place services

Essex County Council

Essex Replacement Minerals Local Plan: Pre-Submission Draft

Sustainability Appraisal and Strategic Environmental Assessment

Environmental Report: Annex B – Baseline Information

November 2012

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1. Introduction

1.1. Background

Essex County Council commissioned the Strategic Environmental Assessment Team of Essex County Council's Place Services to undertake a Sustainability Appraisal, incorporating Strategic Environmental Assessment, on the proposed Replacement Minerals Local Plan: Pre-Submission Draft (MLP).

Place Services are acting as consultants for this work, therefore the content of the Sustainability Appraisal should not be interpreted or otherwise represented as the formal view of Essex County Council.

This Annex presents a baseline information profile of the plan area and has been used as a basis for the assessed impacts of the Pre Submission MLP Document.

1.2. Sustainability Baseline Information

The SEA Directive requires the production of the following information:

"the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;" Annex 1(b);

"the environmental characteristics of areas likely to be significantly affected;" Annex 1(c); and

"any existing problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance such as areas designated pursuant to Directives 79/409/EEC and 92/43/ECC" Annex 1(d).

The baseline information identifies current sustainability issues and problems in the area which should be addressed and provides a basis for predicting and monitoring the effects of implementing the MLP.

To ensure the data collected was relevant and captured the full range of sustainability issues it was categorised under thematic topics which cover all the topics referred to in Annex 1(f) of the SEA Directive and follow the order of:

- Minerals
- Waste
- Cultural Heritage
- Landscape
- Biodiversity
- Water Quality
- Air Quality
- Noise Quality
- Climatic Factors
- Flooding
- Population and Social
- Health
- Transport
- Housing
- Economy

The summaries of each topic have been included within the main Environmental Report document while this annex contains the detailed baseline information.

2. Minerals

2.1. Introduction

Minerals extraction and requirements are closely linked to construction and demolition and excavation waste (CDEW) arisings. Such arisings are a source for recyclable aggregates, and may be particularly important in relation to planned growth in certain areas in Essex. The growth agenda in Essex, combined with the preference for development to take place on previously developed land suggests that indigenous supply of secondary and recycled aggregate is also likely to be significant.

2.2. Hierarchal Approach

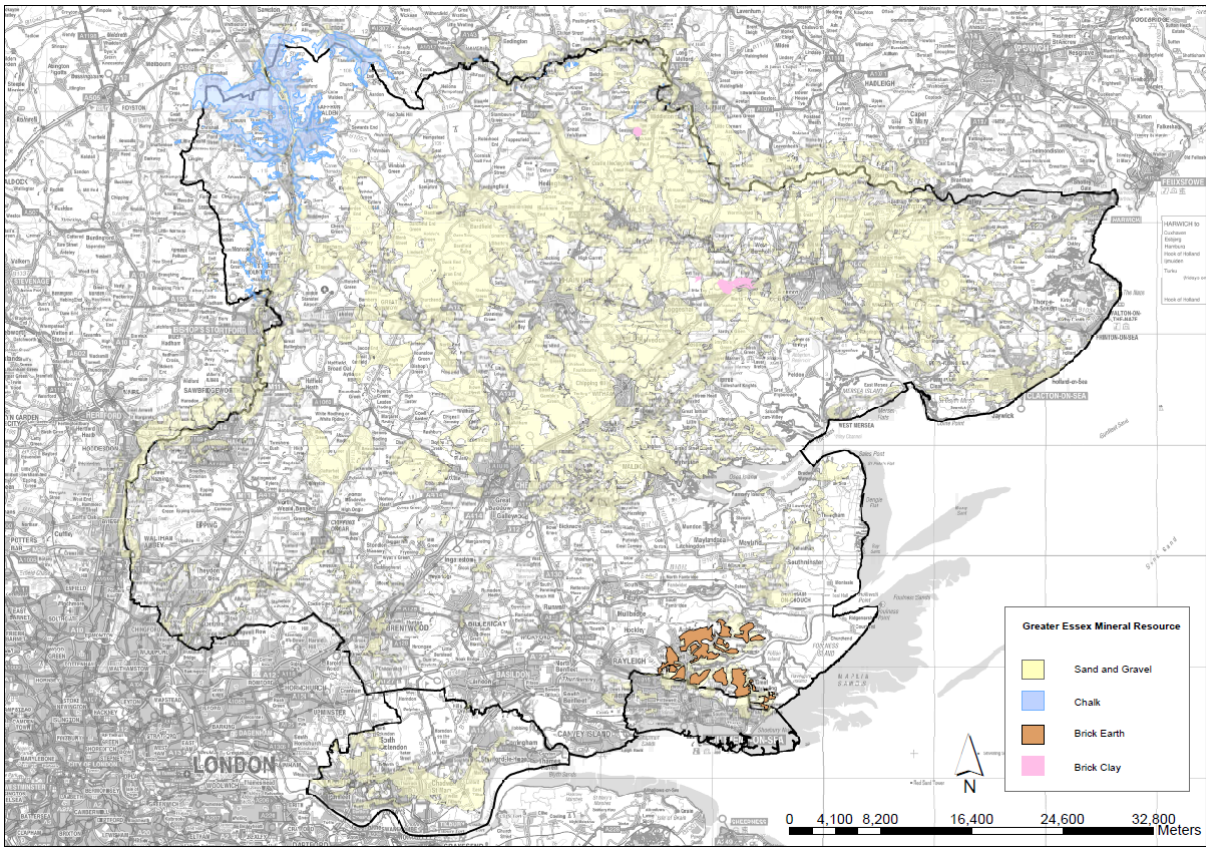
NPPF requires that a hierarchal approach is employed in considering mineral supply, where the first consideration should be reduction in the quantity of material used and reduction of wastes generated. The second consideration should be to optimise the use of recycled and secondary material, closely associated with CDEW waste management and the third is to secure the remaining required material through primary extraction. This hierarchical approach operates in practice within the context of the sub-regional apportionment system outlined above for the primary extraction of some minerals.

2.3. Planned Provision

Responding to the third consideration in the minerals supply hierarchy, extraction will be more prevalent where recyclable aggregate waste arisings are not effectively managed and utilised. Essex is composed of three geological zones; coastal (clays and marshes), mid-Essex (sands, gravels, acidic soil and glacial outwash) and North-Western Essex (chalk). The main materials of economic significance are the sands and gravels, of which Essex is one of the largest producers in the country. Brick clay and brick earth is also found as well as chalk (for agriculture or pharmaceutical use), silica (glass, ceramics and water filtration), London Clay (cement) and crag, although this is not currently mined.

The soon to be abolished East of England Plan (the RSS for the region) set out planned mineral provision through sub-regional apportionments, in average tonnes of land won minerals, to be extracted per annum up to 2016. Whilst a figure of 4.41mtpa was originally quoted for Essex, rising to 4.55mpta for Essex, Southend and Thurrock, the figures have subsequently been revised by the Regional Aggregates Working Party to 4.31mpta (a reduction of 2%) for Essex and 4.45mpta for Greater Essex.

Figure 1: Known and Inferred Mineral Resources in Essex

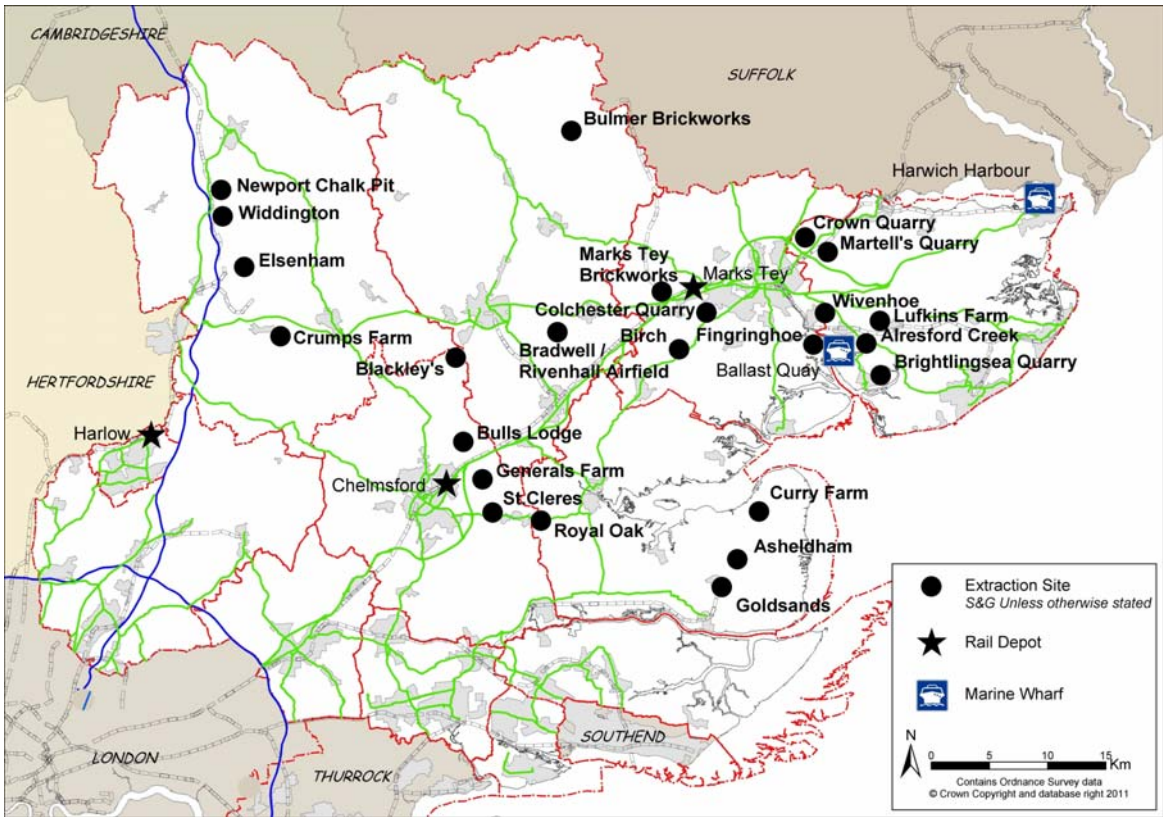


Source: Based on information from the British Geological Society – Mineral Resources Map 1:100,000, 2002

Sand and gravel is by far the most common extracted mineral in the country. Essex is a nationally significant exporter of sand and gravel and is one of the largest producers in the UK. Sand and gravel deposits are largely concentrated in the north of the county and particularly in the districts of Uttlesford, Braintree, Colchester, Tendring and Chelmsford. Sand and gravel deposits are far less abundant in the south of Essex and are less workable. Sand and gravel extracted in Essex is used as a raw material to produce, amongst other things, concrete and asphalt.

Whilst there are many sand and gravel sites throughout Essex, other minerals such as silica sand, brick clay and chalk are extracted at either one or two sites in the county, namely in Colchester, Bulmer and Marks Tey, and Uttlesford respectively.

Figure 2: Active and Inactive Mineral Extraction and Transhipment Sites in Greater Essex



Source: Essex County Council Minerals and Waste Annual Monitoring Report, April 2010 – March 2011

As of August 2012, there were 23 sand and gravel sites with a further four sand and gravel quarries which have permission to extract but are currently dormant. Permitted reserves in Greater Essex in 2011 estimated 2.80 million tonnes (mt) with total permitted reserves estimated at 37.642mt. One of these sites also produces silica sand. In addition to this in Greater Essex there are two brick clay sites and one chalk site although commercial confidentiality precludes the stating of their total permitted reserves. Regarding operational transhipment sites, there are 2 wharfs and 4 rail depots in the County.

The following table lists all primary extract sites within Greater Essex and their cessation period. Most existing sites will be exhausted by the end of the plan period (2029) if they continue to operate at their average output as quoted on their planning application. By 2029, those remaining active sites would be in the north-east of Greater Essex, leaving many parts of the area outside of the economically viable reach of an active mineral site. Without additional land won sand and gravel sites, the sand and gravel landbank would become exhausted significantly before the end of the plan period (2029).

Table 1: Primary Aggregate Sites in Greater Essex, August 2012

Site Name	Cessation Date for Planning Permission
Operational Sand & Gravel Quarries with Permitted Reserves	
Martells Quarry, Ardleigh	2026
Bradwell Quarry, Rivenhall Airfield (inc Extension A2)	2016
Alresford Creek, Alresford	2042
Brightlingsea Quarry, Brightlingsea	2026
Elsenham Quarry, Uttlesford	2030

Widdington Pit, Widdington	2013
Royal Oak, Danbury	2014
Curry Farm, Bradwell-on-Sea	2014
Crumps Farm, Great Canfield	2042
Blackley Quarry, Great Leighs	2015
Asheldham Quarry, Asheldham	2014*
Birch Quarry, Birch	2018
Bulls Lodge Quarry, Boreham	2030
Wivenhoe Quarry, Wivenhoe	2015
East Tilbury Quarry	2021
Crown Quarry, Ardleigh	2028
Highwood Quarry, Little Easton	2026
Colchester Quarry, Stanway	2042
Fingringhoe Quarry, Fingringhoe	2042
Non Operational Sand & Gravel Quarries with Permitted Reserves	
Lufkins Farm, Thorrington	Commencement within 3 years from July 2010, cessation three years after commencement.
Rivenhall Airfield (Waste Facility)	2015
Cobbs Farm, Goldhanger	Commencement within 5 years from June 2012, cessation four years after commencement.
Orsett Quarry, Linford	2042
Dormant Sand & Gravel Quarries	
Alton Park	-
Hambro Hill	-
Hodgnells Farm	-
Straits Mill	-
Operational Brick Clay Sites with Permitted Reserves	
Bulmer Brickworks	2037***
Marks Tey Brickworks	2042
Operational Chalk Sites with Permitted Reserves	
Newport Chalk Pit	2042

Source: Essex Minerals and Waste Annual Monitoring Report, 1st April 2010 – 30th March 2011

* Pre-application discussions have taken place. A fifteen year extension to 31st December 2029 is likely.

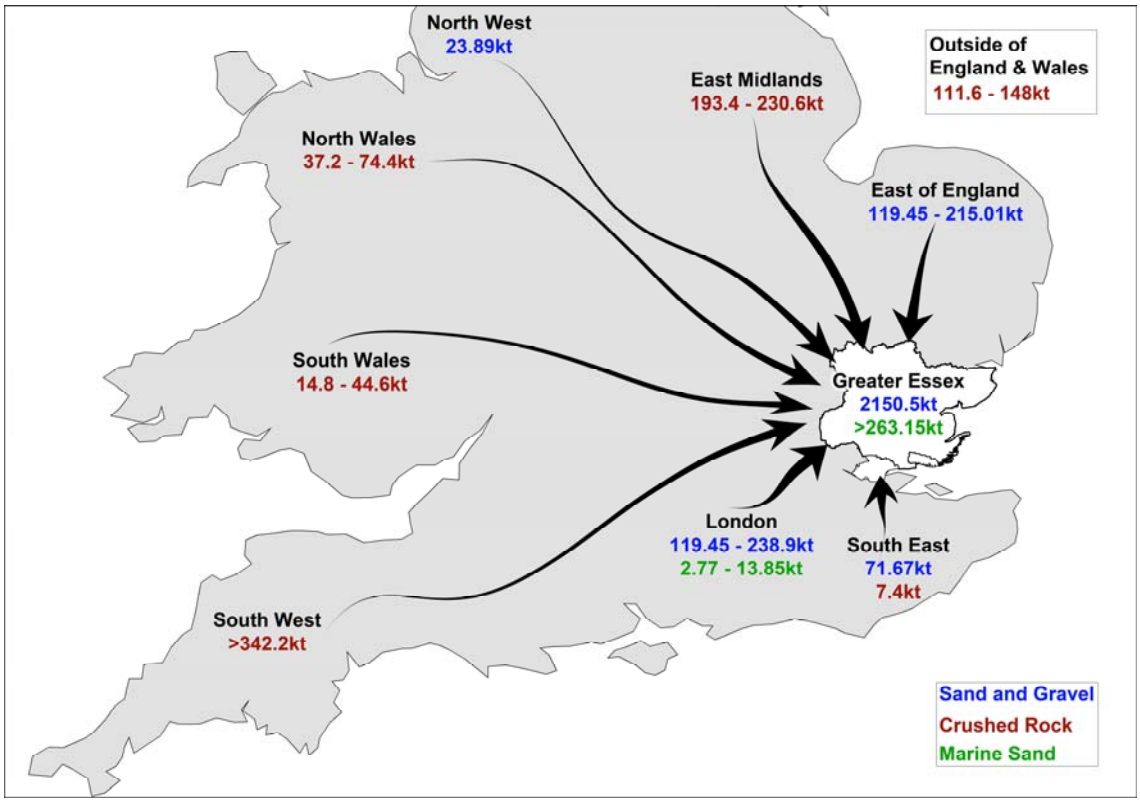
** Will need a Review of Old Mineral Permissions (ROMP) before 2027

2.4. Movement of Minerals

Minerals are transported in, out and around Greater Essex by three methods – rail, road and water. The road network is the most effective and heavily utilised form of transportation for mineral movement within Greater Essex as relatively short journeys to the local Essex Market are required. Exportation to London is predominantly undertaken by rail. There are also a number of relevant port and wharf facilities on the coast in Thurrock and navigable sections of inland waterways.

According to the British Geological Survey and 'Collation of the results of the 2009 aggregate minerals survey for England and Wales' over 90% of the land won sand and gravel consumed in Greater Essex was extracted within Greater Essex. This is shown in Figure 3. Crushed rock does not however exist in Greater Essex and as a result it is imported from elsewhere with the largest proportion coming from Somerset. The majority of all aggregate extracted from Greater Essex served local markets within Greater Essex. 8% was exported elsewhere in the East of England and 14% was exported further a field.

Figure 3: Imports of Mineral to Greater Essex, 2009

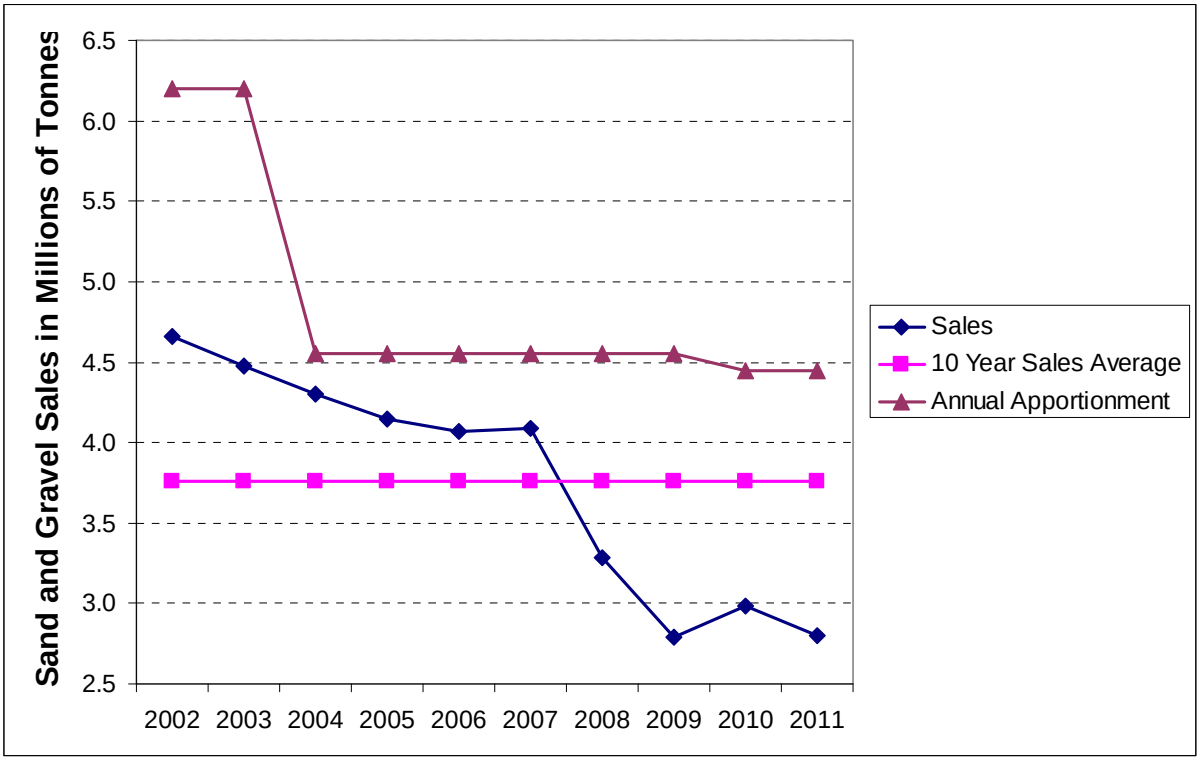


Source: BGS and Essex County Council, 2012

2.5. Reduction in Sales

According to the draft Essex Local Aggregate Assessment (2012) there has been a "*clear reduction in the amount of mineral that Greater Essex has permitted for extraction over the last 20 years*". This is the result of sales of primary aggregates being higher than the amount of material in the reserves being added through new planning permissions. The recent increase in reserves between 2009 and 2011 was partly due to a reduction in sales but also due to the awarding of planning permissions for extraction at Crown Quarry in Ardleigh. Also, despite the general trend of a falling reserve, Greater Essex has maintained its seven year landbank due to the annual apportionment figure reducing over time.

Figure 4: Greater Essex Sales and Apportionment to 2011



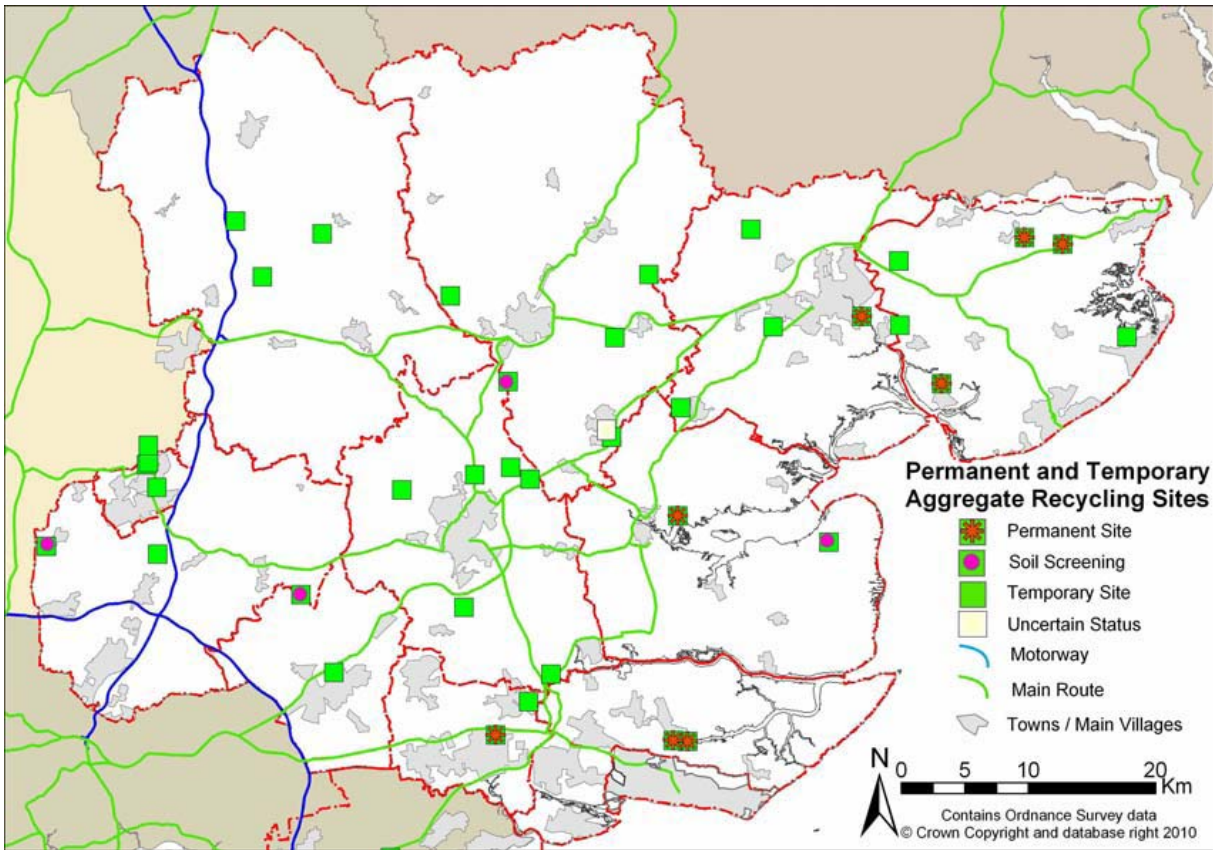
Source: East of England Aggregates Working Party and Site Operator Survey Returns, 2011

The amount of mineral to be provided annually is, according to the NPPF, to be based primarily on a rolling ten year local sales average. The sales of sand and gravel within Greater Essex over the last 10 year period have reported a general declining trend with the largest fall in sales occurring between 2007 and 2008. This is strongly related to the economic recession. The annual apportionment has historically been higher than actual sales of sand and gravel but this was due to delays in plan formation at the national level. Before 1991 sales of sand and gravel in Greater Essex were around 8mtpa and historic apportionments closely corresponded to actual sales. The reduction of the Greater Essex apportionment to 4.55mpta in 2003 closely mirrored sales of sand and gravel again until the aforementioned economic recession which caused sales to fall considerably.

