, a Post-Adoption Statement will be published describing how the SEA and the responses to consultation have been taken

Checklist Items	Comments
	into account during the preparation of the Waste Strategy.
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered	This will be set out following consultation on the draft Waste Strategy and Environmental Report.
Monitoring measures	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA	The Environmental Report will include a section addressing proposals for monitoring.
Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA	The suggestions for monitoring will be made in the Environmental Report, with monitoring taking place following implementation of the Waste Strategy, further to consultation with regulatory authorities including the Environment Agency and Natural England.
Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect)	The suggestions for monitoring will be made in the Environmental Report, with monitoring taking place following implementation of the Waste Strategy, further to consultation with regulatory authorities including the Environment Agency, Natural England and Historic England.
Proposals are made for action in response to significant adverse effects	Mitigation measures for adverse effects will be addressed in the Environmental Report.



T: +44 (0) 1235 75 3000

E: enquiry@ricardo.com

W: ee.ricardo.com