2.6. Recycled Aggregates

Construction and demolition and excavation (CDE) waste arisings are a source for recyclable aggregates, and may be particularly important in relation to planned growth in certain areas in Essex. It must be acknowledged that there are significant issues with availability of reliable statistical information on secondary and recycled aggregates. The 'National and Sub-National Guidelines for Aggregate Provision in England 2005 – 2020' document proposes that the East of England region should provide 117mt of alternative aggregate materials between 2005 and 2020, equating to 7.8mt a year. There has not been any apportionment of this figure but, as it accounts for 31% of the regions total aggregate supply, it is anticipated that reuse of recycled and secondary aggregate will contribute considerably to future mineral supply.

Figure 5: Construction and Demolition Waste Recycling Sites in the Plan Area, 2010



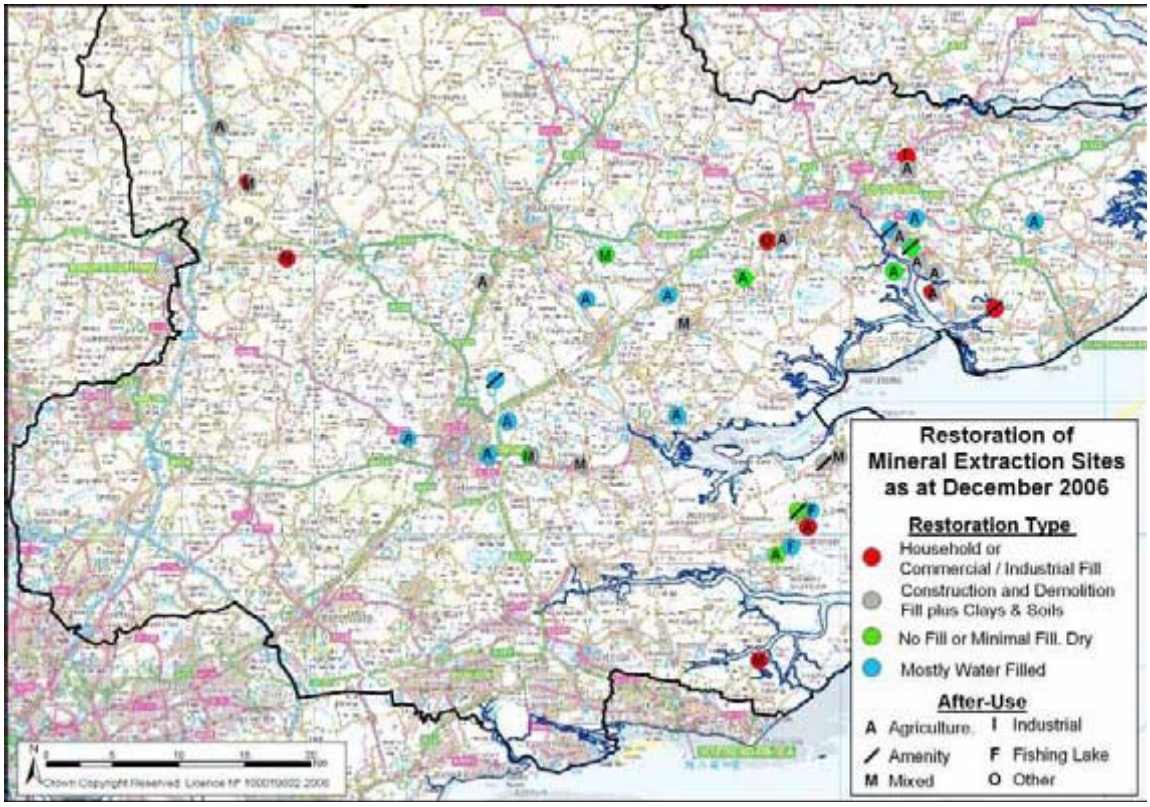
Source: Essex County Council and Southend-on-Sea Borough Council Waste Development Document: Capacity Gap Compilation Final Report, 2010

There are 35 aggregate recycling facilities in Essex and Southend-on-Sea, approximately 60% of which provide permanent capacity with the remaining proportion being located in temporary facilities on existing minerals sites. The total permitted capacity of all these sites, according to the *Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report Update – Revised 2011,* is 1,737,992t. 28 of these facilities are operational and account for approximately 79% of the total capacity. However due to the future closing of the temporary facilities a 'capacity gap' is expected from 2020/21 between the available capacity to recycle and the volume of CDE waste which must be recycled. To address this, additional CDE recycling facilities will be needed within Essex and Southend-on-Sea.

Operators of smaller recycling operations in rural areas are considered to be able to find suitable working sites more easily due to lower land values. Operators in the most densely populated urban areas are thought to have access to sufficient C&D waste but may have difficulty identifying recycling sites due to high land values. It is considered that operators located on the urban fringe are most likely to be able to balance their proximity to raw materials and market demand with workable and accessible fixed aggregate sites. In Essex, the majority of permanent sites are on the urban fringe.

2.7. Restoration

Figure 6: Restoration and After-use of Mineral Extraction Sites 2006



Source: Essex County Council Minerals Development Document: Contextual Baseline Report, 2009

The above map is based on thirty sites for which the restoration plans are known and were either active or had permission to extract in 2006. Over half the sites are wholly or partially water-filled. This includes agricultural reservoirs. Approximately 88ha of land has been converted to surface waters since 1998 as a result of the creation of lakes or agricultural reservoirs. Of the 22 sites which are active or had permission to extract in 2006 but which aren't destined to become agricultural reservoirs, one half will be restored to former levels and one quarter to lower levels. One third will be at least partially filled with non-inert materials. There is no obvious spatial pattern as to the choice of restoration material.

2.8. Summary

NPPF requires that a hierarchal approach is employed when considering the mineral supply, where the first consideration is how to reduce the quantity of material used as well reducing the amount of waste generated. The second consideration is to optimise the use of recycled and secondary material through effective construction and demolition and excavation waste (CDEW) management and finally to secure the remaining required material through primary extraction. Mineral requirements are closely linked to CDEW arisings. Such arisings are a source for recyclable aggregates, and may be particularly important in relation to planned growth in certain areas in Essex.

Sand and gravel is by far the most common extracted mineral in the country. Essex is a nationally significant exporter of sand and gravel and is one of the largest producers in the UK. Sand and gravel deposits are largely concentrated in the north of the county and particularly in the districts of Uttlesford, Braintree, Colchester, Tendring and Chelmsford. Sand and gravel deposits are far less abundant in the south of Essex and are less workable. Whilst there are many sand and gravel sites throughout Essex, other minerals such as silica sand, brick clay and chalk are extracted at either one or two sites in the county, namely in Colchester, Bulmer and Marks Tey, and Uttlesford.

As of August 2012, there were 23 sand and gravel sites with a further four sand and gravel quarries which have permission to extract but are currently dormant. Permitted reserves in Greater Essex in 2011 estimated 2.80 million tonnes (mt) with total permitted reserves estimated at 37.642mt. One of these sites also produces silica sand. In addition to this in Greater Essex there are two brick clay sites and one chalk site although commercial confidentiality precludes the stating of their total permitted reserves. Regarding operational transhipment sites, there are 2 wharfs and 4 rail depots in the County.

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It is important to acknowledge that most of the existing mineral sites will be exhausted by the end of the plan period (2026) if they continue to operate at their average output as quoted on their planning application. By 2026, those remaining active sites would be in the north-east of Greater Essex, leaving many parts of the area outside of the economically viable reach of an active mineral site.

There are 35 aggregate recycling facilities in Essex and Southend-on-Sea, approximately 60% of which provide permanent capacity with the remaining proportion being located in temporary facilities on existing minerals sites. The total permitted capacity of all these sites, according to the *Essex County Council and Southend-on-Sea Borough Council Capacity Gap Report Update – Revised 2011,* is 1,737,992t. 28 of these facilities are operational and account for approximately 79% of the total capacity. However due to the future closing of the temporary facilities a 'capacity gap' is expected from 2020/21 between the available capacity to recycle and the volume of CDE waste which must be recycled. To address this, additional CDE recycling facilities will be needed within Essex and Southend-on-Sea.

3. Waste

3.1. Introduction

Please note that Essex and Southend-on-Sea have a strategic partnership for all waste matters. As such all references to the 'plan area' within this section refer to Essex and Southend-on-Sea, the plan area of the Waste Local Plan, rather than the plan area of the MLP which is Essex, defined as the 12 district and boroughs for which Essex acts as the top-tier authority. This waste section draws on data and information supplied by Essex County Council's Waste Planning Team and that accumulated as part of the Regional Spatial Strategy's evidence base for waste policy in the East of England.

Essex currently has existing capacity to manage all types of waste (municipal, commercial, industrial and construction/demolition wastes), including recycling and composting capacity, and inert and non-hazardous landfill void space. However, nearly 50% of household waste in Essex is sent to landfill, with 30% recycled and 20% composted.

A substantial proportion of waste sent to landfill originates from London, and there should be an aim for this to be progressively reduced over time. Southend-on-Sea has a large shortfall in waste management capacity and relies on Essex for the majority of its waste management needs. There is a requirement to safeguard existing facilities to ensure the capacity gap does not grow and to ensure a larger proportion of waste is managed through recycling, composting and recovery methods in the future.

3.2. Waste Type Definitions

3.2.1. Construction and Demolition (C&D) Waste

Construction waste is essentially controlled waste arising from construction and demolition. The majority of this waste is bulky and inert. There is potential for using recycled construction and demolition waste as a substitute for primary aggregates.

The construction industry is a major source of waste in England, using the highest tonnage of solid material resources in any sector nationally. The construction and demolition (C&D) sector generates more waste in England than any other sector. Examples of C&D waste include waste building and dredging materials, tree stumps and rubble resulting from construction, remodelling, repair, and demolition operations on houses, commercial buildings and other structures, and pavements. It is also the largest generator of hazardous waste of all sectors, and may contain lead, asbestos, or other hazardous materials.

3.2.2. Commercial and Industrial (C&I) Waste

This is the waste created by commercial and industrial businesses. On a national scale, marginally more industrial waste is created by industrial businesses than commercial businesses. Traditionally, the main sectors producing the most C&I waste are retail, food, drink and tobacco, 'professional services', utilities, the chemicals industries, basic metal manufacture and hotels/catering.

3.2.3. Municipal (Solid) Waste

This is predominantly domestic waste and waste that resembles domestic waste in its properties or composition. It is collected by Local Authorities and is typically composed of domestic garden waste, kitchen waste, paper and cardboard, glass, wood and plastics. It also includes street sweepings and waste from reuse and recycling centres, as well as local authority-collected C&I waste.

3.2.4. Hazardous Waste

Hazardous waste is essentially waste that contains hazardous properties that may render it harmful to human health or the Environment. The European Commission has issued a Directive on the controlled management of such waste (91/689/EEC) and hazardous waste is defined on the

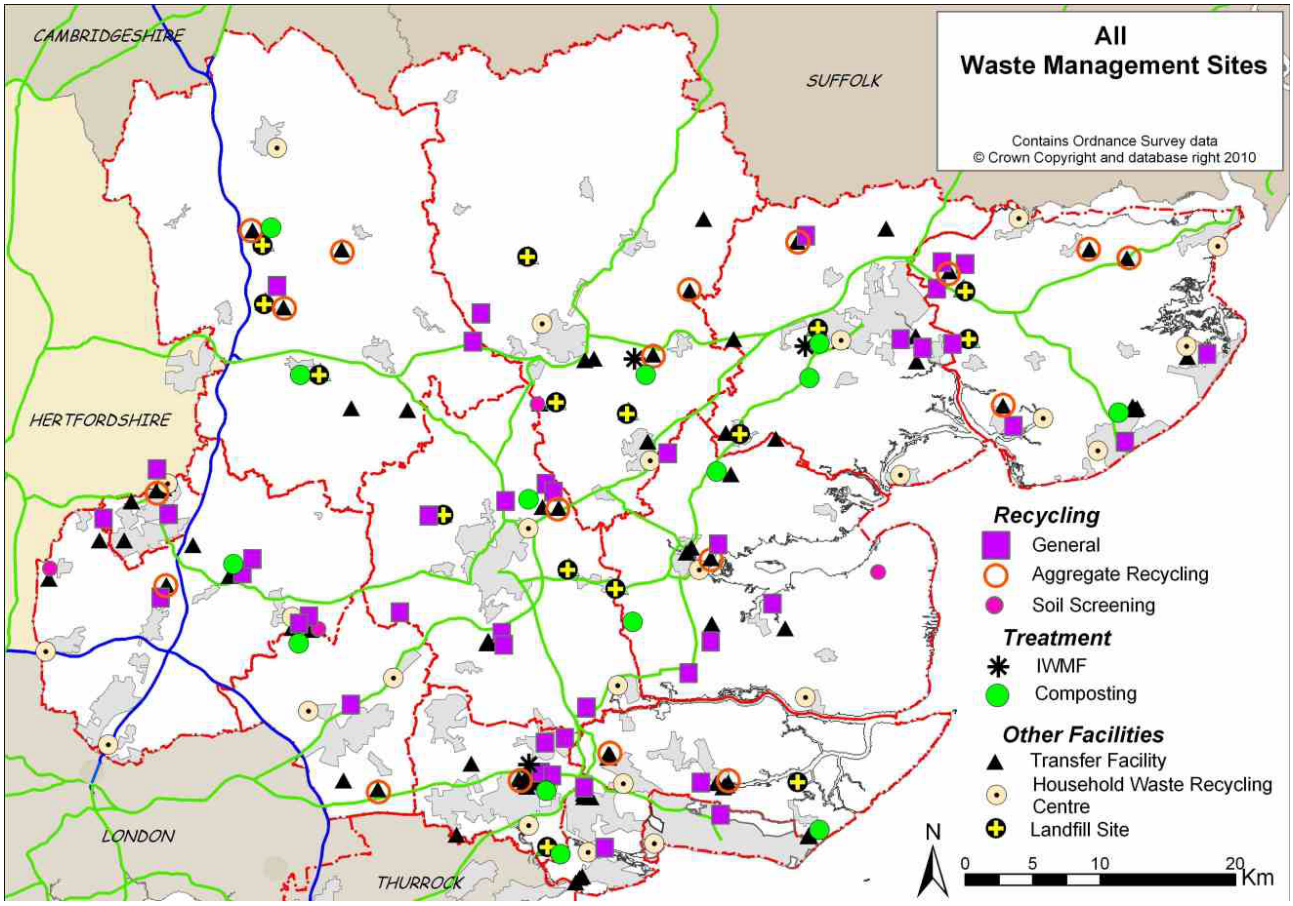
basis of a list, the European Waste Catalogue, drawn up under that Directive. This list includes waste that is explosive, oxidising, highly flammable, toxic, carcinogenic, corrosive, mutagenic or ecotoxic.

3.2.5. Agricultural Waste

Agricultural waste is waste created from farming practices. This includes waste from horticulture, dairy farming, livestock breeding and keeping and grazing land amongst other farming activities. The creation of manure or slurry is not included in agricultural waste figures where it is utilised as fertilizer.

3.3. Existing Waste Facilities

Figure 7: Active Waste Sites



Source: Source: Essex Minerals and Waste Annual Monitoring Report, 2010/11

In 2011 there were a total of 299 waste management facilities within Essex. These consisted of:

- 110 waste transfer facilities;
- 99 Recycling Sites;
- 14 Composting Facilities;
- 32 C&D Recycling Facilities;
- 20 Waste Treatment Sites;
- 9 Energy from Waste Facilities; and
- 15 Landfill Sites.

There were 10 new waste management facilities approved between 1 April 2010 and 31 March 2011. According to the most recent Annual Monitoring Report the new facilities have created an

additional 0.247mtpa recycling and composting capacity and a total landfill disposal capacity of 3.287mt.

3.4. Current Waste Arisings

Arisings in the plan area have been included for Construction and Demolition (C&D) waste, Commercial and Industrial (C&I) waste and Municipal Solid Waste (MSW).

Table 2: Total Waste Arisings by Waste Stream until 2030/31

Scenario	MSW	C&I	London Imports	Total Tonnes (exc C&D)	Annual Average (Mtpa, over the 22 years)	C&D Arisings	Total Tonnes (inc. C&D)
Adopted RSS	24.9	50.1	4.6	79.6	3.62		
Submitted RSS	18.4	27.9	3.7	50	2.27	50.7	100.7
Local Waste Strategy	18.2	27.9	3.7	49.8	2.26	50.7	100.5
Actual Arisings 2008/09	0.8	1.17 (estimate)	0.93	2.9		2.24 (estimate)	5.14

Source: Essex County Council and Southend-on-Sea Borough Council Waste Development Document: Capacity Gap Compilation Final Report, 2010

It can be seen from Table 2 that the majority of predicted waste arisings are anticipated to come from construction and demolition at approximately 50% of the total waste produced, followed by commercial and industrial activities. Municipal waste is predominantly from households and is expected to make up approximately 20% of total waste produced.

Essex has seen a reduction in imported arisings from London between 2006 and 2007. Table 3 highlights that this is contrary to the respective increases from Hertfordshire and Thurrock.

Table 3: Imported Arisings From London in East of England

	Imports from London per annum (tonnes)	
	2006 (Actual)	2007 (Actual)
Bedfordshire & Luton	1,057,954	923,526
Thurrock	762,049	889,036
Essex & Southend	334,217	305,986
Hertfordshire	132,115	159,917
Cambridgeshire & Peterborough	99	35
Norfolk	0	0
Suffolk	0	0
Total East of England	2,286,434	2,278,500

Source: East of England Plan Review, 2009

3.5. Total Construction and Demolition Waste Arisings to be Managed

The total arisings to be managed are plan based figures and set by the Regional Spatial Strategy which is soon to be revoked. Future arisings for Essex (and Southend) are shown by type of waste arisings as seen in the following sub-sections. The evidence supporting the RSS figures, together with support from EERA provide the justification for the RSS figures to be provided below. The Environmental Report will contain both sets of figures for reference.

3.5.1. Construction and Demolition Waste Arisings and Capacity

The following table expresses the future tonnage of waste expected from construction and demolition sources. Information is provided on quantities to be accepted to landfill.

Table 4: Construction and Demolition Waste Arisings, 2008

Area	Total New Build Construction	Total Repair and Maintenance	Total Demolition	Total C&D Waste	Percentage of East of England Total
Essex	0.29mt	0.35mt	1.12mt	1.75mt	24.3%
Southend-on-Sea	0.04mt	0.04mt	0.14mt	0.21mt	3.0%
Total	0.33mt	0.39mt	1.26mt	1.96mt	27.3%
Percentage Total	16.5%	19.8%	63.7%		

Source: Essex County Council and Southend-on-Sea Borough Council Waste Development Document: Capacity Gap Compilation Final Report, 2010

Construction and Demolition waste arising in Essex made up 24.3% of the total amount of C&D waste created in the East of England in 2007 with the equivalent figure for Southend-on-Sea being 3%. In both cases the majority of this waste came from the complete demolition of existing sites. The majority of these facilities are those which process inert and non-inert C&D waste.

3.6. Waste Management Facilities in Essex and Southend-on-Sea

3.6.1. C&D Recycling facilities

There are 32 C&D Recycling facilities in the plan area. The 'Minerals Development Document: Contextual Baseline Report' undertaken by Essex County Council and formulating part of the evidence base for Essex County Council's Minerals Local Plan, highlights potential sources of construction wastes. These correspond to 5 Priority Areas for Regeneration within Essex County Council's administrative area and are located at Harlow, Basildon, Colchester, Clacton-on-Sea and Harwich. It could be perceived that there is a potential lack of facilities within sustainable locations in Essex to receive C&D waste from Harlow. Further sources of construction and demolition wastes occur at existing urban centres, disused airfields, in examples of road removal and maintenance and there may possibly be small amounts of imported C&D waste as a result of London Olympics 2012 re-development. There are 4 sites that have been permitted for C&D recycling (1 in Braintree, 1 in Chelmsford, 1 in Harlow and 1 in Tendring) but are not yet receiving waste.

3.6.2. Inert Landfill Sites

There are 8 inert landfill sites within the study area and 7 instances of golf course creation or expansion using inert material. Three of the landfill sites are currently in an operational period of restoration.

3.6.3. Non Hazardous Landfill Sites

There are 7 non hazardous landfill sites in the plan area, of which 6 include a landfill gas generation plant to produce electricity from naturally occurring methane.

3.7. Waste Arisings Scenarios

The Essex and Southend-on-Sea Waste Capacity Report (ECC 2010) identifies the waste needed to be managed to 2031 within the emerging Waste Local Plan for this plan area. Three scenarios have been used to forecast waste arisings and the capacity for waste management and disposal

that Essex and Southend will be required to plan for, reflecting the emerging situation and evidence. Using the three scenarios allows for flexibility and establishes best and worst case situations in Essex and Southend. The three scenarios respond to the different forecasts documented in the:

- The Adopted Regional Spatial Strategy (RSS) (2008)
- The Submission RSS (Submitted 2010 but now abolished)
- The Local Waste Strategy (OBC, 2009)

Table 5: Capacity Requirements for Essex and Southend-On-Sea

Broad Facility Type	Existing Potential Capacity (mtpa) Rounded	Required capacity by 2031 (mtpa) Rounded Up	
		Minimum (best case scenario)	Maximum (worst case scenario)
Transfer	1.64	1.20 (+0.0)	1.77 (+0.13)
Recycling	1.74 inc IWMF (+0.51)	1.43 (+0.0) inc IWMF (+0.0)	1.77 (+0.0) Inc IWMF (+0.0)
Composting	0.20 inc IWMF (+0.11)		
Construction & Demolition Recycling	1.36	1.67 (+0.31)	
Treatment	0.18 inc IWMF (+1.01)	0.51 (+0.33) Inc IWMF (+0.0)	1.00 (+0.82) Inc IWMF (+0.0)

Source: Essex County Council and Southend-on-Sea Borough Council Waste Development Document: Capacity Gap Compilation Final Report, 2010

Note: The values in brackets are the capacities of the 3 combined Integrated Waste Management Facilities (IWMFs) that have been granted planning permission, when fully operational and at full capacity.
'Potential' refers to the amount of facility space which can be used at the base date. This includes the capacity of all operational, non-operational with planning permission and recent or pending facilities.

Transfer Facilities - There is currently existing potential capacity of 1.64mtpa within Essex and Southend-on-Sea. This is in excess of the best-case scenario, and thus the minimum capacity that will be required by 2031. However, when considering the worst case scenario the plan area will require a further 0.13mtpa of transfer capacity by 2031.

C&D Recycling Facilities - There is currently a potential 1.36mtpa of C&D recycling capacity per annum. The only current projection for inert waste arisings is in the soon to be abolished RSS and this suggests there will be approximately 2mtpa of inert waste arising within Essex and Southend-on-Sea. The RSS required a 90% diversion of this waste stream from landfill by 2031. A progressive increase in capacity is required in C&D recycling facilities to nearly 1.67mtpa. The result is that by 2031 an increase in capacity of 0.31mtpa is required.

Treatment Facilities - In total, there is currently an existing potential 0.18mtpa treatment capacity within Essex and Southend-on-Sea. This is significantly below both the best and worst case scenarios, requiring 0.51mtpa million and 1mtpa respectively, by 2031. However, when the permitted IWMFs within the plan area are also considered, there is a potential of 1.01mtpa if all of these facilities are operational and at full capacity. The result is that there is enough planned treatment capacity in the best-case scenario (by 0.5mtpa). There would also be enough capacity in the worst case scenario. This would however only be by 0.19mpta and therefore there could be the need for additional facilities if all the IWMFs do not become operational or work at full capacity.

Table 6: Landfill Capacity Requirements for Essex and Southend-on-Sea

Broad Landfill Type	Existing Potential Capacity (million m^3) Rounded	Required capacity by 2031 (Rounded Up)	
		Minimum (best case scenario)	Maximum (worst case scenario)
Landfill – Inert	2.17	+3.70 million m^3 from early 2015/16	+5.00 million m^3 from early 2015/16
Landfill - Non Hazardous	15.10	+0.79 million m^3 from 2024/25	+4.90 million m^3 from early 2018/19

Source: Essex County Council and Southend-on-Sea Borough Council Waste Development Document: Capacity Gap Compilation Final Report, 2010

Inert Landfill - The current permitted void space for inert landfill is 2.17 million m^3. This is estimated to be full by early 2015/16 in the best-case scenario and mid 2015/16 in the worst. In the best-case scenario, the minimum amount of void space required will be 3.7 million m^3 and the maximum required for the worst-case scenario will be 5,300m^3, until 2031.

Non Hazardous Landfill - The total estimated void space is 15.1 million m^3 at 31 March 2009. In the best-case scenario, it is estimated that a total of 0.79 million m^3 of void space must be available by 2027/28 to 2030/31. However, in the worst-case scenario, it is estimated that this void will be full by 2018/19 and the plan area will require a further 4.93 million m^3 of capacity space by 2031.

3.8. Summary

In 2011 there were a total of 299 waste management facilities within Essex. These consisted of 110 waste transfer facilities; 99 Recycling Sites; 14 Composting Facilities; 32 C&D Recycling Facilities; 20 Waste Treatment Sites; 9 Energy from Waste Facilities; and 15 Landfill Sites. There were 10 new waste management facilities approved between 1 April 2010 and 31 March 2011. According to the most recent Annual Monitoring Report the new facilities have created an additional 0.247mtpa recycling and composting capacity and a total landfill disposal capacity of 3.287mt.

Essex currently has existing capacity to manage all types of waste (municipal, commercial, industrial and construction/demolition wastes), including recycling and composting capacity, and inert and non-hazardous landfill void space. The majority of predicted waste arisings are anticipated to come from construction and demolition (C&D) at approximately 50% of the total waste produced, followed by commercial and industrial activities. Municipal waste is predominantly from households and is expected to make up approximately 20% of total waste produced. In 2010/11 nearly 50% of household waste in Essex was sent to landfill, with 30% recycled and 20% composted.

Construction and Demolition waste arising in Essex made up 24.3% of the total amount of C&D waste created in the East of England in 2007 with the equivalent figure for Southend-on-Sea being 3%. In both cases the majority of this waste came from the complete demolition of existing sites. The majority of these facilities are those which process inert and non-inert C&D waste.

Potential sources of construction waste correspond to 5 Priority Areas for Regeneration within Essex County Council's administrative area and are located at Harlow, Basildon, Colchester, Clacton-on-Sea and Harwich. It could be perceived that there is a potential lack of facilities within sustainable locations in Essex to receive C&D waste from Harlow. Further sources of construction and demolition wastes occur at existing urban centres, disused airfields, in examples of road removal and maintenance and there may possibly be small amounts of imported C&D waste as a result of London Olympics 2012 re-development. There are 4 sites that have been permitted for C&D recycling (1 in Braintree, 1 in Chelmsford, 1 in Harlow and 1 in Tendring) but are not yet receiving waste.

There is currently a potential 1.36mtpa of C&D recycling capacity per annum. The only current projection for inert waste arisings is in the soon to be abolished RSS and this suggests there will be approximately 2mtpa of inert waste arising within Essex and Southend-on-Sea. The RSS required a 90% diversion of this waste stream from landfill by 2031. A progressive increase in capacity is required in C&D recycling facilities to nearly 1.67mtpa to achieve this. The result is that by 2031 an increase in capacity of 0.31mtpa is required.

4. Cultural Heritage

4.1. Introduction

The historic environment should be effectively protected and valued for its own sake, as an irreplaceable record which contributes to our understanding of both the present and the past. Cultural heritage adds to the quality of life, by enhancing the local scene and sustaining a sense of local distinctiveness, which is an important aspect of the character and appearance of towns, villages and countryside and should not be compromised by the insensitive location of development. It also has an importance for leisure and recreation. The location and scale of new mineral management facilities may have an adverse impact on nearby features of a cultural heritage value. It is important that new facilities respond to this in determining the location of new proposed site allocations or incorporate necessary mitigation to offset any negative externalities.

The Essex Historic Environment Record (EHER), maintained by Essex County Council, is a computerised database of all listed and other historic buildings and all known archaeological sites, historic parks and gardens and other historic landscape features in the county and currently holds over 36,000 records.

4.2. Listed Buildings

All buildings built before 1700 which survive in anything like their original condition are listed, as are most of those built between 1700 and 1840. The criteria become tighter with time, so that post-1945 buildings have to be exceptionally important to be listed. A building normally has to be over 30 years old to be eligible for listing. New mineral management facilities and sites should not negatively impact on the setting of listed buildings aesthetically or through operational noise or nuisance.

Table 7: Composition of Listed Buildings in Essex

	Type of Listed Building			Total
Admin Area	Grade I	Grade II*	Grade II	
Essex	247	700	12,028	12,975
England	9,437	22,128	345,570	377,135

Source: Essex County Council Historic Environment Team & English Heritage, February 2012

The total number of listed buildings or groups of buildings in England is over 377,000 and in Essex there are around 13,000. Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Only 1.9% of all listed buildings in Essex are Grade I. 5.3% have been designated as Grade II* buildings which are particularly important buildings of more than special interest and the rest are Grade II listed which means they are nationally important and of special interest.

There is a fairly even distribution of listed buildings within Essex; however there is a greater concentration to the north particularly in the districts of Uttlesford and Braintree and also around historic towns such as Colchester.

4.3. Heritage At Risk Register

The Heritage at Risk Register (HARR) contains details of buildings known to be ‘at risk’ through neglect and decay, or vulnerable of becoming so. The objective of the register is to outline the state of repair of these buildings with the intention of instigating action towards securing their long term conservation. Table 8 illustrates the number of listed buildings ‘at risk’. The register addresses a ‘moving target’ as some buildings which are repaired and taken off, others become ‘at risk’ and are added. The success of the Register may be measured by the number of buildings added, furthermore both the success and failure of the conservation measures employed is reflected in the numbers removed.

Table 8: Number of Buildings on the Building At Risk Register 2011 - 2009

Administrative Area	At Risk		
	2011	2010	2009
Basildon	3	3	4
Braintree	22	19	21
Brentwood	8	9	9
Castle Point	0	0	0
Chelmsford	22	25	15
Colchester	41	48	49
Epping Forest	24	23	23
Harlow	4	4	2
Maldon	12	15	10
Rochford	8	8	7
Tendring	35	33	26
Uttlesford	14	18	16
Plan Area Total	193	205	181

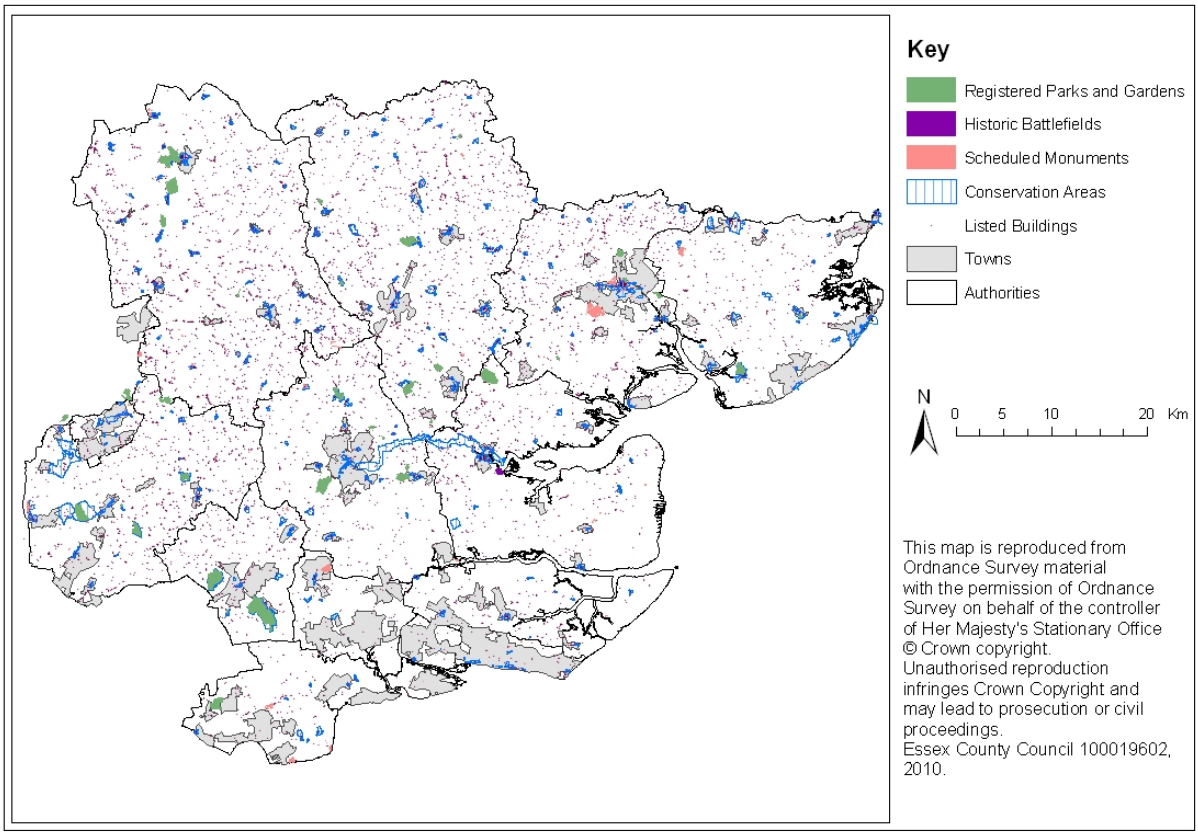
Source: Heritage At Risk in Essex Register 2011

Between 2010 and 2011 there was a decrease in the total number of heritage assets 'at risk' to 193 in Essex. The most significant removal from the list, as stated in the report, is in Colchester, where a total of 9 buildings have been removed from the Register due to repairs having been carried out successfully. Additions to the register include St Osyths Park in Tendring, which is the first Registered Park and Garden in Essex to be added to the County Heritage at Risk Register and the Conservation Area in Sible Hedingham in the district of Braintree.

4.4. Archaeology, Recorded Sites and Finds in Essex

As with rest of the UK, it is true to say that the majority of archaeological sites and deposits in Essex remain buried, hidden and thus preserved. However, the known archaeological resource in the county is very varied and highly significant. There are over 36,000 records of archaeological sites and finds, recorded on the Essex Historic Environment Record (EHER) for the county.. The archaeological deposits range in date from the Palaeolithic, through to structures related to the Cold War. However, it should also be remembered that the EHER represent only the known deposits with many new sites being identified each year. Archaeological sites (and their setting) constitute a finite, non-renewable resource, vulnerable to damage.

Figure 8: Scheduled Monuments, Conservation Areas, Historic Parks & Gardens and Listed Buildings in Essex, 2010



Source: Essex County Council 2010

4.5. Scheduled Monuments

Scheduled Monuments (SMs) are sites of national importance and protected by the Ancient Monuments and Archaeological Areas Act 1979. SMs are designated to preserve the monument for the future and protect it from damage, destruction or any unnecessary interference. Mineral management facilities and new sites will have to respect the location of any SMs in light of perceived interference. There are 279 SMs in Essex, ranging from prehistoric burial mounds to unusual examples of World War II defensive structures.

4.6. Conservation Areas

Essex currently has 193 designated Conservation Areas. The Conservation Areas are defined as historical town centres and buildings having 'special architectural or historical interest, the character of which is desirable to preserve or enhance' which are protected under the Listed Buildings and Conservations Areas Act (1990). The objective of the Conservation Area designation is to ensure that the character of the defined area is preserved from developments which do not preserve or enhance its character. Mineral activities should not negatively affect the quality and condition of conservation areas.

4.7. Historic Parks and Gardens

These are designated by English Heritage and defined as "a park or garden of special historic interest". They are graded I (highest quality), II* or II. There are currently 38 historic parks and gardens in Essex. Of the 38, six have been graded II* and one, Audley End, has been awarded grade I status which is the highest quality.

4.8. Historic Battlefields

There is one registered battle site within Essex, located at Northey Island in the Blackwater Estuary. It is known as the Battle of Maldon which took place in 991AD between the Saxons and the Vikings who wanted to invade England. The battlefield site is situated within a number of designations: the Coastal Protection Belt, Special Landscape Area and a SSSI.

4.9. Summary

The location and scale of new mineral management facilities have the potential to impact on nearby features of a cultural heritage value. The location of mineral sites must not have any non-mitigateable adverse effect on a site of international importance (World Heritage Sites) or a site or building with a nationally recognised designation (Scheduled Monuments, Conservation Areas, Listed Buildings, Registered Historic Battlefields and Registered Parks and Gardens).

The total number of listed buildings or groups of buildings in England is over 377,000 and in Essex there are around 13,000. Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Only 1.9% of all listed buildings in Essex are Grade I. 5.3% have been designated as Grade II* buildings which are particularly important buildings of more than special interest and the rest are Grade II listed which means they are nationally important and of special interest.

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5. Landscape

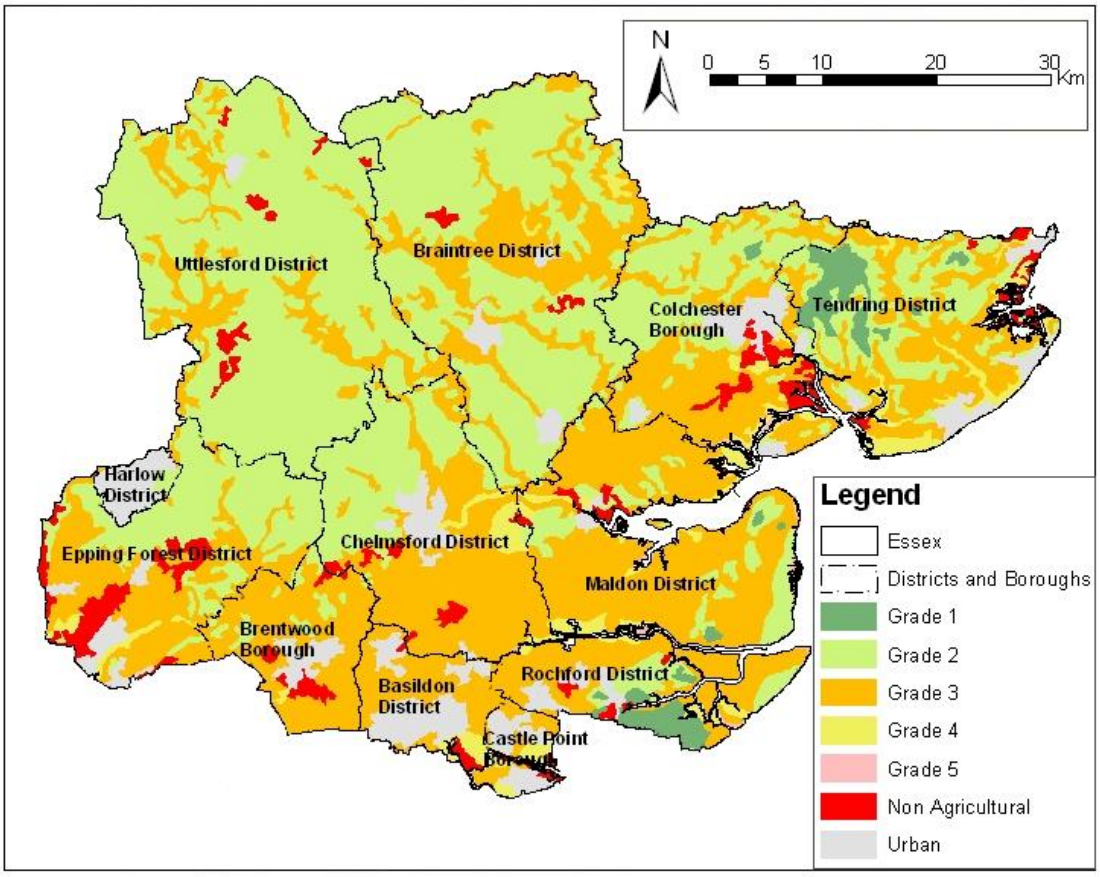
5.1. Introduction

Since the end of the last Ice Age, natural processes and successive human use have shaped the Essex landscape into its present form. The result is a combination of physical components such as landform, visible spatial components and non visible spatial components which can incorporate sound and cultural associations. It is the particular combination of these aspects that determines an areas distinctive character, which can then be classified into wider character areas, or remain as distinct unique areas. Within the Essex landscape there are many areas of special interest which have been designated and protected from inappropriate development. The scale and location of mineral sites and activities will have to adhere to such landscape interest, being either unsuitable for development in certain areas, requiring mitigation to offset any negative impacts, or proven that the benefits of facilities at certain locations outweigh the loss of landscape amenity.

5.2. Agricultural Land

Soil types within Essex have also helped to shape the landscape, wildlife and economy of the County. New mineral related activities and sites should not result in a loss of the County's most fertile land through its location or any potential pollution. Agricultural Land is classified by quality in a grading system with Grade 1 being the highest quality and Grade 5 the lowest.

Figure 9: Agricultural Land Classification in Essex



Source: Essex County Council, 2008

In Essex, 75% of the land area is considered agricultural land and over half of this is of high grade soils as shown in the figure above.

There are significant areas of Grade 1 agricultural land within Tendring and Rochford Districts, and smaller areas within Maldon District and Colchester Borough. Such land would not be suitable for mineral sites and associated facilities and activities.

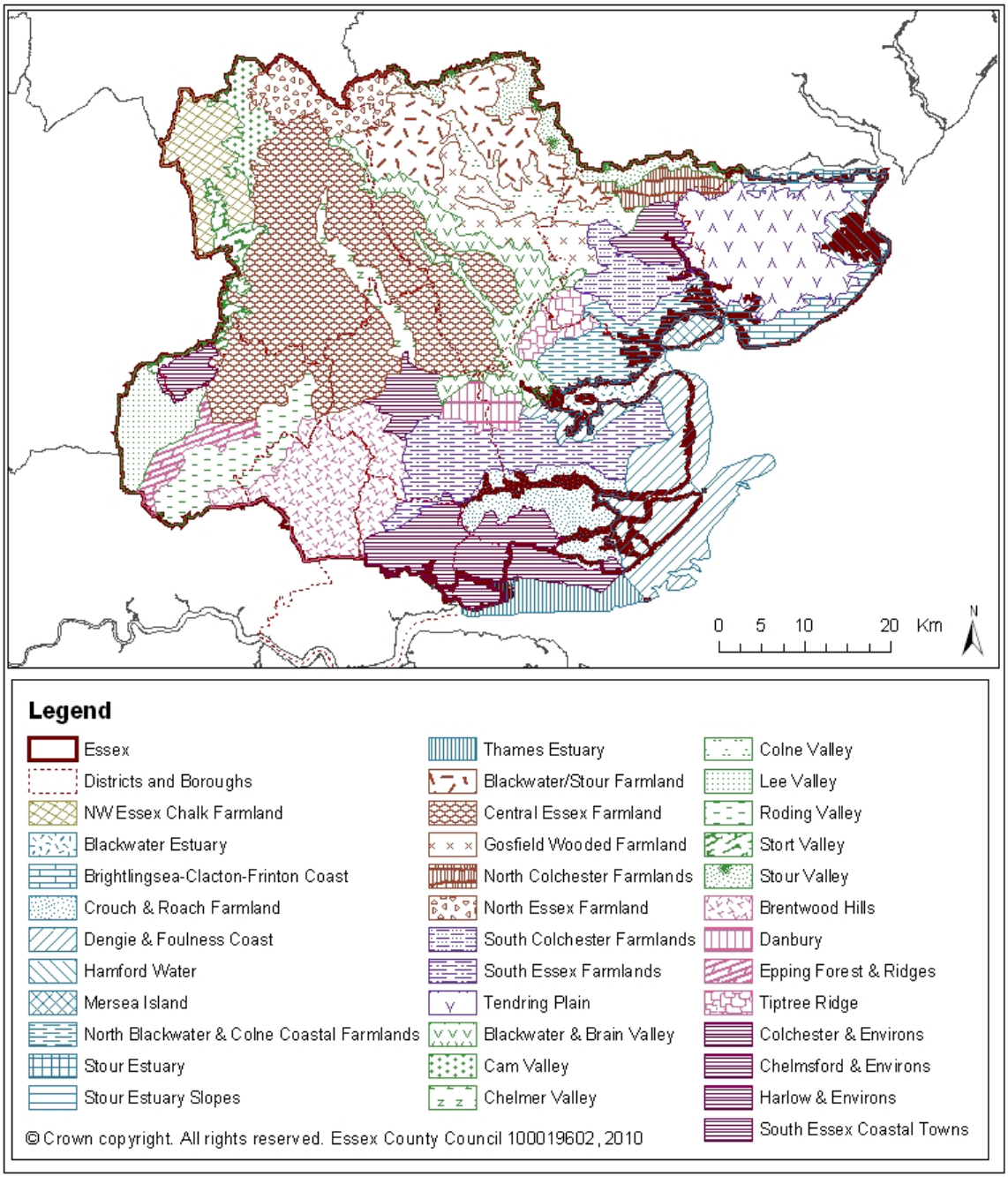
The majority of agricultural land within Essex can be broadly classified as Grade 2 in the north and Grade 3 to the south. This is related to the location of the Essex till, with better quality land located in the north-west of the County.

Much of Harlow District is classified as an urban area, and to a lesser degree so too is Basildon District and Castle Point Borough. Lands classified as non-agricultural are located within all districts, with the exception of Harlow. Low grade, undesignated non-agricultural and underused agricultural land would be preferable for the location of new mineral sites and strategic mineral facilities.

5.3. Landscape Character Areas

The Essex Landscape Character Assessment (Chris Blandford Associates, 2003) is based on the Countryside Agency's guidance, and establishes a 'baseline' of the existing character of the Essex landscape. The assessment involved a broad review of the landscape identifying 35 'Landscape Character Areas' (LCAs) within Essex (Figure 10). They are areas with a recognisable pattern of landscape characteristics, both physical and experiential, that combine to create a distinct sense of place.

Figure 10: Landscape Character Areas in Essex



Source: Essex County Council, 2010

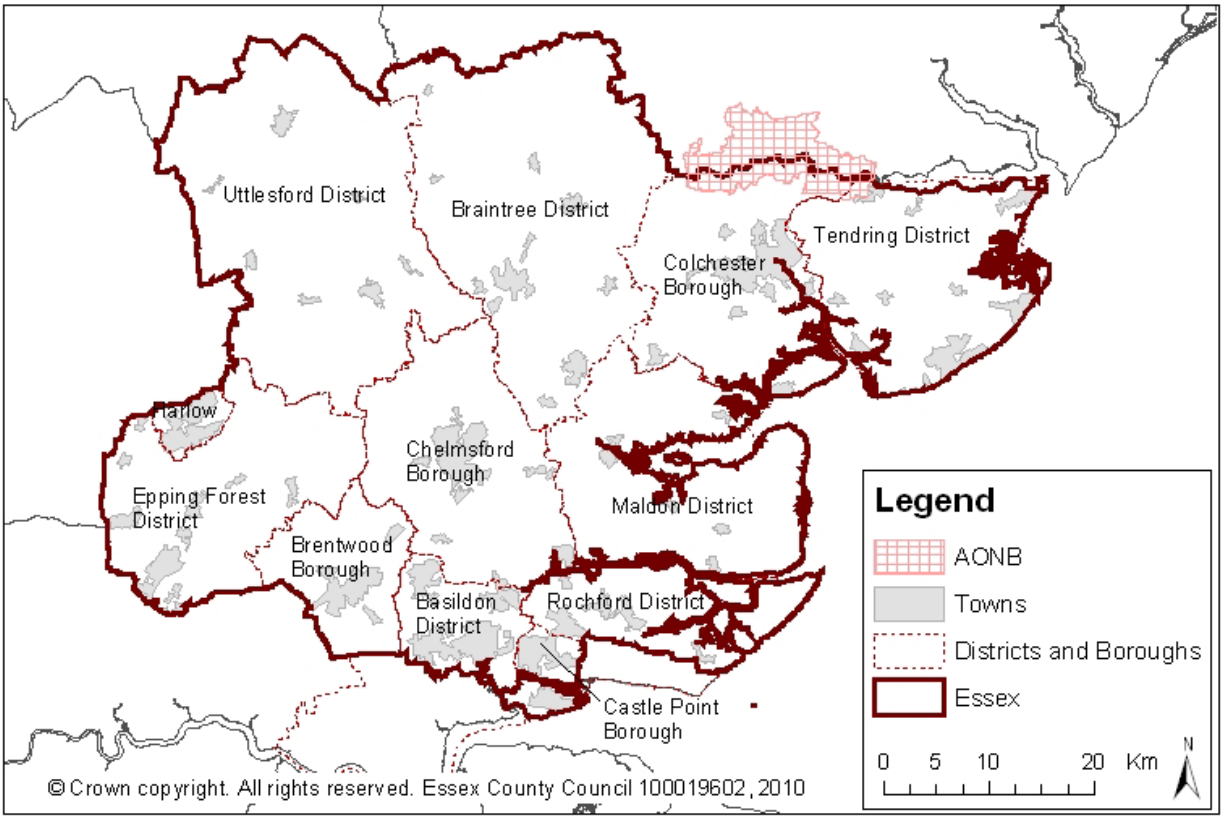
Further to the Landscape Character Assessment carried out in 2003 and the coastal character assessment in 2005, a number of Essex districts, namely Braintree, Brentwood, Chelmsford, Maldon and Uttlesford, underwent a combined Landscape Character Assessment in 2006. This report divides the County's Landscape Character Areas into a further twenty-two smaller local Landscape Character Areas. This information can be used to determine the sensitivity of certain landscapes and areas to development and can be utilised in the appraisal of new mineral extraction sites.

5.4. Areas of Outstanding Natural Beauty

Areas of Outstanding Natural Beauty (AONBs) are described by Natural England as areas of high scenic quality that have statutory protection in order to conserve and enhance the natural beauty of their landscapes.

There are 36 AONBs in England covering approximately 15% of the country. These have been designated for protection under the Countryside and Rights of Way Act 2000.

Figure 11: Area of Outstanding Natural Beauty



Source: Essex County Council, 2010

In Essex there is one AONB, Dedham Vale, which lies on the border of Suffolk and Essex and covers an area of 90 sq km. It has been designated as such because it is an exceptional example of a lowland river valley. It has an extraordinary range of different scales and special features giving rise to distinctive landscape characters - rolling fields on the valley slopes, lush and sheltered valley-floor meadows and open marshes and intimate tributary valleys of the River Stour. Due to the location of Dedham Vale and the small area of land in the County currently under this designation, it can be seen as unlikely that new mineral sites and associated facilities will be located in such an area that would negatively impact on any AONB.

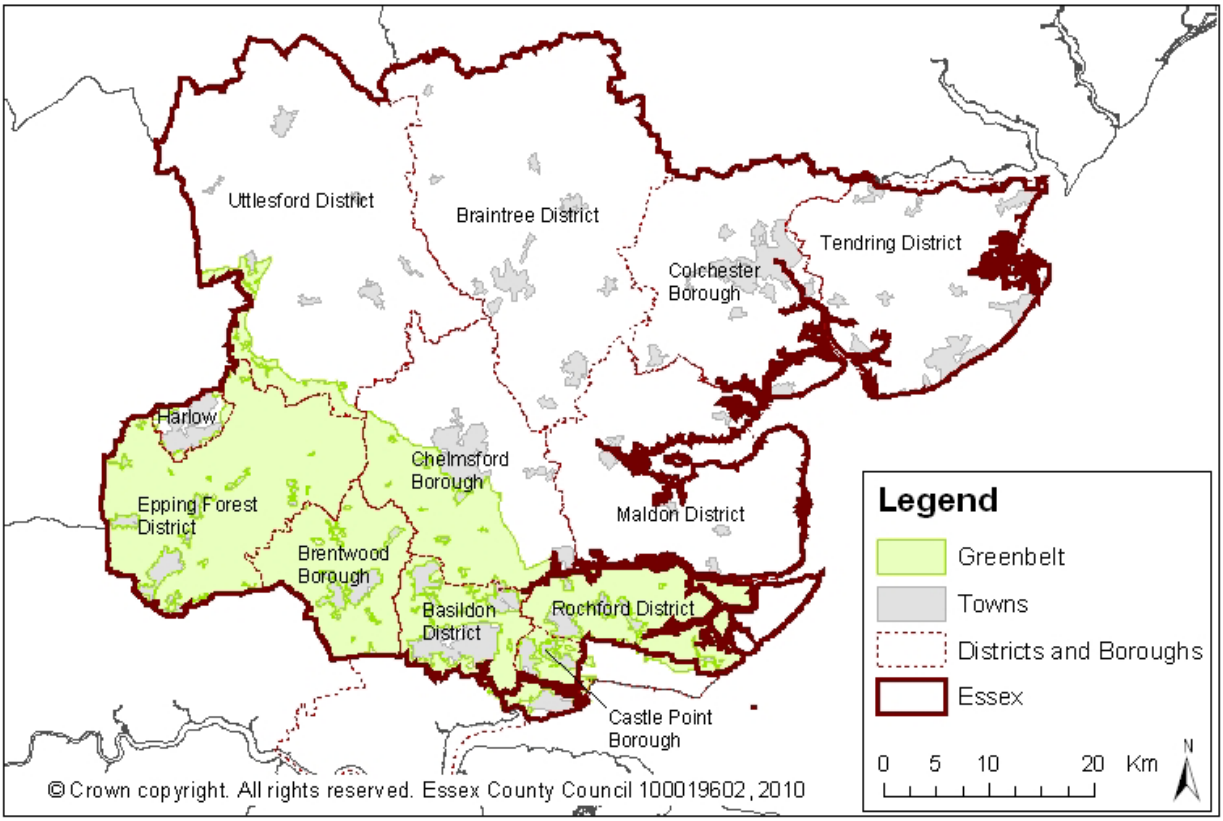
5.5. Green Belt

The largest green belt within the UK is the Metropolitan Green Belt around London which includes a large area of land in Essex. It is protected by planning policies within Local Plans which enforce restrictions on certain development within the designated area. There are five purposes of including land in Green Belts as set out in NPPF (2012). They are:

- to check the unrestricted sprawl of large built-up areas;
- to prevent neighbouring towns from 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.

Figure 12 shows the coverage of Green Belt as of 2001 in Essex.

Figure 12: Metropolitan Green Belt Coverage in Essex



Source: Essex County Council, 2010

There are 8 local authorities in the plan area that have land classified as being within the Metropolitan Green Belt. The largest amounts are in Brentwood, Chelmsford and Rochford

Table 9: Area of Designated Green Belt Land by Local Planning Authority

Local Planning Authority	Area (hectares)	Local Planning Authority	Area (hectares)
Basildon	7,000	Harlow	640
Brentwood	13,700	Rochford	12,760
Castle Point	2,750	Uttlesford	3,810
Chelmsford	12,900	Essex	85,240
Epping Forest	31,680		

Source: CLG, 31st March 2011

Of the 85,240 hectares of greenbelt in Essex, the biggest proportions can be found in Epping Forest, (37%) and Brentwood (16%).

5.6. Protected Lanes

Protected lanes have significant historic and landscape values. They generally originate from pre-historic track ways, which have been in continual (if lighter) use since. Protected lanes are often narrow, sunken and enclosed by a combination of mixed deciduous hedges and mature trees, ditches and raised verges that can be indications of great age.

The volume weights and speed of traffic is often limited to preserve the special character and due to their age and use they also have great biological value. This would distance their use as access routes for mineral related vehicles.

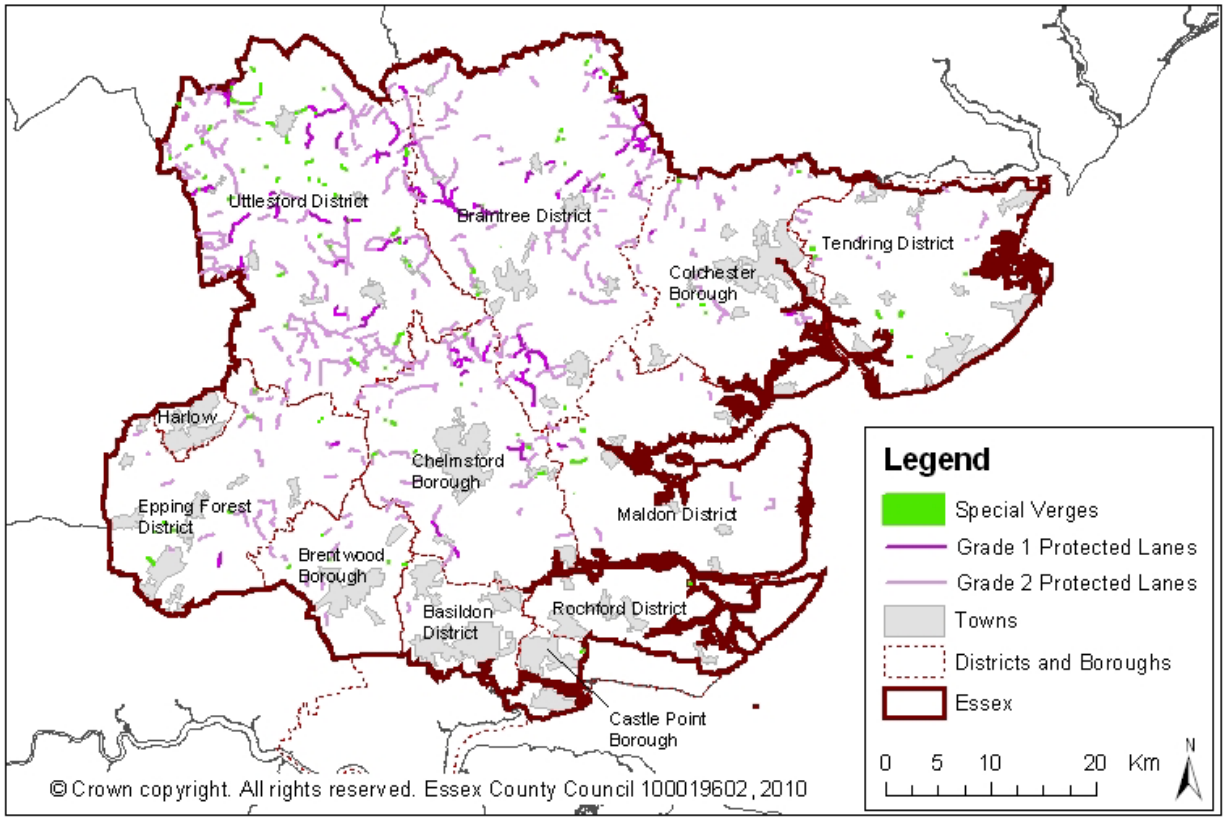
5.7. Special Verges

Roadside Verges are important and if sensitively managed they can increase the biodiversity of the verges themselves and from that the surrounding countryside. The reason for this is that verges can act as corridors interlinking fragmented or isolated habitats. In terms of wildlife value, verges can be split into three broad types:

- Landscaped and intensively managed verges: poorest quality.
- Recently created verges left to colonise naturally: vary in ecological value.
- Ancient verges: often of high ecological value.

With this in mind, in the 1970s, Essex County Council Highways Agency, Nature Conservancy Council and Essex Wildlife Trust identified a number of important verges which were subsequently designated as Special Roadside Nature Reserves. They aim to protect the future of rare and uncommon flowers growing on them. As such, access routes for mineral related vehicles should seek to deviate away from these verges. There are over 100 special verges designated in Essex.

Figure 13: Special Verges and Protected Lanes in Essex



Source: Essex County Council, 2010

5.8. Summary

Within the Essex landscape there are many areas of special interest which have been designated and protected from inappropriate development. The scale and location of mineral facilities and activities will have to adhere to such landscape interest, being either unsuitable for development in certain areas, requiring mitigation to offset any negative impacts, or proven that the benefits of facilities at certain locations outweigh the loss of landscape amenity.

New mineral related activities and sites should not result in a loss of the County's most fertile land through its location or any potential pollution. Agricultural Land is classified by quality in a grading system with Grade 1 being the highest quality and Grade 5 the lowest. There are significant areas

of Grade 1 agricultural land within Tendring and Rochford Districts, and smaller areas within Maldon District and Colchester Borough. The majority of agricultural land within Essex can be broadly classified as Grade 2 in the north and Grade 3 to the south. Much of Harlow District is classified as an urban area, and to a lesser degree so too is Basildon District and Castle Point Borough. Lands classified as non-agricultural are located within all districts, with the exception of Harlow. Low grade, undesignated non-agricultural and underused agricultural land would be preferable for the location of new strategic mineral facilities.

The Essex Landscape Character Assessment (Chris Blandford Associates, 2003) is based on the Countryside Agency's guidance, and establishes a 'baseline' of the existing character of the Essex landscape. The assessment involved a broad review of the landscape identifying 35 'Landscape Character Areas' (LCAs) within Essex. They are areas with a recognisable pattern of landscape characteristics, both physical and experiential, that combine to create a distinct sense of place. Further to the Landscape Character Assessment carried out in 2003 and the coastal character assessment in 2005, a number of Essex districts, namely Braintree, Brentwood, Chelmsford, Maldon and Uttlesford, underwent a combined Landscape Character Assessment in 2006. This report divides the County's Landscape Character Areas into a further twenty-two smaller local Landscape Character Areas. This information can be used to determine the sensitivity of certain landscapes and areas to development and can be utilised in the appraisal of new mineral management sites.

Areas of Outstanding Natural Beauty (AONBs) are described by Natural England as areas of high scenic quality that have statutory protection in order to conserve and enhance the natural beauty of their landscapes. In Essex there is one AONB called Dedham Vale which lies on the border of Suffolk and Essex covering an area of 90 sq km. Due to the location of Dedham Vale and the small area of land in the County currently under this designation, it can be seen as unlikely that new mineral sites will negatively impact on any AONB.

The largest green belt within the UK is the Metropolitan Green Belt around London which includes a large area of land in Essex. It is protected by planning policies within Local Plans which enforce restrictions on certain development within the designated area. There are 8 local authorities in the plan area that have land classified as being within the Metropolitan Green Belt. The largest amounts are in Epping Forest and Brentwood.

Protected lanes have significant historic and landscape values. They generally originate from pre-historic track ways, which have been in continual (if lighter) use since. Protected lanes are often narrow, sunken and enclosed by a combination of mixed deciduous hedges and mature trees, ditches and raised verges that can be indications of great age. The volume weights and speed of traffic is often limited to preserve the special character and due to their age and use they also have great biological value. This would distance their use as access routes for mineral related vehicles.

Roadside Verges are important and if sensitively managed they can increase the biodiversity of the verges themselves and from that the surrounding countryside. The reason for this is that verges can act as corridors interlinking fragmented or isolated habitats. With this in mind, in the 1970s, Essex County Council Highways Agency, Nature Conservancy Council and Essex Wildlife Trust identified a number of important verges which were subsequently designated as Special Roadside Nature Reserves. They aim to protect the future of rare and uncommon flowers growing on them. As such, access routes for mineral related vehicles should seek to deviate away from these verges. There are over 100 special verges designated in Essex.

6. Biodiversity

6.1. Introduction

Essex is predominantly rural in character with a diverse wildlife. There are sites designated as internationally, nationally and locally important due to the habitats and species present. The Essex coastline affords international protection due to a series of saltmarshes, mudflats, sandflats, lagoons and estuaries which are not only important examples of habitats but are home to over 100,000 migratory birds. Conservation of sites and designations of biodiversity value have an important role within the planning process, land management, and controlling development pressure. Mineral management facilities and related activities need to respond to these designations in scale, location and any associated impacts that could affect biodiversity, flora and fauna and bird strike issues surrounding landfill sites.

6.2. Flora and Fauna

The Essex Biodiversity Action Plan (EBAP) is currently being re-written at the time of compiling this baseline, and the original 1999 Action Plan is now withdrawn. A sub-group was formed in May 2006 to review the species and habitats of Essex Biodiversity Action Plan and to revise the format. The new format will include targets and actions are intended to be realistic and achievable. Habitat groups have been formed to frame the review process: Lowland Grassland, Lakes and Ponds, Rivers, Wetlands, Coastal, Marine, Urban and Brownfield. Each Group will contain sub-plans for more specific habitats. There will be no Species Action Plans as species will be addressed within the habitats where they are found.

In addition to the recognition of priority species within the EBAP there is also a comprehensive inventory of species that are threatened with extinction. Nationally these are compiled into Red Data Books based on specific groups of animals or plants. An Essex wide Red Data List has been compiled and lists over 6,000 species including those on the national list but also species that are not but are present only in a small number of sites in Essex or are in decline.

The species in the Red Data Books are found in a number of different types of areas across Essex. Hotspots include the Stour Estuary; in the Epping Forest and Lee Valley region; the Dagnam Park, South Weald, Navestock, Weald Park and Curtismill Green area; the Stort Valley and Hatfield Forest; Hylands Park; the Danbury Ridge; Halstead and Sible Hedingham area. Brownfield sites are also considered important, particularly in the Thames Gateway where many Red Data Book, Nationally Scarce and Essex Red Data species have been recorded. Such sites are also home to species on the UK BAP such as the Shrill Carder Bee *Bombus sylvarum*, the Brown-banded Carder Bee *Bombus humilis*, the picture winged fly *Dorycera graminum*, the solitary wasps *Cerceris quinquefasciata* and *C. quadricincta* and the ground beetle *Anisodactylus poeciloides*.

Development would be inappropriate in locations where the identified habitats and species would be negatively affected by road traffic, noise and vibration, hedgerow, farmland or grassland loss, the potential pollution of groundwater or water courses or where development would require the excessive management of vegetation as a consideration.

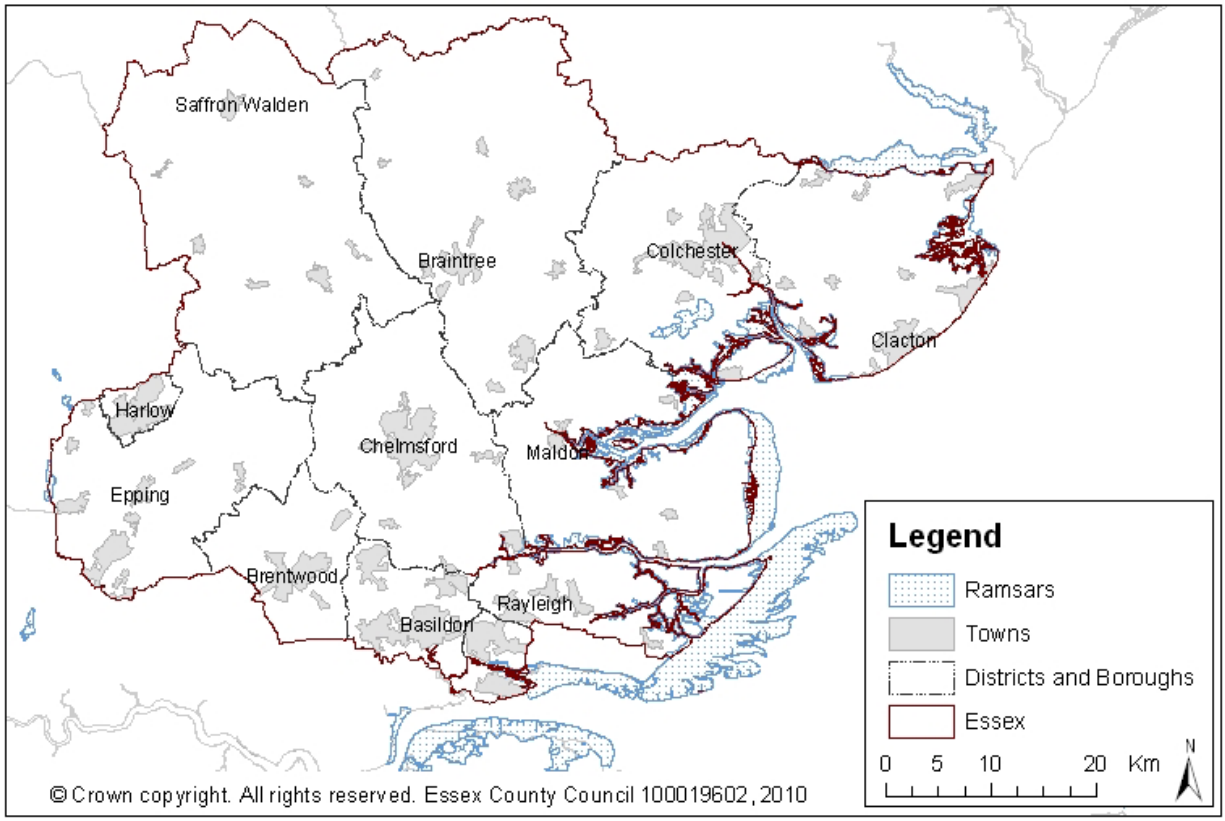
6.3. Land Designations

6.3.1. Ramsar Sites

Ramsar sites are wetlands of international importance designated under the Ramsar Convention which have a high degree of protection. They often incorporate Special Protection Areas (SPAs) and Special Areas for Conservation (SACs).

In Essex there are 10 Ramsar sites as shown in Figure 14 which cover approximately 30,524ha and include coastal areas, estuaries, rivers and lakes/reservoirs. These include Hamford Water, parts of the Colne and Blackwater estuaries, and the Dengie Marshes. Development is not suitable on such sites or in any location that may see a decline in their habitat quality.

Figure 14: Ramsar Sites in Essex



Source: Essex County Council, 2010

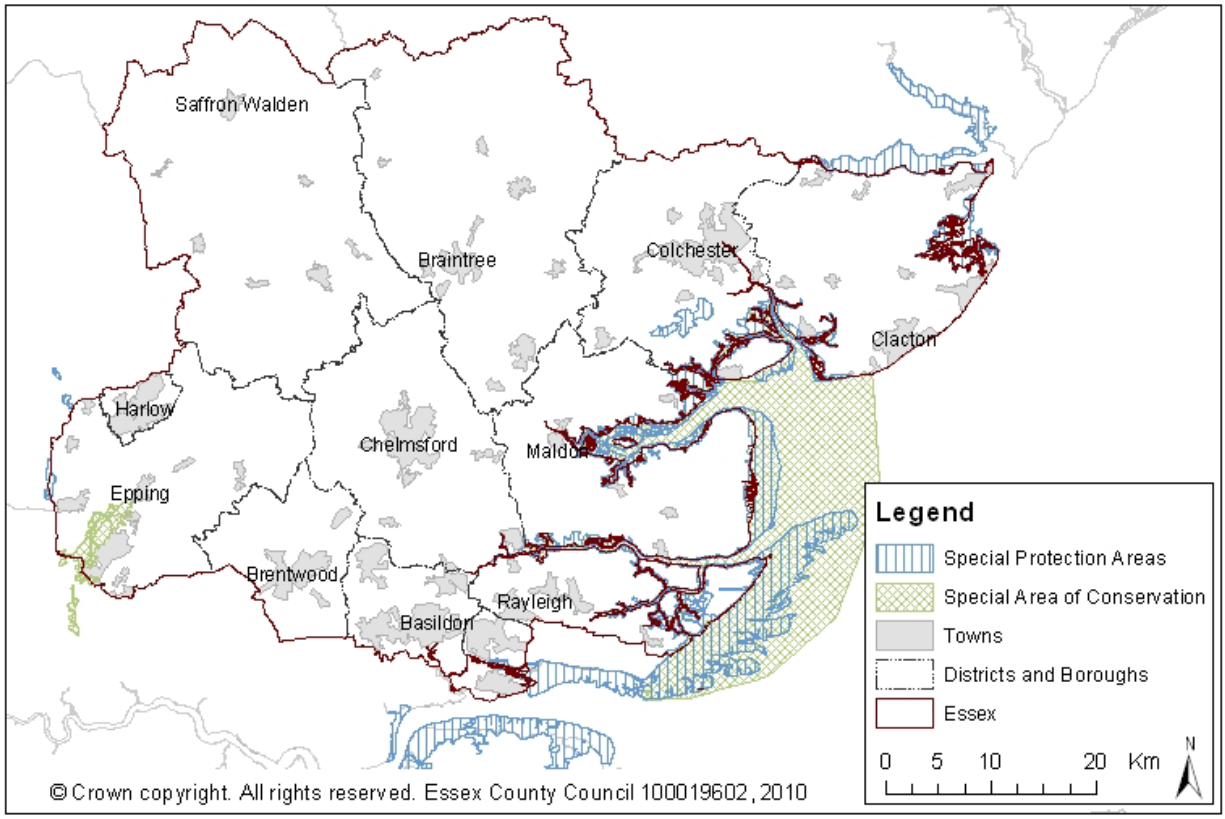
6.3.2. Special Protection Areas and Special Areas for Conservation

Special Protection Areas (SPAs) are internationally protected sites which are classified in accordance with Article 4 of the EC Directive on the Conservation of Wild Birds (79/409/EEC). SPAs are designated to protect rare and vulnerable birds and for regularly occurring migratory species. They are also often designated as Ramsar sites and comprise areas of estuaries and coasts. The majority of the Essex coastline has been designated as part of the Mid-Essex Coast Phase, which is made up of 5 separately designated SPAs. Combined these cover an area of approximately 23,000 ha.

Special Areas for Conservation (SACs) are sites of international importance designated under the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). There are two SACs in the County: Epping Forest and the Essex Estuary.

The designated SPAs and SACs are shown in Figure 15. Together the SPAs and SACs form 'Nature 2000', a European wide network of areas of special nature conservation interest. Due to the high level of protection that these designations are given appropriate measures to reduce potential adverse impacts arising from development proposals are required.

Figure 15: Special Protection Areas and Special Areas for Conservation in Essex

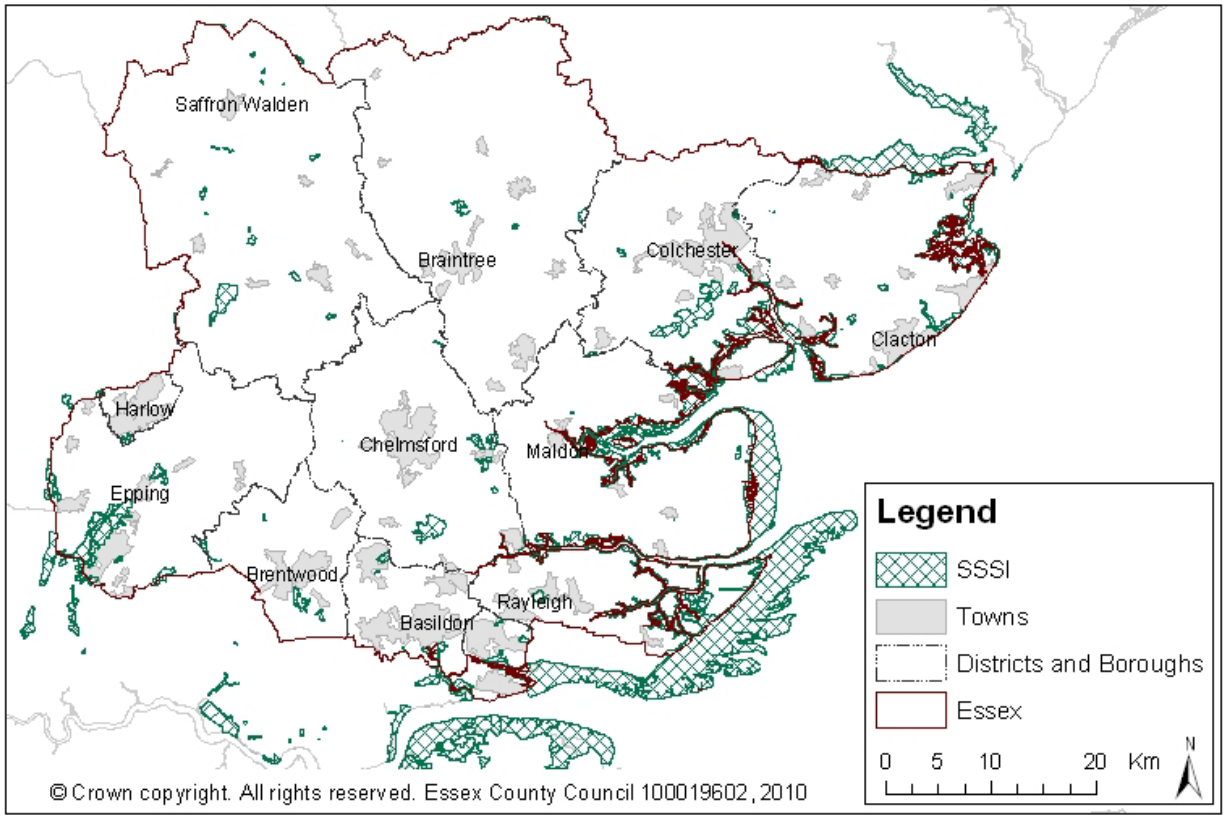


Source: Essex County Council, 2010

6.3.3. Sites of Specific Scientific Interest

Sites of Special Scientific Interest (SSSIs) are designated areas of land which are considered to be of special interest due to their fauna, flora, geological and/or physiographical features. In Essex there are 81 SSSIs covering a total of approximately 36,322 ha, the largest proportion of which are along the coastline as shown in Figure 16. There are over 4,000 SSSIs in England.

Figure 16: SSSIs in Essex



Source: Essex County Council, 2010

Table 10: Condition of SSSIs in Essex, 2012

Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed
98.15%	57.81%	40.34%	0.80%	1.04%	0.00%

Source: Natural England, October 2012

The success of SSSIs is monitored by Public Service Agreement (PSA) targets. In accordance with the PSA, SSSIs are categorised on a scale of five alternatives ranging from favourable to destroyed. A SSSI is deemed to be meeting the PSA target by Natural England if 95% or more of the total area is classed as "Favourable" or "Unfavourable Recovering". Essex is currently meeting this target, with 98.15% of all SSSIs in the County being in a favourable or unfavourable but recovering condition. 1.04% of the County's total area of SSSIs is unfavourably declining although none has been lost. It is important that new development, particularly concerning mineral activity, does not contribute to the decline of any SSSI through inappropriate location or through associated noise, vibration and pollution.

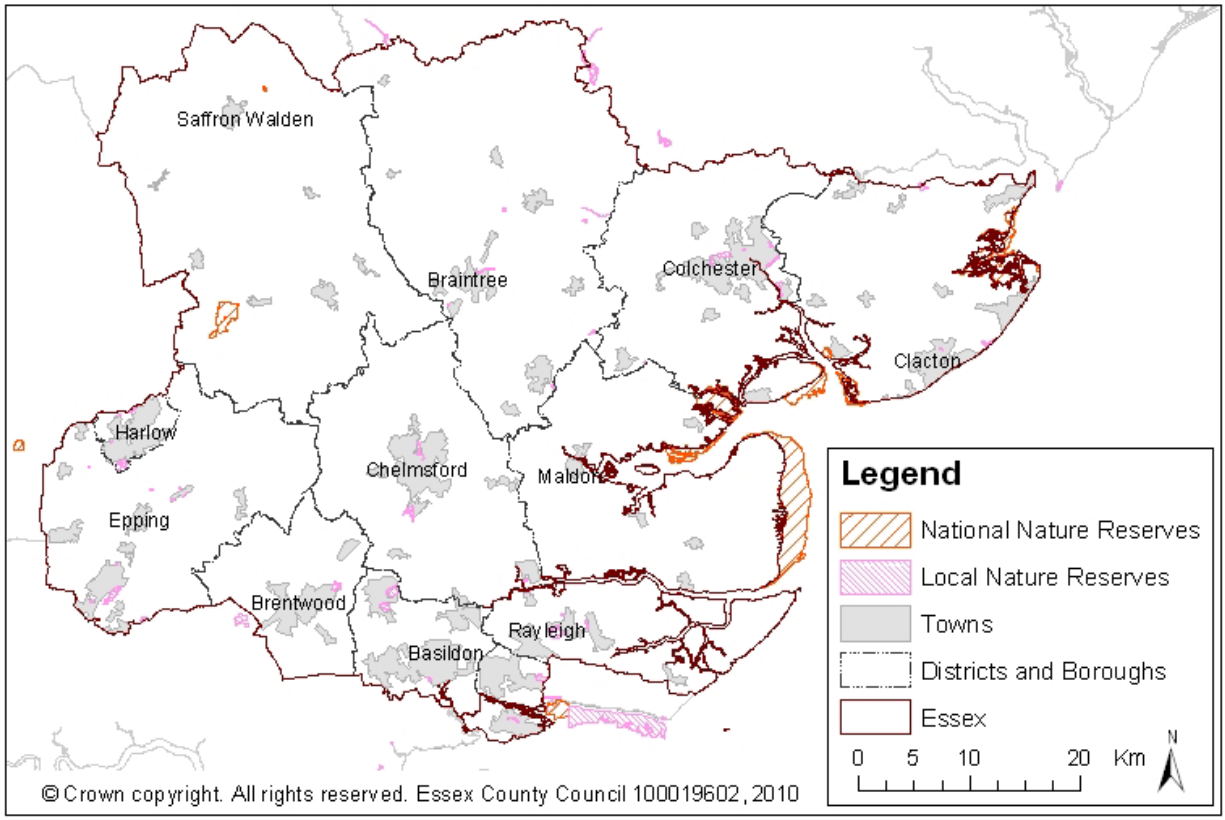
6.3.4. National Nature Reserves

Natural England is the body empowered to declare National Nature Reserves (NNRs) in England, the Reserves being a selection of the very best parts of England's Sites of Special Scientific Interest. It is this underlying designation which gives NNRs their strong legal protection. The majority also have European nature conservation designations.

There are seven NNRs located in Essex. They are the Blackwater Estuary, Colne Estuary, Dengie, Hales Wood, Hamford Water, Hatfield Forest and Leigh. It is important that new primary extraction

sites and associated activities do not negatively impact upon these designations through inappropriate location or through associated noise, vibration and pollution.

Figure 17: National Nature Reserves and Local Nature Reserves in Essex



Source: Essex County Council, 2010

6.3.5. Local Nature Reserves

Local Nature Reserves (LNRs) are designated by local authorities in conjunction with Natural England in recognition of their high interest in the local context for their wildlife or wildlife education value; or because they offer an important area for informal enjoyment of nature by the public. There are currently 39 LNRs in Essex as shown in the figure above along with the designated NNRs.

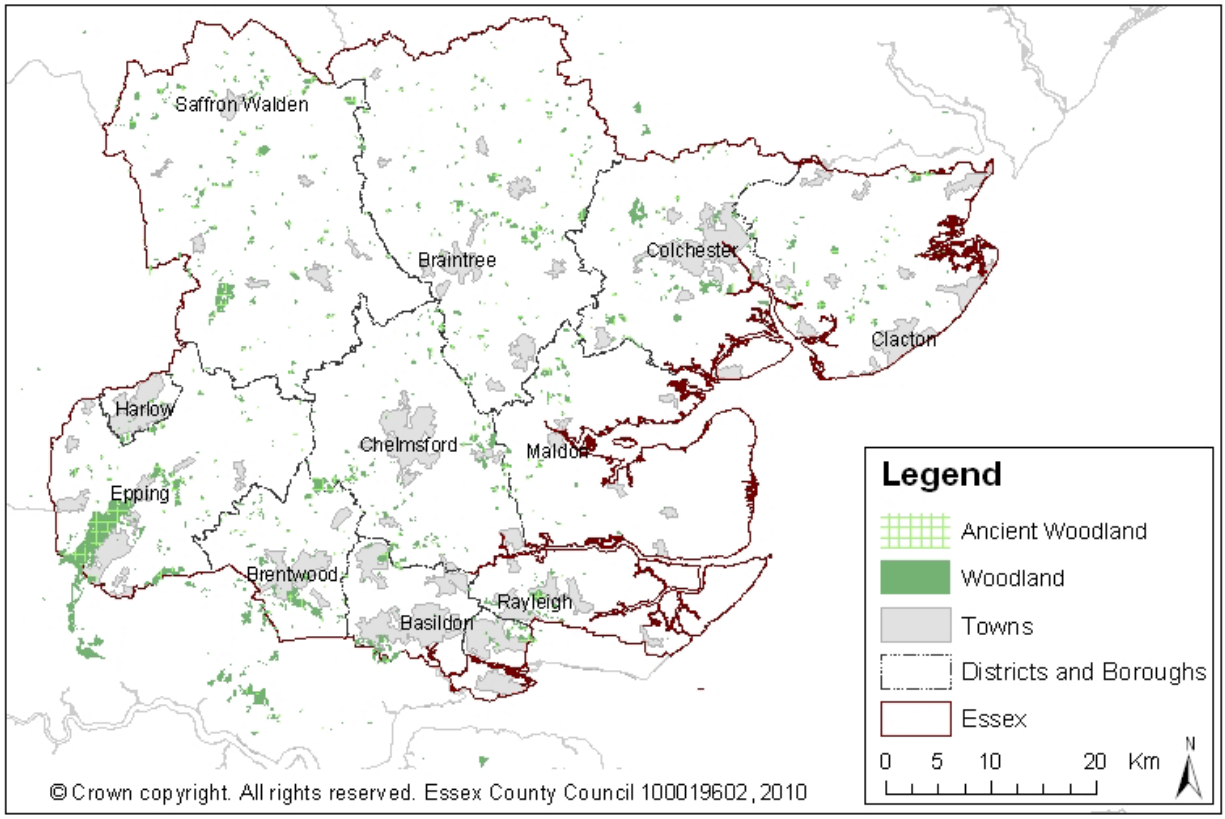
6.3.6. Local Wildlife Sites

Previously known as Sites of Importance for Nature Conservation (SINC) they are now known as Local Wildlife Sites (LoWS) and support both locally and nationally threatened wildlife species and habitats. In Essex there are approximately 1,440 LoWS covering around 13,000ha and together with statutorily protected areas they represent the minimum habitat to maintain current levels of wildlife. New mineral facilities and sites should not be located in areas that would see any decline in these levels of wildlife.

6.3.7. Woodlands

The amount of woodland has diminished considerably in Essex over time. Three quarters has been lost since the 11th Century. The total wooded area is now 5.7% and this is fragmented and scattered across Essex as shown in Figure 18 below.

Figure 18: Woodland in Essex



Source: Essex County Council, 2010

Ancient woodlands are wooded areas having been in continuous existence since 1600 AD. The amount of ancient woodland should not be reduced through new development, particularly of a large scale. Ancient Woodlands in Essex:

- Cover approximately 12,800ha. or 3.5% of the County;
- Include Epping Forest, clusters in the north-west (e.g. Oxlip woodlands), south-east (e.g. Hockley Woods) and heathland and woodlands on the Danbury ridge;

6.4. Summary

Essex is predominantly rural in character with a diverse wildlife. Conservation of sites and designations of biodiversity value have an important role within the planning process, land management, and controlling development pressure. Mineral management facilities and related activities need to respond to these designations in scale, location and any associated impacts that could affect biodiversity, flora and fauna.

The Essex Biodiversity Action Plan (EBAP) is currently being re-written at the time of compiling this baseline, and the original 1999 Action Plan is now withdrawn. A sub-group was formed in May 2006 to review the species and habitats of Essex Biodiversity Action Plan and to revise the format. The new format will include targets and actions are intended to be realistic and achievable. Habitat groups have been formed to frame the review process: Lowland Grassland, Lakes and Ponds, Rivers, Wetlands, Coastal, Marine, Urban and Brownfield. Each Group will contain sub-plans for more specific habitats. There will be no Species Action Plans as species will be addressed within the habitats where they are found.

The species in the Red Data Books are found in a number of different types of areas across Essex. Hotspots include the Stour Estuary; in the Epping Forest and Lee Valley region; the Dagnam Park, South Weald, Navestock, Weald Park and Curtismill Green area; the Stort Valley and Hatfield Forest; Hylands Park; the Danbury Ridge; Halstead and Sible Hedingham area. Brownfield sites are also considered important, particularly in the Thames Gateway where many Red Data Book,

Nationally Scarce and Essex Red Data species have been recorded. Such sites are also home to species on the UK BAP such as the Shrill Carder Bee *Bombus sylvarum*, the Brown-banded Carder Bee *Bombus humilis*, the picture winged fly *Dorycera graminum*, the solitary wasps *Cerceris quinquefasciata* and *C. quadricincta* and the ground beetle *Anisodactylus poeciloides*.

Ramsar sites are wetlands of international importance designated under the Ramsar Convention which have a high degree of protection. They often incorporate Special Protection Areas (SPAs) and Special Areas for Conservation (SACs). In Essex there are 10 Ramsar which cover approximately 30,524ha and include coastal areas, estuaries, rivers and lakes/reservoirs. These include Hamford Water, parts of the Colne and Blackwater estuaries, and the Dengie Marshes. Development is not suitable on such sites or in any location that may see a decline in their habitat quality.

The majority of the Essex coastline has been designated as part of the Mid-Essex Coast Phase, which is made up of 5 separately designated SPAs. Combined these cover an area of approximately 23,000 ha. SPAs are designated to protect rare and vulnerable birds and for regularly occurring migratory species.

There are two SACs in the county: Epping Forest and the Essex Estuary which considered to be sites of international importance.

Sites of Special Scientific Interest (SSSIs) are designated areas of land which are considered to be of special interest due to their fauna, flora, geological and/or physiographical features. In Essex there are 81 SSSIs covering a total of 36,322 ha, the largest proportion of which are along the coastline.

The success of SSSIs is monitored by Public Service Agreement (PSA) targets. A SSSI is deemed to be meeting the PSA target by Natural England if 95% or more of the total area is classed as “Favourable” or “Unfavourable Recovering”. Essex is currently meeting this target, with 98.15% of all SSSIs in the County being in a favourable or unfavourable but recovering condition. 1.04% of the County’s total area of SSSIs is unfavourably declining although none has been lost.

Natural England is the body empowered to declare National Nature Reserves (NNRs) in England, the Reserves being a selection of the very best parts of England’s Sites of Special Scientific Interest. It is this underlying designation which gives NNRs their strong legal protection. The majority also have European nature conservation designations. There are six NNRs located in Essex. They are the Blackwater Estuary, Colne Estuary, Dengie, Hales Wood, Hamford Water and Hatfield Forest. It is important that new mineral development or activities do not negatively impact upon these designations through inappropriate location or through associated noise, vibration and pollution.

Local Nature Reserves (LNRs) are designated by local authorities in conjunction with Natural England in recognition of their high interest in the local context for their wildlife or wildlife education value; or because they offer an important area for informal enjoyment of nature by the public. There are currently 39 LNRs in Essex along with the designated NNRs.

Local Wildlife Sites (LoWS), previously known as Sites of Importance for Nature Conservation (SINC), support both locally and nationally threatened wildlife species and habitats. In Essex there are approximately 1,440 LoWS covering around 13,000ha and together with statutorily protected areas they represent the minimum habitat to maintain current levels of wildlife. New mineral facilities and sites should not be located in areas that would see any decline in these levels of wildlife.

The amount of woodland has diminished considerably in Essex over time. Three quarters has been lost since the 11th Century. The total wooded area is now 5.7% and this is fragmented and scattered across Essex. Ancient Woodlands in Essex cover approximately 12,800ha or 3.5% of the County and include Epping Forest, clusters in the north-west (e.g. Oxlip woodlands), south-east (e.g. Hockley Woods) and heathland and woodlands on the Danbury ridge.

7. Water Quality

7.1. Introduction

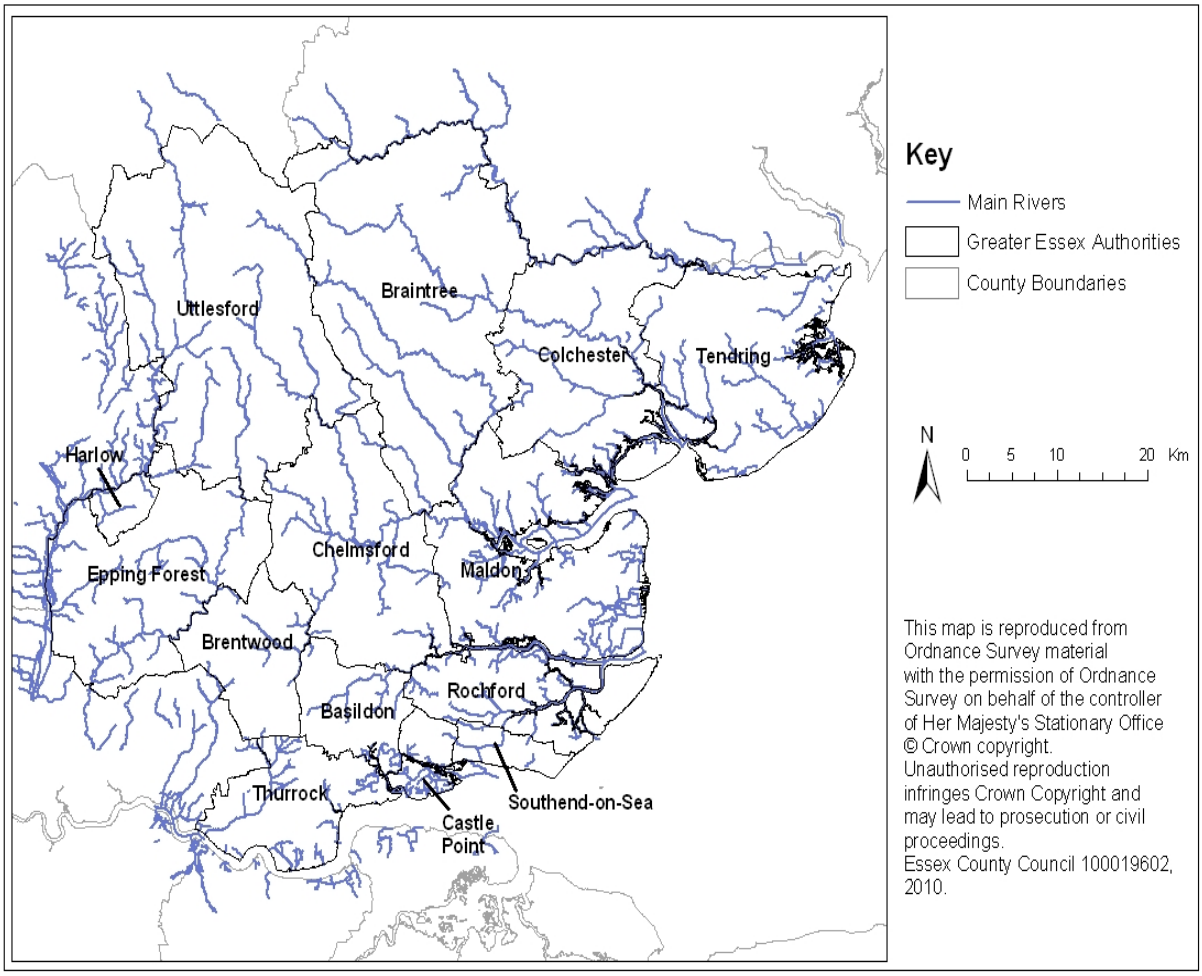
Water policy in England aims to protect both public health and the environment by maintaining and improving the quality of water. In addition to the ever increasing demand from human uses, water contributes to the natural environment, having ecological, aesthetic, scientific, educational and recreational value. The quality of water resources can be severely affected by mineral operations and landfill, where the quality of groundwater and water-bodies can become compromised by leachates. Considerations will include the proximity of vulnerable surface and groundwater.

In England, the Department for Environment, Food and Rural Affairs (Defra) oversees water policy. The Environment Agency makes sure that these policies are carried out and they have a responsibility to protect and enhance the environment as a whole.

7.2. Inland Water Resources in Essex

The figure below shows the location of the main water courses running through Essex.

Figure 19: Rivers in Essex



Source: Essex County Council, 2010

The main rivers in the north of Essex are:

- Stour
- Colne
- Pant/Blackwater and
- Chelmer

The main rivers in the south of Essex are:

- Mardyke
- Crouch
- Roach
- Asheldham Brook

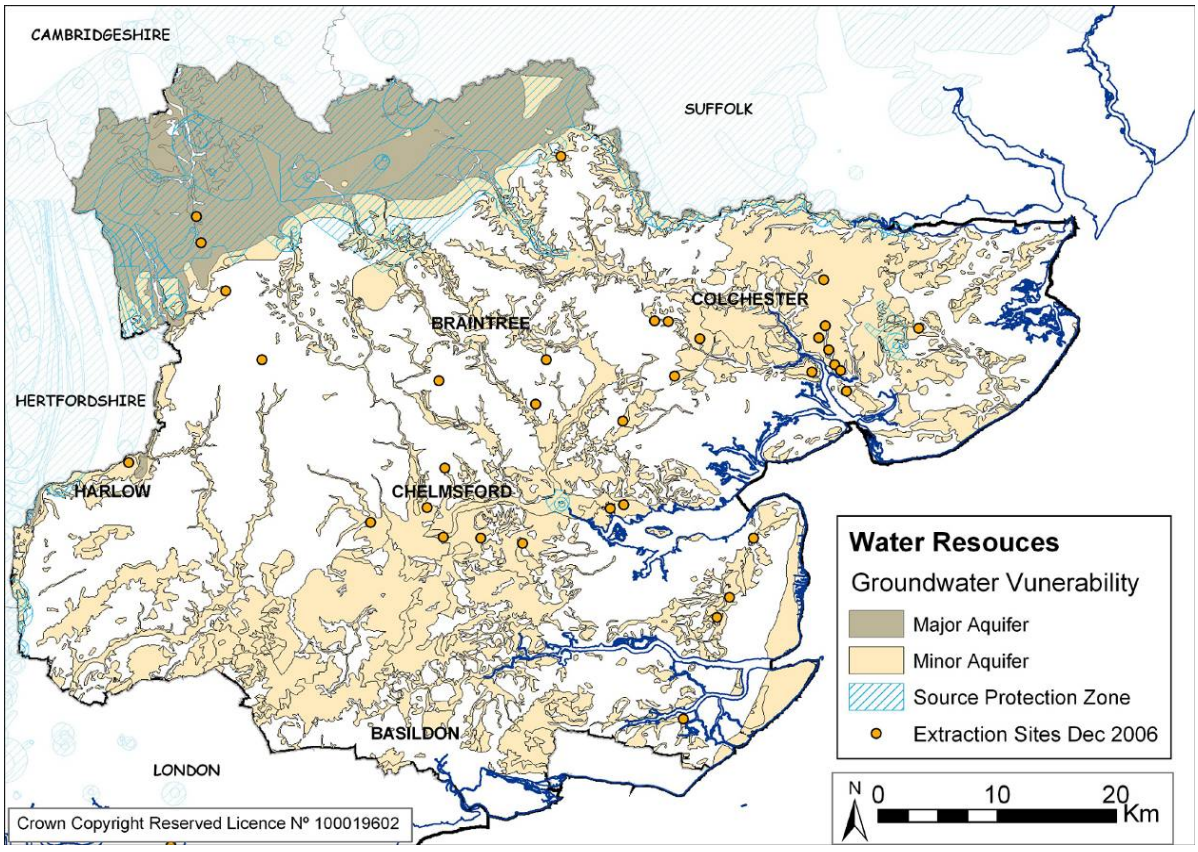
The main rivers in the west of Essex are:

- Lee
- Roding
- Stort

Essex is bounded by the River Thames to the South of the County. Mineral sites and facilities should not cause a decline in water quality where possible. Effects on water quality should be mitigated and minimised through effective (surface water) drainage mechanisms.

As well as surface water resources the north of Essex, as outlined in Figure 20, contains Chalk, Crag and Drift aquifers. The Chalk aquifer is the largest and most important type. It is used primarily for public water supply and spray irrigation. The Crag and Drift aquifers are overlain by sands and gravels of varying thickness which are locally important minor aquifers.

Figure 20: Aquifers in Essex



Source: Essex County Council, 2010

The majority of Essex has a very low contamination vulnerability rating. It is only the northern part of the county, including Halstead and Saffron Walden that has a higher vulnerability because of the porosity of the underlying chalk. In addition to natural water bodies there are various artificial water bodies in the county, especially reservoirs created through mineral extraction. Hanningfield and Abberton are Essex's largest inland water resources.

7.3. Water Supply in the East of England

The Environment Agency (EA) is responsible for managing water resources in England and Wales. One of the ways that this is done is through licensing water abstraction. The EA developed catchment abstraction management strategies (CAMS) to:

- inform the public on water resources and licensing practice
- provide a consistent approach to local water resources management
- help to balance the needs of water-users and the environment

Following a national review of CAMS boundaries, water resources in the South Essex CAMS (excluding the Mardyke catchment) are now incorporated with the North Essex CAMS into the Combined Essex CAMS. Some of the issues that the Combined Essex CAMS cover include:

- Are existing water resources adequate to meet future demands?
- Is the current level of abstraction having a significant impact on flows?
- How much water is needed to protect the river environment, including the fish?
- What are the most suitable options for managing the rivers?

The Combined Essex CAMS document sets out the issues for the whole of Essex. The document splits the County into Water Resource Management Units (WRMU).

Water management is challenging in Essex given the combination of high development growth and it being one of the driest counties in England. Annual rainfall in Essex is only 65% of the average in England and Wales. In respect of water quantity in Essex:

- A significant portion of the resource is considered to be 'water stressed.'
- The resource availability status of rivers and aquifers show that they are generally over abstracted.
- Essex is not self-sufficient in relation to local sources of water supply and needs to import substantial quantities of water to satisfy existing demand.

7.4. River Basin Management Plan

7.4.1. Water Quality

The European Water Framework Directive requires member states to identify the individual river basins within their national territory and assign them to River Basin Districts (RBDs). Essex falls within two River Basin Districts; the River Basin Management Plan for the Anglian RBD and the River Basin Management Plan for the Thames RBD although it is primarily within the former. These plans highlight the pressures facing the water environment and the actions that will address them.

Table 11: Water Quality – Anglian River Basin District

	Rivers, canals and SWTs	Lakes and SSSI ditches	Estuaries	Coastal	Surface waters combined	Ground-water
% of water bodies at good ecological status/potential or better now. For groundwater: % of water bodies at good or better quantitative status now.	18	31	0	27	18	65
% of water bodies at good ecological status/potential or better by 2015. For groundwater: % of water bodies at good or better quantitative status 2015	19	35	0	27	19	65
% of water bodies at good chemical status now	85	83	82	100	85	65
% of water bodies at good chemical status 2015	94	100	82	100	93	65
% of water bodies at good biological status now	33	11	33	86	33	n/a
% of water bodies at good biological status 2015	36	22	33	86	36	n/a

Source: River Basin Management Plan for the Anglian River Basin District, December 2009

Note: SWTs - Surface Water Transfers

The overall percentages of rivers, canals and surface water transfers in the Anglian River Basin District are expected to improve in ecological, chemical and biological status by 2015. This is also the case in regard to lakes and SSSI ditches, and combined surface waters. There is expected to be no percentage improvement or decline in estuaries, groundwater or coastal waters for ecological, chemical or biological status by 2015.

The Anglian River Basin District is subdivided into catchment areas and the Essex Rivers catchment area lies within the counties of Essex and Suffolk as well as a small part of Cambridgeshire. It encompasses the rivers and tributaries of the Stour, Colne, Pant/Blackwater, Chelmer, Crouch and Roach, along with the smaller catchments of Sixpenny, Tenpenny, Holland and Asheldham Brook. There are 125 river water bodies and 5 lakes in the catchment. Over 33% of rivers and lakes (in excess of 280km of river length) currently achieve at least good biological status.

Table 12: Water Quality – Thames River Basin District

	Rivers, canals and SWTs	Lakes and SSSI ditches	Estuaries	Coastal	Surface waters combined	Ground-water
% of water bodies at good ecological status/potential or better now. For groundwater: % of water bodies at good or better quantitative status now.	20	47	0	0	23	35
% of water bodies at good ecological status/potential or better by 2015. For groundwater: % of water bodies at good or better quantitative status 2015	22	49	0	0	25	35
% of water bodies at good chemical status now	78	0	20	0	75	43
% of water bodies at good chemical status 2015	84	0	40	0	81	46
% of water bodies at good biological status now	28	31	0	0	28	n/a
% of water bodies at good biological status 2015	34	34	50	0	34	n/a

Source: River Basin Management Plan for the Thames River Basin District, December 2009

Note: SWTs - Surface Water Transfers

The overall percentages of rivers, canals and surface water transfers in the Thames River Basin District are expected to improve in ecological, chemical and biological status by 2015. This is also the case in regard to combined surface waters. There is expected to be percentage improvement in the ecological and biological status of lakes and SSSI ditches, although no change is forecast in chemical status. There is predicted to be improvements in the chemical and biological status of estuaries, however no change in ecologically. There is expected to be no percentage improvement or decline in estuaries, groundwater or coastal waters for ecological, chemical or biological status by 2015.

7.5. Planning Applications Objected to by the Environment Agency on Water Quality Grounds

Table 13: Planning Applications Objected to by the Environment Agency on Water Quality Grounds between April 2011 and March 2012

Local Planning Authority	Local Planning Authority Reference	Nature of Proposed Development	Reason for Agency Objection
Basildon Borough Council	11/01247/FUL	Offices/Light Industry - Minor	Insufficient Info - Water Quality
Basildon Borough Council	11/01283/FULL	Mixed Use - Major	Mains drainage - unacceptable risk to water quality
Braintree District	11/01349	Other - Minor	Insufficient Info -

Council			Water Quality
Chelmsford Borough Council	11/01210/FUL	Offices/Light Industry - Major	Insufficient Info - Water Quality
Chelmsford Borough Council	11/013/Ful	Caravan Sites - Major	Required Circular 3/99 or 10/99 Assessment
Chelmsford Borough Council	12/00152/FUL	Residential - Minor	Non-mains drainage proposed in sewered area
Maldon District Council	FUL/MAL/11/00499	Caravan Sites - Minor	Required Circular 3/99 or 10/99 Assessment
Rochford District Council	11/00404/FUL	Other - Minor	Unacceptable risk to water quality
Rochford District Council	12/00103/FUL	Infrastructure - Major	Insufficient Info - Water Quality
Tendring District Council	11/00530/OUT	Residential - Major	Insufficient Info - Water Quality
Uttlesford District Council	UTT/1378/11/FUL	Agriculture - Minor	Insufficient Info - Water Quality
Uttlesford District Council	UTT/1404/11/FUL	Offices/Light Industry - Minor	Insufficient Info - Water Quality

Source: Environment Agency, 2010

In total, 12 applications made within Essex were objected to by the Environment Agency on water quality grounds between April 2011 and March 2012.

7.6. Summary

Water policy in England aims to protect both public health and the environment by maintaining and improving the quality of water. In addition to the ever increasing demand from human uses, water contributes to the natural environment, having ecological, aesthetic, scientific, educational and recreational value. The quality of water resources can be severely affected by mineral operations and landfill, where the quality of groundwater and water-bodies can become compromised by leachates.

Essex is bounded by the River Thames to the South of the County. Mineral management and disposal facilities should not cause a decline in water quality where possible. Effects on river water quality should be mitigated and minimised through effective (surface water) drainage mechanisms.

As well as surface water resources, the north of Essex contains Chalk, Crag and Drift aquifers. The Chalk aquifer is the largest and most important type. It is used primarily for public water supply and spray irrigation. The Crag and Drift aquifers are overlain by sands and gravels of varying thickness which are locally important minor aquifers. These aquifers should not be subjected to leachate migration from landfill.

The majority of Essex has a very low contamination vulnerability rating. It is only the northern part of the county, including Halstead and Saffron Walden that has a higher vulnerability because of the porosity of the underlying chalk.

In addition to natural water bodies there are various artificial water bodies in the county, especially reservoirs created through mineral extraction. Hanningfield and Abberton are Essex's largest inland water resources. The Environment Agency (EA) is responsible for managing water resources in England and Wales.

Water management is challenging in Essex given the combination of high development growth and it being one of the driest counties in England. Annual rainfall in Essex is only 65% of the average

in England and Wales. In respect of water quantity in Essex a significant portion of the resource is considered to be 'water stressed'. The resource availability status of rivers and aquifers show that they are generally over abstracted and Essex is not self-sufficient in relation to local sources of water supply and needs to import substantial quantities of water to satisfy existing demand.

The overall percentages of rivers, canals and surface water transfers in the Anglian River Basin District are expected to improve in ecological, chemical and biological status by 2015. This is also the case with regard to lakes and SSSI ditches, and combined surface waters. There is expected to be no percentage improvement or decline in estuaries, groundwater or coastal waters for ecological, chemical or biological status by 2015.

The overall percentages of rivers, canals and surface water transfers in the Thames River Basin District are expected to improve in ecological, chemical and biological status by 2015. This is also the case with regard to combined surface waters. There is expected to be percentage improvement in the ecological and biological status of lakes and SSSI ditches, although no change is forecast in chemical status. There is predicted to be improvements in the chemical and biological status of estuaries, however no change ecologically. There is forecast to be no percentage change for ecological, chemical or biological statuses by 2015.

In total, 12 applications made within Essex were objected to by the Environment Agency on water quality grounds between April 2011 and March 2012.

8. Air Quality

8.1. Introduction

The transportation of minerals to various sites throughout the County is an important issue with regard to associated air quality through vehicle emissions. In addition to transport related air quality aggregate recycling dust from surface mineral operations can have a noticeable environmental impact and affect the quality of life of local communities. Amenities can potentially be affected by dust up to 1km from the source, although concerns are most likely to be experienced near to dust sources, generally within 100 m, depending on site characteristics and in the absence of appropriate mitigation

8.2. Air Quality Management Areas

Each local authority in the UK has been carrying out reviews and assessments of air quality within their area since December 1997. The aim of reviewing and assessing the information is to ensure that future and current air quality objectives can be achieved by the deadlines set. If a local authority has an area with measurements of air pollution that are unlikely to meet the objectives, an Air Quality Management Area (AQMA) must be declared. The size of this area can vary from a section of one street to a much larger area of the locality. Likely routes for the transportation of mineral arisings should deviate from these areas where possible.

Air quality in Essex is generally good. The air quality in Essex is influenced by its close proximity to mainland Europe whilst most industrial processes in Essex are concentrated along the Thames Estuary. There are currently 15 AQMAs within the Plan Area, as highlighted by Table 14 and Table 15.

Table 14: Number of AQMAs within Each District/ Borough in Essex

Local Authority	Number of AQMAs	Local Authority	Number of AQMAs
Basildon	0	Epping Forest	1
Braintree	0	Harlow	0
Brentwood	7	Maldon	0
Castle Point	0	Rochford	1
Chelmsford	1	Tendring	0
Colchester	2	Uttlesford	3
Total	15		

Source: Essex Air Quality Consortium, 2012

Table 15: Location of AQMAs within each District/ Borough in Essex

Local Authority	AQMA	Pollutant
Brentwood	M25 / Nags Head Lane Junction	NO_2
	M25 / A12 Brook Street Roundabout	NO_2 & PM_{10}
	A12 / Greenshaw and Porters Close	NO_2 & PM_{10}
	A12 / Warescot Road / Hurstwood Avenue / Ongar Road	NO_2 & PM_{10}
	A12 / Roman Road, Mountnessing	NO_2 & PM_{10}
	A12 / Fryerning Lane, Pemberton Avenue and Trimble Close	NO_2
	A128 / A1023 Junction (Wilson's Corner)	NO_2
Chelmsford	The Army and Navy roundabout	NO_2

Local Authority	AQMA	Pollutant
Colchester	The northern end of the B1025 Mersea Road	NO_2 & PM_{10}
	Area encompassing Brook Street, Colchester between (and including) the junctions with Walpole Road and East Hill	NO_2
Epping Forest	Area encompassing a number of properties (37-49 Odd) on the High Street, Epping opposite the junction with Half Moon Lane	NO_2
Rochford	Rawreth Industrial Estate	NO_2
Uttlesford	Area extending 75m in all directions from the centre of the junction of High Street and George Street in Saffron Walden	NO_2
	Area extending 50m in all directions from the centre of the junction of High Street and Castle Street in Saffron Walden	NO_2
	Area extending 50m in all directions from the centre of the junction of Thaxted Road, East Street and Radwinter Road in Saffron Walden	NO_2

Source: Defra, 2010

All of the AQMAs have been designated due to increased levels of nitrogen dioxide with some also reporting elevated emissions of PM_{10}. This infers that the levels of nitrogen dioxide at these sites exceed the National Air Quality Standard of 200µg.m^{-3} more than 18 times in a single year or that the annual mean target of 40µg/m^{-3} is being exceeded. High levels of nitrogen dioxide can have adverse effects on human health relating to the respiratory system. PM_{10} emissions at certain sites would have been found to exceed the 40µg/m^{-3} annual target and/or the maximum number of tolerated annual exceedences of the PM_{10} threshold of 50µg/m^{-3}.

Of the 15 AQMAs in Essex, seven are within the Borough of Brentwood and five of these are located along the A12.

8.3. Summary

The transportation of mineral to various sites throughout the County is an important issue with regard to associated air quality through vehicle emissions. In addition to transport related air quality aggregate recycling, dust from surface mineral operations can have a noticeable environmental impact and affect the quality of life of local communities. Amenities can potentially be affected by dust up to 1km from the source, although concerns about dust are most likely to be experienced near to dust sources, generally within 100 m, depending on site characteristics and in the absence of appropriate mitigation.

Air quality in Essex is generally good. The air quality in Essex is influenced by its close proximity to mainland Europe whilst most industrial processes in Essex are concentrated along the Thames Estuary.

There are currently 15 AQMAs within the Plan Area. All of the AQMAs have been designated due to increased levels of nitrogen dioxide nitrogen dioxide with some also reporting elevated emissions of PM_{10}.. Of the 15 AQMAs in Essex, half are within the Borough of Brentwood and 5 of these are located along the A12.

9. Noise

9.1. Introduction

Noise from mineral sites can also be created from associated machinery and impact on neighbouring developments. It is good practice for noise generating activities to be positioned away from site boundaries. Existing buildings can also be used to shield the noise source. Unfortunately monitoring these sources of noise is problematic and can not therefore be included in this baseline chapter.

9.2. Ambient Noise

Ambient or environmental noise is defined as noise which is either unwanted or harmful. It is created by human activities and includes noise emitted by transport including road, rail and air traffic, as well as from sites of industrial activity. Mapping of ambient noise in England was carried out during 2006-07 in line with the Government's work to implement the EU's Environmental Noise Directive.

This section will depict results from the air mapping exercise undertaken along the major road network and in towns in Essex. Each area covered has two maps based on the different times of day and can be used in the assessment of proposed new mineral sites in the county in regards to transport suitability and hours of operation. This is explained further in the following table:

Table 16: Summary of Terms Used

Term	Explanation
dB(A)	A unit of sound pressure level, adjusted in accordance with the A waiting scale, a scale which takes into account the increased sensitivity of the human ear at some frequencies.
Lden	The day, evening and night level. Lden is a logarithmic composite of the Lday, Levening and Lnight levels but with 5dB(A) being added to the Levening value and 10dB(A) being added to the Lnight level.
Lnight	The A-weighted average sound level over the 8 hour night period of 2300 – 0700 hours.

Source: Descriptions taken from DEFRA, 2008

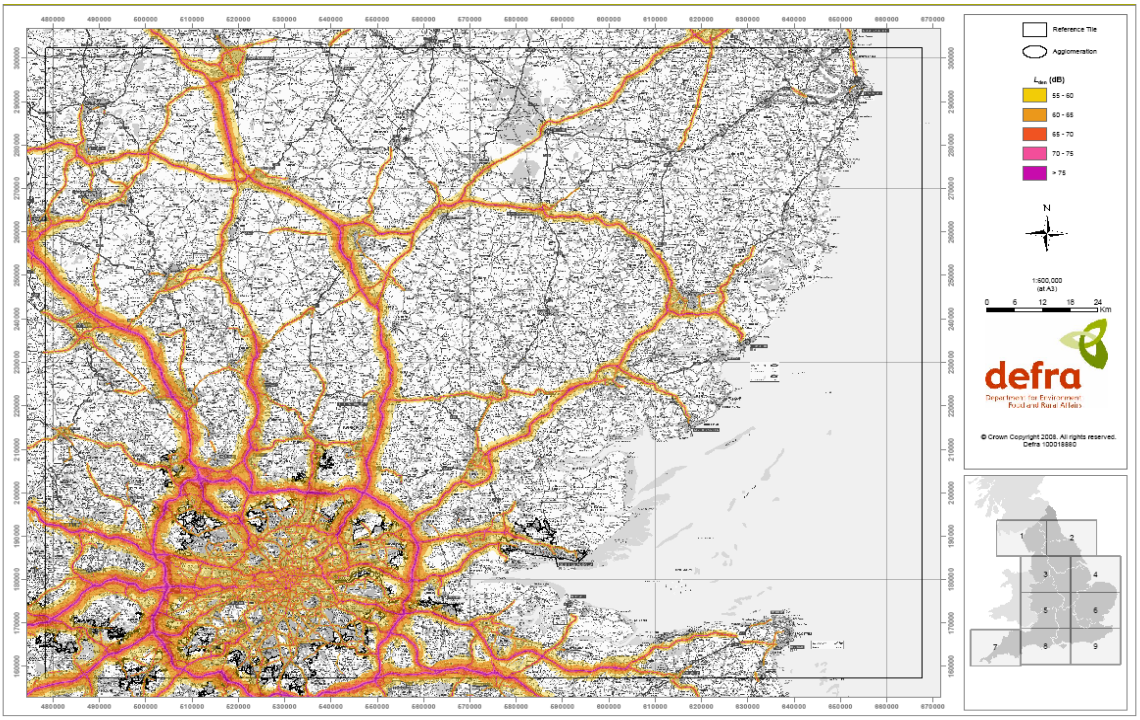
9.3. Mapping of Ambient Noise

Ambient or environmental noise is defined as noise which is either unwanted or harmful. It is created by human activities and includes noise emitted by transport including road, rail and air traffic, as well as from sites of industrial activity. Mapping of ambient noise in England was carried out during 2006-07 in line with the Government's requirement to implement the EU's Environmental Noise Directive.

Results from the air mapping exercise undertaken along the major road network and in towns for Essex show that:

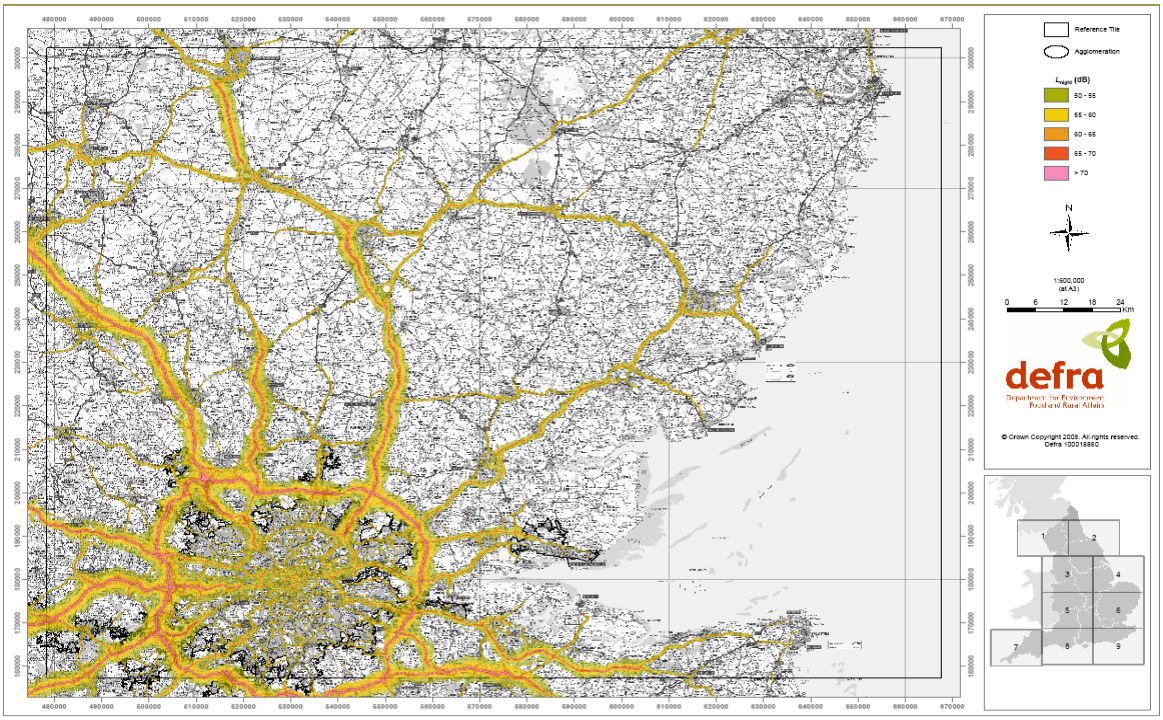
- All major roads experienced some noise levels of over 75dB(A) in the day (defined as 0700 – 1900, Lden map), in particular the A12, A127, M11 and the M25, and where this was not the case the measurements were mainly between 65 and 70dB(A).
- In the night (defined as 2300 – 0700, Lnight map) there are lower levels of ambient noise along all the major roads than that seen in the Lden map with only the M25 and the M11 showing levels of more than 70dB(A) along the whole Essex stretch of both roads.

Figure 21: Ambient Noise along Major Roads, L_{den} 2006



Source: DEFRA, 2008

Figure 22: Ambient Noise along Major Roads, L_{night} 2006



Source: DEFRA, 2008

Road traffic creates noise which can affect people's lives. Different modes of transport will create varying amounts of ambient noise and should therefore be monitored. The transportation of extracted and recycled material within the County could contribute to noise pollution in certain localities

9.4. Summary

Road traffic creates noise which can affect people's lives. Different modes of transport will create varying amounts of ambient noise and should therefore be monitored. The transportation of extracted and recycled material within the County could contribute to noise pollution in certain localities

Noise from extraction or recycling sites can also be created from associated machinery and impact on neighbouring developments. It is good practice for noise generating activities to be positioned away from site boundaries. Existing buildings can also be used to shield the noise source. Unfortunately monitoring these sources of noise is problematic and largely qualitative.

All major roads in Essex experienced some noise levels of over 75dB(A) in the day (defined as 0700 – 1900), in particular the A12, A127, M11 and the M25, and where this was not the case the measurements were mainly between 65 and 70dB(A). In the night (defined as 2300 – 0700) there are lower levels of ambient noise along all the major roads than that seen in the Lden map with only the M25 and the M11 showing levels of more than 70dB(A) along the whole Essex stretch of both roads.

10. Climatic Factors

10.1. Introduction

Planning's role is not only to shape sustainable communities which are resilient to future climates but to reduce emissions and minimise the human impact on the environment. Changes in climate are inevitable and 'PPS: Planning and Climate Change' acknowledges that in the future "*we are likely to see more extreme weather events, including hotter and drier summers, flooding and rising sea-levels increasing the risk of coastal erosion*" in the UK.

Mineral development has important climate change impacts, particularly with regards to the problem of transporting such a bulky resource

10.2. Climate Change Projections

The UK Climate Impact Programme has developed the UK Climate Change Projections 2009 (UKCP09) which models future climate scenarios for the UK.

The key findings from UKCP09 of how our climate might change in the future are:

- All areas of the UK will get warmer, and the warming is greater in summer than in winter. Across the UK, central estimates of the average regional summer (June, July, August) temperature rise in the 2080s are between 3 and 4°C.
- Across the UK, central estimates of regional average summer precipitation change are projected to be between -17% to -23% in the 2080s.
- Greater sea level rise in the south of the UK than the north. The central estimates for sea level rise (taking into account land movement) show that sea level is projected to rise by 18cm in London by 2040 and 36cm by 2080.
- Across the UK, central estimates of regional average winter precipitation change are projected to be in the region of +14% (NE) to +23% (SW), in the 2080s.
- Reaching a peak in global emissions in 2016 and achieving a 4% decrease per year thereafter, a global temperature rise to 1.8°C by 2050 is expected, which would then stabilise at about 2°C by 2100.

Key findings for the East of England for the 2080s (based on medium (current) emissions scenario) are:

- Under medium emissions, the central estimate of increase in winter mean temperature is 3ºC; it is very unlikely to be less than 1.6ºC and is very unlikely to be more than 4.7ºC.
- Under medium emissions, the central estimate of increase in summer mean temperature is 3.6ºC; it is very unlikely to be less than 1.9ºC and is very unlikely to be more than 5.9ºC.
- Under medium emissions, the central estimate of change in winter mean precipitation is 20%; it is very unlikely to be less than 4% and is very unlikely to be more than 44%.
- Under medium emissions, the central estimate of change in summer mean precipitation is –20%; it is very unlikely to be less than –44% and is very unlikely to be more than 6%.

Sea level rise and subsidence will lead to more frequent flooding of coastal areas. Increased temperatures and greater fluctuation in annual precipitation will further increase pressure on water resources. With this in mind it is possible to determine the potential flood risk that mineral sites can add to water bodies in areas of concern. Essex is already one of the driest areas in the UK.

10.3. CO_2 Emissions

Changes in land use, and various industrial processes are adding heat-trapping gases, particularly carbon dioxide (CO_2), to the atmosphere. There is now roughly 40% more CO_2 in the atmosphere than there was before the industrial revolution. One of the main causes of increased CO_2 in the atmosphere is through the burning of fossil fuels for electricity and transportation.

Table 17: Reduction in CO_2 Emissions across Essex 2005 – 2010

Area	2010 per Capita CO2 Emissions (tonnes)	Reduction Since 2005	Area	2010 per Capita CO2 Emissions (tonnes)	Reduction Since 2005
Basildon	5.9	14.50%	Epping Forest	9.3	8.82%
Braintree	6.7	11.84%	Harlow	7.2	16.30%
Brentwood	8.0	12.09%	Maldon	6.1	14.08%
Castle Point	4.4	18.37%	Rochford	4.9	10.91%
Chelmsford	6.5	9.72%	Tendring	5.2	10.34%
Colchester	5.7	17.39%	Uttlesford	11.2	11.11%
			Essex Average	6.6	12.00%

Source: DECC, 2012

Within Essex, Uttlesford District residents emitted the highest per capita amount of CO_2 at 11.2t with Castle Point residents emitted the least at 4.4t. The Essex average was recorded as 6.6t.

There was a 12% per capita reduction in CO_2 emissions across Essex between 2005 and 2010. All local authorities in the plan area experienced a reduction in CO_2 emissions per capita. The greatest CO_2 emissions reduction per capita was in Castle Point; achieving a 18.37% reduction between 2005 and 2010. The location of new extraction sites and extraction facilities should not compromise any district or borough's reductions beyond what is reasonably acceptable.

Table 18: CO_2 Emissions in Kilotonnes by Sector 2010

Authority	Industrial & Commercial		Domestic		Transport		Land Use, Land-Use Change and Forestry (LULUCF)	Total
Basildon	376.20	(36.2%)	377.50	(36.3%)	285.38	(27.5%)	-0.26	1,038.83
Braintree	295.26	(30.5%)	322.58	(33.3%)	356.87	(36.9%)	-7.26	967.44
Brentwood	134.20	(22.5%)	192.23	(32.2%)	271.56	(45.4%)	-0.34	597.65
Castle Point	75.50	(19.2%)	211.61	(53.7%)	107.03	(27.1%)	0.10	394.23
Chelmsford	344.64	(31.5%)	380.91	(34.8%)	371.54	(34.0%)	-3.40	1,093.69
Colchester	315.71	(30.8%)	371.04	(36.2%)	339.29	(33.1%)	-2.23	1,023.80
Epping Forest	236.22	(20.4%)	321.89	(27.8%)	603.82	(52.1%)	-2.16	1,159.78
Harlow	320.88	(54.9%)	166.01	(28.4%)	98.16	(16.8%)	-0.24	584.82
Maldon	128.22	(33.3%)	153.00	(39.8%)	102.12	(26.5%)	1.46	384.80
Rochford	110.14	(27.0%)	196.16	(48.1%)	99.76	(24.5%)	1.68	407.73
Tendring	205.16	(26.6%)	327.24	(42.4%)	237.31	(30.8%)	1.59	771.30
Uttlesford	224.03	(25.9%)	188.92	(21.9%)	460.22	(53.2%)	-8.68	864.49
Essex	2,766.16	(29.8%)	3,209.08	(34.5%)	3,333.08	(35.9%)	-19.75	9,288.56

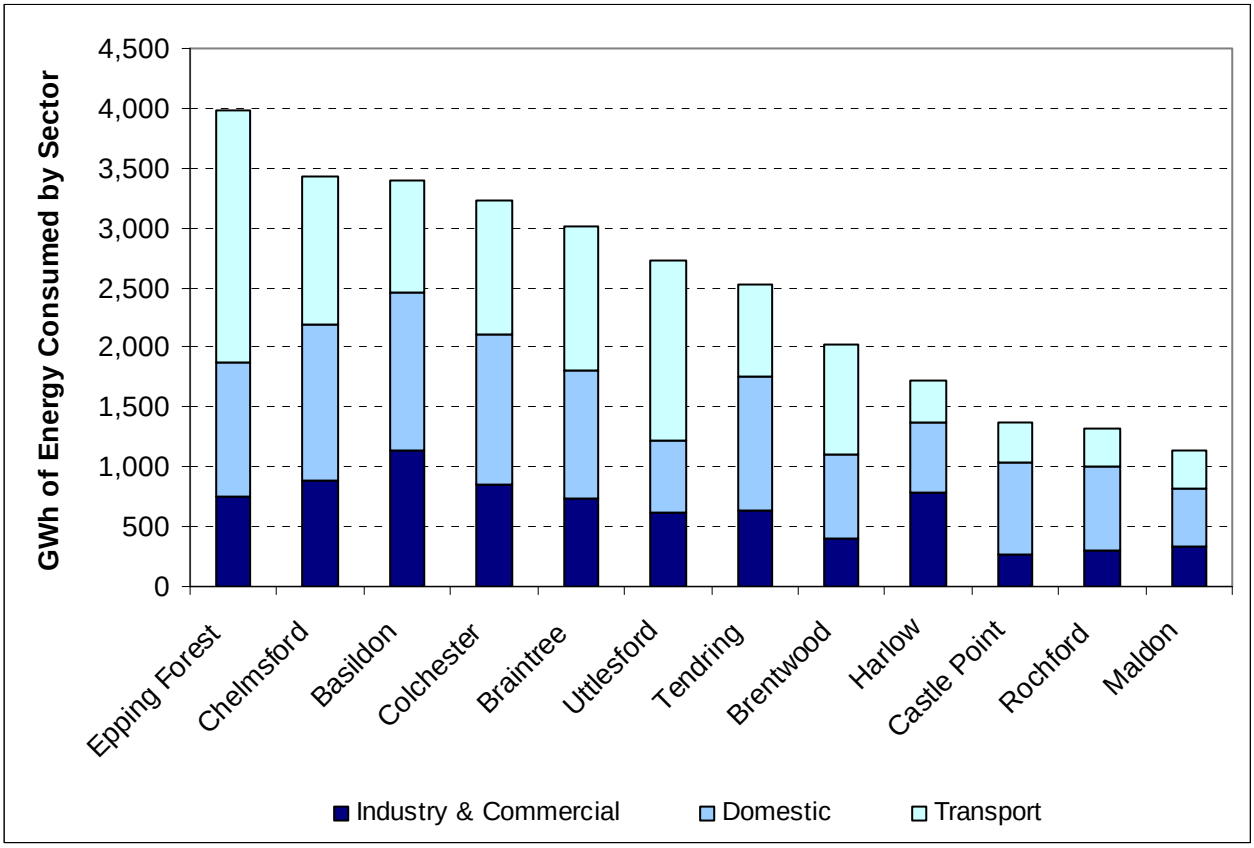
Source: DECC, 2012

In Essex the largest proportion of CO_2 emissions produced in 2010 was within the transport sector, accounting for 35.9% of the total CO_2 emissions, followed by the domestic sector which produced 34.5%. Recycling facilities and, where possible, primary extraction sites should be located in strategic locations in order to minimise emissions produced through transportation around the County, which equated to 3,333kt of CO_2 in 2010.

10.4. Energy Consumption

The transport sector consumes the largest amount of energy within Essex compared to the domestic and industry and commercial sectors. As a whole Essex reportedly consumed 29,890 GWh of energy in 2009. A breakdown by district is shown in Figure 23.

Figure 23: Energy Consumption in GWh by Sector



Source: DECC, 2012

Epping Forest District consumed the greatest total amount of energy compared to other local authorities in Essex and more than half of this total was consumed by the transport sector. The transport sector also accounted for more than half the energy consumption within Uttlesford while in Castle Point and Rochford the domestic sector accounted for more than half their total consumptions. Industry and commercial sector and the domestic sector energy consumptions were highest within Basildon.

10.5. Renewable Energy Consumption and Generating Capacity

Table 19: Proportion of Total Energy Consumption in Essex from Renewables and Waste, 2009

Local Authority	Proportion of Total Energy Consumption which was from Renewable and Waste	Local Authority	Proportion of Total Energy Consumption which was from Renewable and Waste

Local Authority	Proportion of Total Energy Consumption which was from Renewable and Waste	Local Authority	Proportion of Total Energy Consumption which was from Renewable and Waste
Basildon	0.00%	Epping Forest	0.04%
Braintree	0.15%	Harlow	0.00%
Brentwood	0.00%	Maldon	0.35%
Castle Point	0.00%	Rochford	0.01%
Chelmsford	0.08%	Tendring	0.05%
Colchester	0.08%	Uttlesford	0.42%
		Essex	0.09%

Source: DECC, 2012

Across Essex, 0.09% of the total energy consumption in the County in 2009 came from renewable resources and waste. Uttlesford reported the highest proportion at the district level at 0.42% with Basildon, Brentwood, Castle Point and Harlow reporting no proportion of energy consumed coming from there sources.

Table 20: Energy Generation and Capacity of renewable installations in Essex

Energy Source	Energy Generation (GWh per year)	Generating Capacity (MW)
Dedicated Biomass	433.3	61.8
Landfill Gas	348.6	66.3
Sewage Gas	12.8	3.4
Wind (< 50kw)	54.4	20.7
Hydro	0.0	0.0
Municipal and Industrial Waste	194.9	27.8
Photovoltaic	0.0	0.0
Total	849.2	180.0

Note: 1 gigawatt (GWh) = 1,000 megawatts (MW)

Source: East of England Renewable and Low Carbon Energy Capacity Study for the Department for Energy and Climate Change, April 2011

Essex has the capacity to generate over 180 MW of energy using renewable energy resources that are either in operation, under construction or with planning consent. The largest amount of generating capacity is from landfill gas at 66.3 MW. The current energy generation per year within Essex is 849.2GWh (0.8492 MW) and more than half of which comes from dedicated biomass.

10.6. Summary

- Mineral development has important climate change impacts, particularly with regards to the problem of transporting such a bulky resource.
- Key findings from the UK Climate Change Projections 2009 regarding how the East of England would be effected by 2080 under the current emission scenario are shown below:
    - The central estimate of increase in winter mean temperature is 3ºC; it is very unlikely to be less than 1.6ºC and is very unlikely to be more than 4.7ºC.
    - The central estimate of increase in summer mean temperature is 3.6ºC; it is very unlikely to be less than 1.9ºC and is very unlikely to be more than 5.9ºC.
    - The central estimate of change in winter mean precipitation is 20%; it is very unlikely to be less than 4% and is very unlikely to be more than 44%.
    - The central estimate of change in summer mean precipitation is –20%; it is very unlikely to be less than –44% and is very unlikely to be more than 6%.
- Sea level rise and subsidence will lead to more frequent flooding of coastal areas. Increased temperatures and greater fluctuation in annual precipitation will further increase pressure on water resources. With this in mind it is possible to determine the potential flood risk that mineral sites can add to water bodies in areas of concern. Essex is already one of the driest areas in the UK.
- Changes in land use and various industrial processes are adding heat-trapping gases, particularly carbon dioxide (CO_2), to the atmosphere. There is now roughly 40% more CO_2 in the atmosphere than there was before the industrial revolution. One of the main causes of increased CO_2 in the atmosphere is through the burning of fossil fuels for: electricity and transportation.
- There was a 12% per capita reduction in CO_2 emissions across Essex between 2005 and 2010. All local authorities in the plan area experienced a reduction in CO_2 emissions per capita. The greatest CO_2 emissions reduction per capita was in Castle Point; achieving a 18.37% reduction between 2005 and 2010. The location of new extraction sites and extraction facilities should not compromise any district or borough's reductions beyond what is reasonably acceptable.
- In Essex the largest proportion of CO_2 emissions produced in 2010 was within the transport sector, accounting for 35.9% of the total CO_2 emissions, followed by the domestic sector which produced 34.5%. Recycling facilities and, where possible, primary extraction sites should be located in strategic locations in order to minimise emissions produced through transportation around the County, which equated to 3,333kt of CO_2 in 2010.
- The transport sector consumes the largest amount of energy within Essex compared to the domestic and industry and commercial sectors. As a whole Essex reportedly consumed 29,890 GWh of energy in 2009.
- Essex has the capacity to generate 180MW of energy using renewable energy resources. This is primarily from landfilled gas and dedicated biomass.

11. Flooding

11.1. Introduction

River flooding is a natural process that plays an important role in shaping the natural environment. The effects of heavy and/or prolonged rainfall can be increased in severity as a result of planning decisions relating to the location, design, nature of settlement and land use. Increasingly flooding is viewed as a potential consequence of future climate change.

Although flooding cannot be completely prevented, its impacts can be avoided and reduced through good planning and land management. Data compiled on this subject is useful to identify whether broad potential future locations for development represent the most appropriate choices. Impacts on water flows may arise from the presence of hard surfaces being located in previously soft surfaced areas. The larger the facility or plant, the more significant such effects could become, especially if located near water-bodies associated with flooding. Drainage systems may be required to ensure that such effects are minimised.

11.2. Flood Zones

NPPF requires development to be carried out in areas of as low a risk of flooding as possible. A risk-based sequential test should be applied at all stages of the planning process. The aim is to steer new development to areas with the lowest probability of flooding.

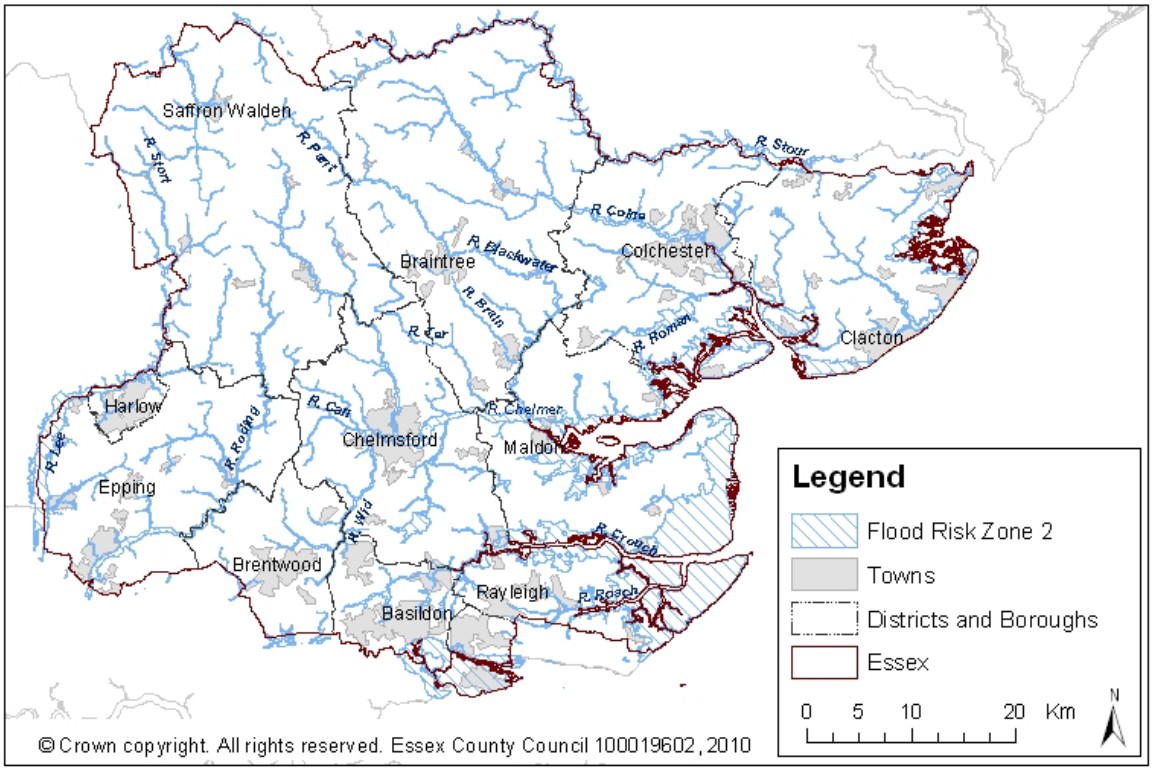
It is recognised that sand and gravel extraction is a water compatible use. Sequential working and restoration can be designed to reduce flood risk by providing flood storage and attenuation. This is likely to be most effective at a strategic (county) scale. Operations can pose a pollution threat. Risks will need to be fully taken into account in applying the sequential approach. Sand and gravel extraction is however considered to be a water-compatible use and their presence is permitted in Flood Zone 3a.

A hierarchy of flood zones for application of the sequential test is defined as:

- Zone 1 - Low Probability: Encompasses land assessed as having a less than 1 in 1000 annual probability of flooding in any year (<0.1%).
- Zone 2 - Medium Probability: Comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%).
- Zone 3a - High Probability: Covers land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) in any year.
- Zone 3b - The Functional Floodplain: This zone consists of land where water has to flow or be stored in times of flood. It is land which would flood with an annual probability of 1 in 20 (5%) or greater in any year.

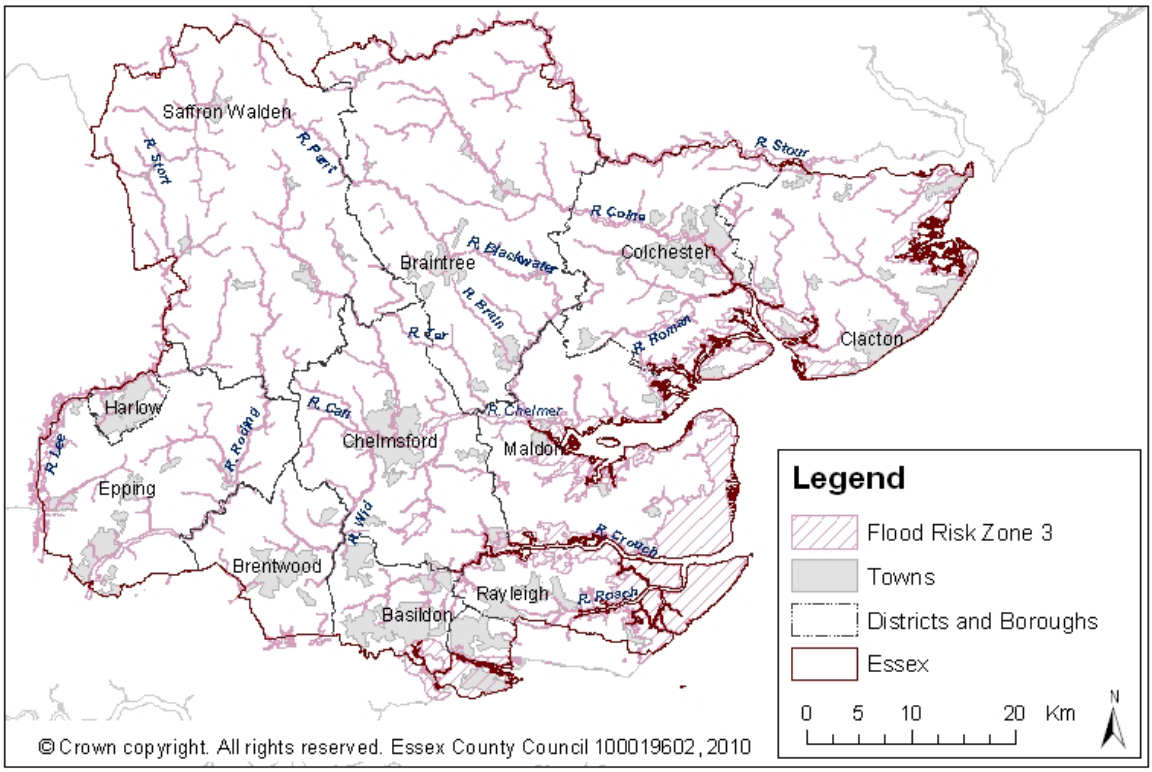
Figure 24 and Figure 25 show the locations in Essex which are within flood zone 2 and flood zone 3. The Essex coastline is at risk of flooding as well as river floodplains which include the rivers Stour, Colne, Chelmer, Crouch and the Thames estuary. As climate change continues, flood risk is likely to increase

Figure 24: Flood Risk Zone 2



Source: Essex County Council, 2010

Figure 25: Flood Risk Zone 3a



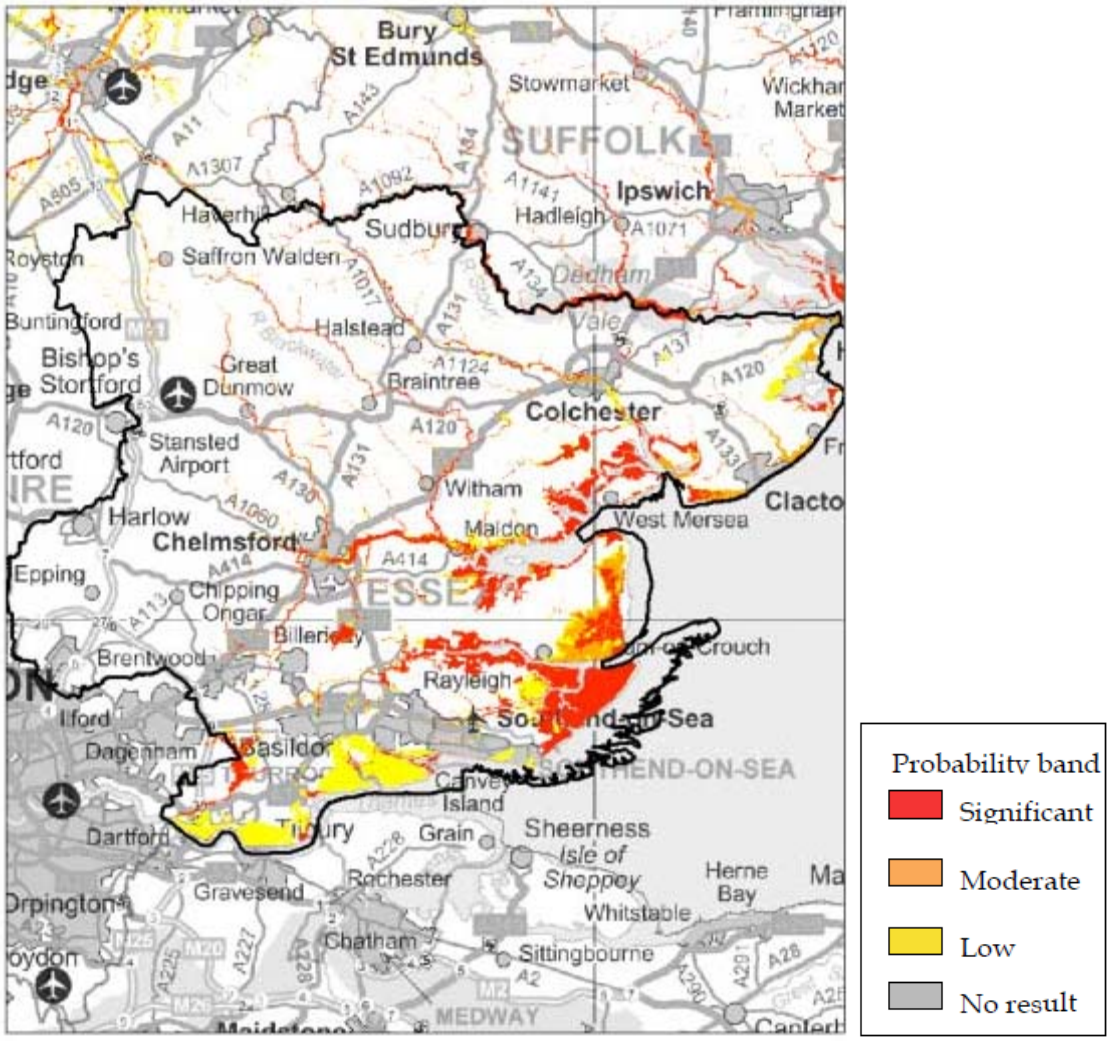
Source: Essex County Council, 2010

11.3. Catchment Flood Management Plans

Essex County lies within three separate Catchment Flood Management Plans (CFMP) – North Essex CFMP, South Essex CFMP and the Thames CFMP. Their role is to establish flood risk management policies which will assist decision makers in delivering sustainable flood risk management for the long term.

11.4. Future Flood Risk

Figure 26: Projected risk of flooding in Essex



Source: Essex Trends 2011 – Originally taken from Environment Agency, Internal State of the Environment Report for Essex County, 2010

Note: The chance of flooding is set out in three risk categories.

Low - areas with a flood recurrence interval greater than 1 in 200 years.

Moderate - areas with a flood recurrence interval between 1 in 200 and 1 in 75 years.

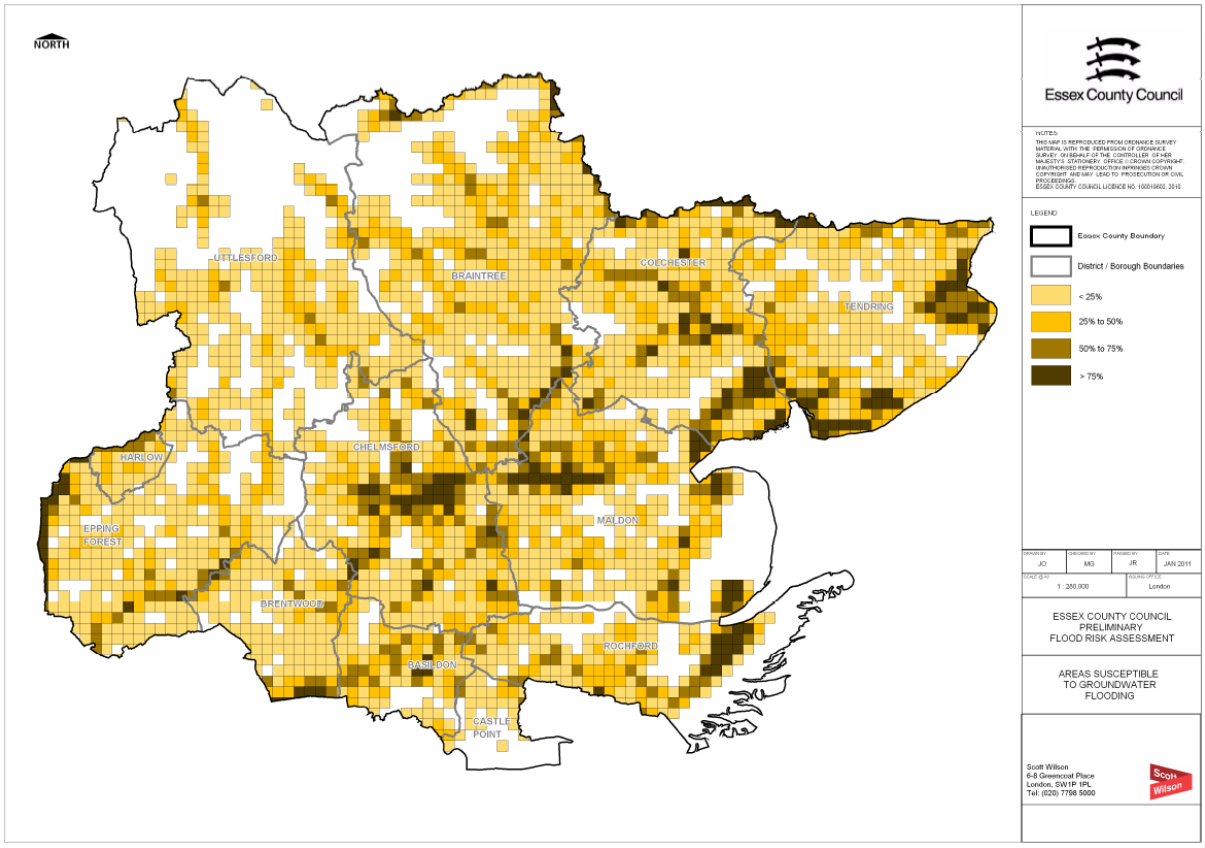
Significant - areas with a flood recurrence interval less than 1 in 75 years.

Significant levels of flood risk have been identified along the Essex coast and inland along river stretches. Essex Trends 2011 states *"While advances in flood protection have been made since the early 1950s the danger of coastal flooding remains significant, particularly as climate change increases the chance of storms and high tides coinciding. Government projections suggest that the number of people in the UK at risk of flooding could more than double by 2080. The resilience of our communities in these areas must be strengthened, and our populations must plan and adapt their behaviour to prepare for these possible events."*

11.5. Groundwater Flood Risk

There is no available information on future groundwater flood risk in Essex however the Environment Agency's dataset for areas susceptible to groundwater flooding is shown in Figure 27.

Figure 27: Areas Susceptible to Groundwater Flooding



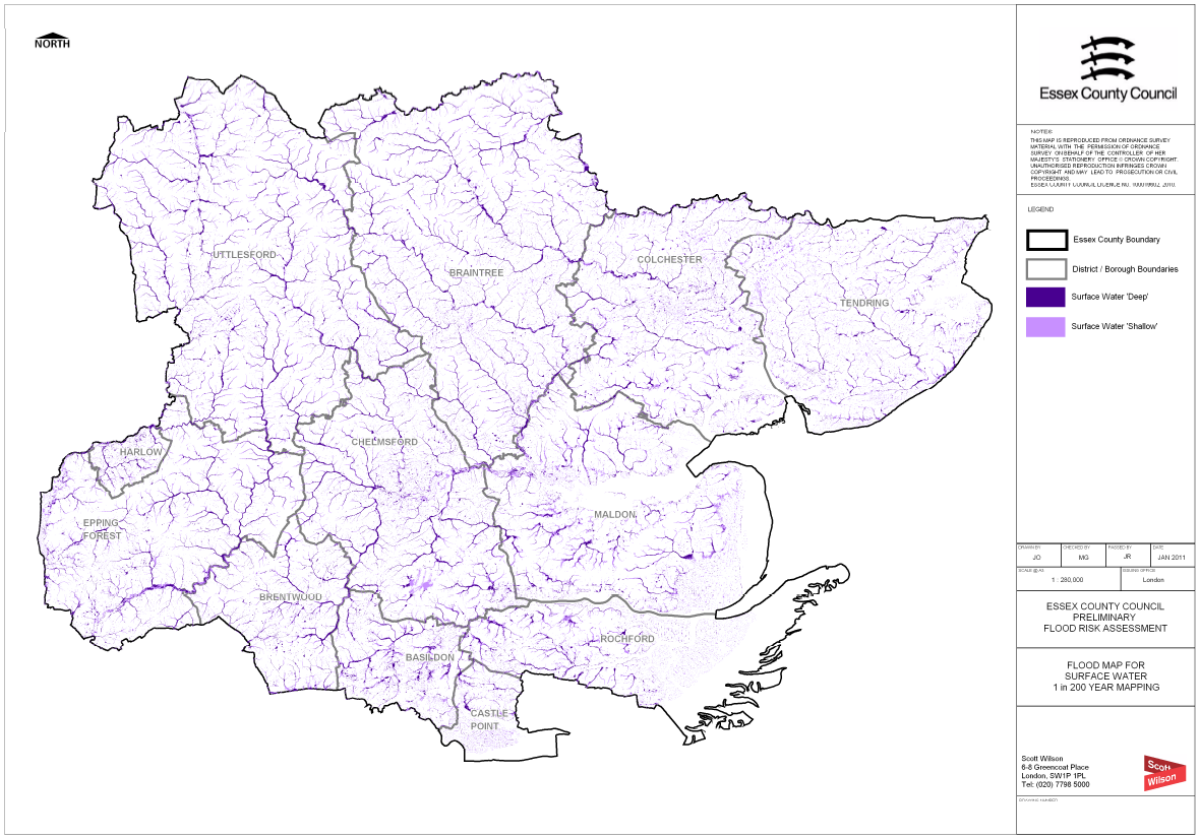
Source: Essex County Council Preliminary Flood Risk Assessment, January 2011

11.6. Surface Water Flood Risk

There is no local information currently available on surface water flood risk in Essex however the Environment Agency have produced a national assessment of surface water flood risk. Figure 28 shows the areas in Essex which are likely to experience surface water flooding in a 1 in 30 year and a 1 in 200 year event.

Surface water flood risk is relatively high in Essex with all main settlements assessed being ranked in the top 1000 settlements most susceptible to surface water flooding. The Preliminary Flood Risk Assessment for Essex (January 2011) suggests that *"there are around 27,000 properties at risk of surface water flooding (from a 1 in 200 year event) in the main settlements of Essex alone"*.

Figure 28: Surface water Flood Map



Source: Essex County Council Preliminary Flood Risk Assessment, January 2011

11.7. EA Objections to Development

Each year the Environment Agency (EA) produces a national list of planning applications which the EA raised objection to on the grounds of flood risk.

The EA will object to planning applications on the grounds of flood risk when:

- the proposed development is not consistent with Government Planning Policy
- there is a lack of evidence that the sequential test and (where needed) the exception test have been applied correctly
- it is not supported by a flood risk assessment
- the flood risk assessment does not demonstrate that the development and its occupants/users will be safe for the lifetime of the development, does not increase flood risk elsewhere and does not seek to reduce risk overall

In Essex between 2011 and 2012 there were 76 planning applications that were objected to by the Environment Agency on the grounds of flood risk. Of these, 5 planning applications came from Essex County Council and related to infrastructure, educational institutions and recycling facilities. These are shown in the following table.

Table 21: Planning Applications Objected to by the Environment Agency on the Grounds of Flood Risk, 2011 to 2012

LPA	LPA Reference	Nature of Proposed Development	Reason for Agency Objection
Essex County Council	DM/PC/CC/COL/17/11	Construction of up to 1000 space park and ride facility with associated terminus building, landscaping, access road, lighting and associated infrastructure /	Unsatisfactory FRA/FCA submitted (Surface Water)
Essex County Council	CC/COL/28/11	The provision of a temporary single modular classbase with an accessible WC and kitchenette facilities for a temporary period until 31st September 2015 /	Unsatisfactory FRA/FCA Submitted
Essex County Council	DM/SB/MP/CC/BAS/62/11	Construction of a new replacement secondary school building. /	Unsatisfactory FRA/FCA submitted (Surface Water)
Essex County Council	ESS/52/11/HLW	Use of the site as a recycling centre for inert and non-hazardous household, commercial and industrial waste and end of life vehicles. Proposed associated development to include the erection of a workshop, modular building, weighbridge and 6m high boundar	No sequential test, PPS25/TAN15 - Request for FRA/FCA
Essex County Council	ESS/53/11/MAL	The retrospective planning application for the deposit of dredged silt on existing siltation lagoons 1 and 2 located to the south and adjacent to Tollesbury Marina. /	Unsatisfactory FRA/FCA Submitted

Source: Environment Agency, 2010

There were no permissions approved contrary to environment agency advice relating to mineral management facilities.

11.8. Summary

Essex lies within three catchment flood management plan areas – North Essex, South Essex and the Thames. The main sources of flood risk for people, property, infrastructure and land use in these catchment areas are river flooding, surface water flooding, sewer flooding, tidal flooding (South Essex and Thames) and groundwater flooding (South Essex and Thames).

Surface water flood risk is relatively high in Essex with all main settlements assessed being ranked nationally in the top 1000 settlements most susceptible to surface water flooding. The Preliminary Flood Risk Assessment for Essex (January 2011) suggests that *"there are around 27,000 properties at risk of surface water flooding (from a 1 in 200 year event) in the main settlements of Essex alone"*.

Significant levels of flood risk have also been identified along the Essex coast and inland along river stretches. Essex Trends 2011 states *"While advances in flood protection have been made*

since the early 1950s the danger of coastal flooding remains significant, particularly as climate change increases the chance of storms and high tides coinciding."

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12. Population and Social

12.1. Introduction

Understanding the context of local demographic trends is important in planning for the future of an area. One needs to understand future demographics in order to account for the changing needs of the population who will live and work in Essex. It is important that new mineral management facilities and sites are located in areas that are sensitive to the requirements of the population, yet not contrary to sustainable mineral transportation.

12.2. Population

The Office for National Statistics (ONS) publishes annual mid year population estimates and biannual projections which are important in many facets of sustainable planning because they indicate the number of people likely to be living in an area and provide a base for estimating development levels and mineral requirements.

12.2.1. Population Structure

The Office for National Statistics (ONS) publishes annual mid year population estimates and biannual projections which indicate the number of people likely to be living in an area. For the benefits of the MLP, this can provide a base for estimating development levels and associated mineral requirements.

Table 22: 2001 – 2011 Mid-Year Population Estimates

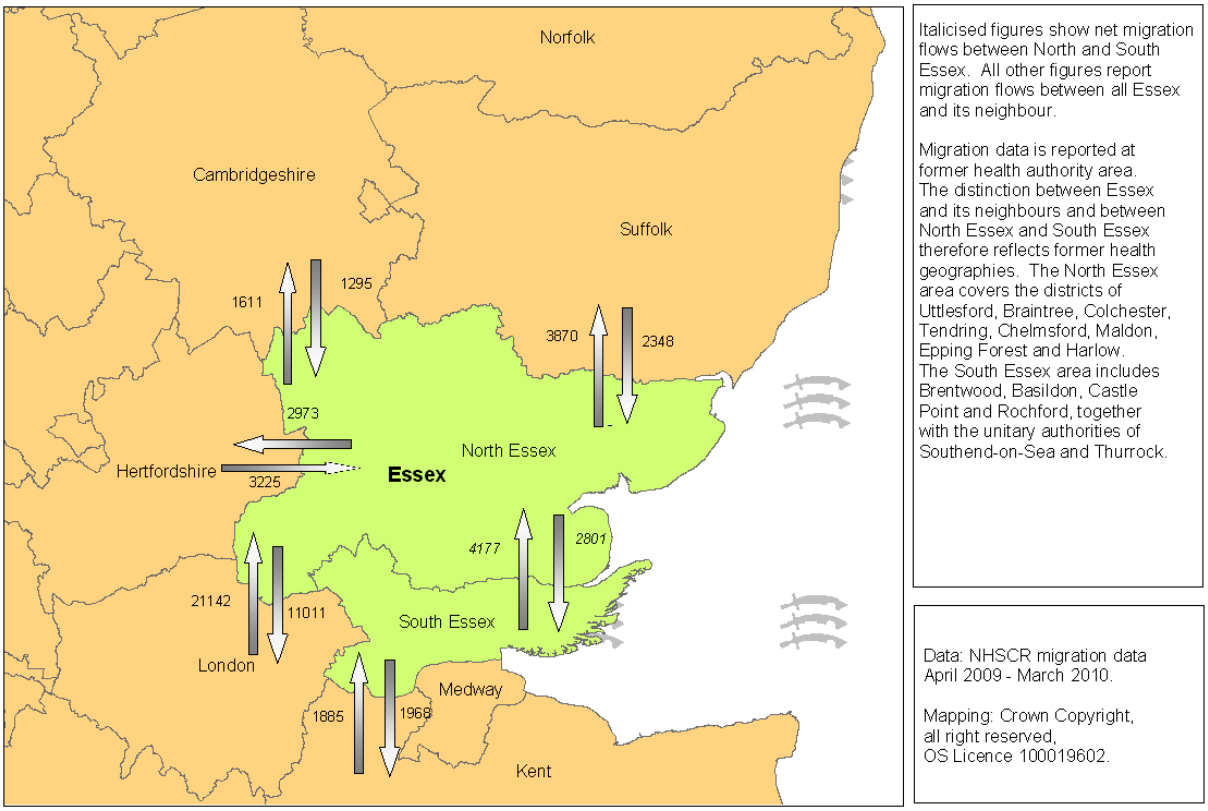
	2001	2011	Percentage Change
Basildon	165,900	174,971	5.5%
Braintree	132,500	147,514	11.3%
Brentwood	68,500	73,841	7.8%
Castle Point	86,700	87,964	1.5%
Chelmsford	157,300	168,491	7.1%
Colchester	156,000	173,614	11.3%
Epping Forest	121,000	124,880	3.2%
Harlow	78,800	82,177	4.3%
Maldon	59,600	61,720	3.6%
Rochford	78,700	83,333	5.9%
Tendring	138,800	138,062	-0.5%
Uttlesford	69,000	80,032	16.0%
Essex	1,312,800	1,396,599	6.4%
East of England	5,400,500	5,862,418	8.6%
England	49,449,700	53,107,169	7.4%

Source: ONS, 2012

The above table shows that Essex had an estimated population of 1,396,599 people as of 2011, having increased by 83,799 people from the 2001 Census figure. At 6.4% this rate of increase is slightly below both the equivalent regional and national figures. In 2011, Basildon had the largest estimated population within Essex at 174,971 people, followed by Colchester and Chelmsford. The smallest population estimate was in Maldon with 61,720. The largest percentage increase in population since 2001 base date to the 2011 estimates occurred in Uttlesford at 16% while Tendring has experienced a slight decrease in population.

According to Essex Trends 2011 Essex has an ageing population and the concentration of over-65s will increase dramatically as the baby-boom children of post-war settlers reach retirement. Although a nation-wide problem, an ageing population will be more evident in Essex as 13% of local people are within ten years of their sixty-fifth birthday; over 26% are within twenty years.

Figure 29: Migration flows to, from and within Essex: 2009/2010



Source: Taken from Essex Trends 2011

Migration within the county has been predominantly to the north. "*Those moving within the county, tend to move from the more urbanised south to the more rural north*"[1]. Migration across the Essex border has been recorded between Essex and all neighbouring counties and London. The greatest migration flows are to and from London with migration from London being more dominant at 21,000 people compared to over 11,000 people moving in to London from Essex.

12.2.2. Population Projections by ONS

The ONS also publish population projections. Projections for 2021 are trend based, meaning that future populations are based on assumptions that births, deaths and migration will continue observed trends over the previous five years. They show what the future population of an area will be if these trends continue. They do not reflect any future policy intentions. The implications of population projections help to identify capacity need for extracted minerals. The currently available ONS population projections at the sub-regional level are Interim 2011-based Subnational Population Projections published by ONS in September 2012.

Table 23: Population Projections

	2011	2021	Percentage Change
Basildon	174,971	187,879	7.38%
Braintree	147,514	162,805	10.37%

[1] Essex Trends 2011, Strategic Services at Essex County Council (September 2011)

	2011	2021	Percentage Change
Brentwood	73,841	80,979	9.67%
Castle Point	87,964	94,288	7.19%
Chelmsford	168,491	180,563	7.16%
Colchester	173,614	200,324	15.38%
Epping Forest	124,880	139,274	11.53%
Harlow	82,177	89,720	9.18%
Maldon	61,720	66,971	8.51%
Rochford	83,333	90,840	9.01%
Tendring	138,062	156,797	13.57%
Uttlesford	80,032	91,569	14.42%
Essex	1,396,599	1,542,010	10.41%
East of England	5,862,418	6,457,823	10.16%
England	53,107,169	57,687,784	8.63%

Source: ONS, 2012

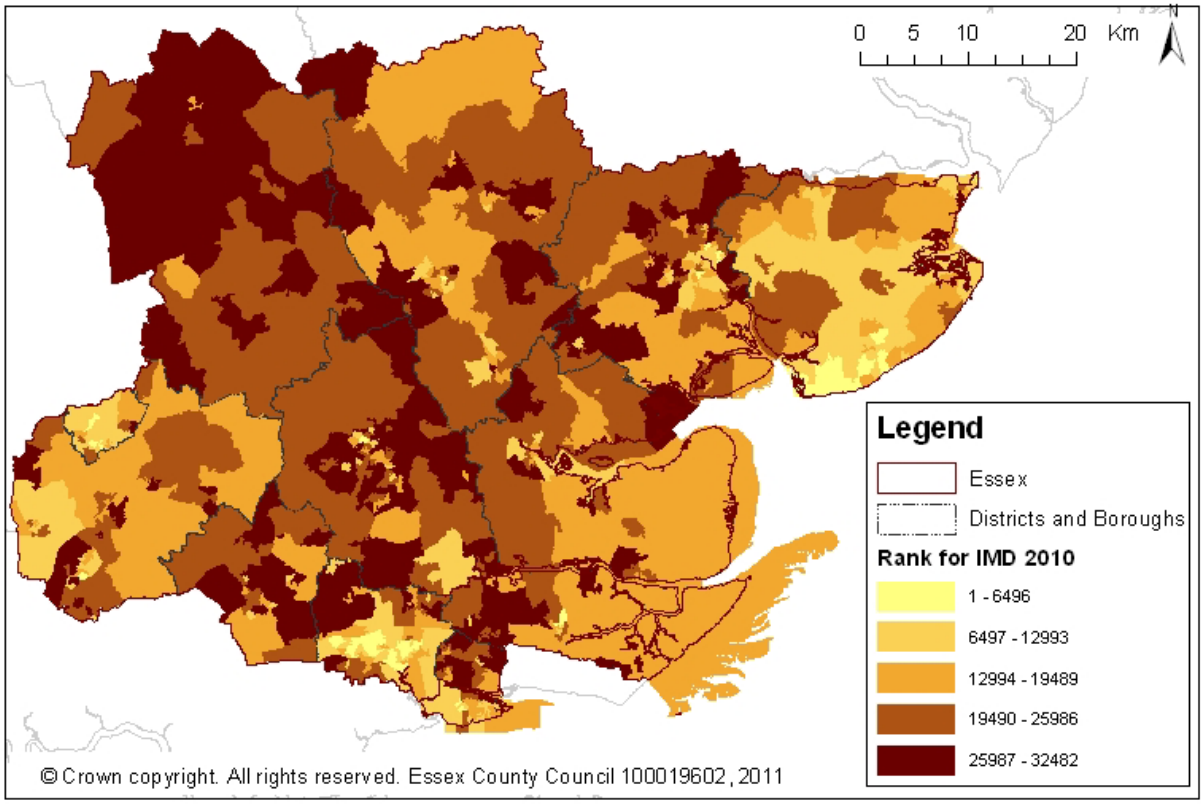
The greatest population increase is projected to occur within Colchester Borough (15.38%) whilst Chelmsford City is projected to encounter the smallest increase, at 7.16%. along with Castle Point Borough at 7.19%

Overall Essex is projected to increase its population by 10.41% to an estimated population in 2021 of 1,542,010. This percentage change is greater than both the national and region levels. It is important to locate new mineral development facilities in close proximity to the areas of greatest need.

12.3. Deprivation

The figure below shows the varying levels of deprivation across Essex, based on the governments Indices of Multiple Deprivation (IMD), which is composed of the following seven categories; income, employment, health, education, barriers to housing and services, living standards and crime. The figure shows that there are broadly low levels of deprivation recorded across the county when ranked nationally however pockets of severe deprivation do exist.

Figure 30: Indices of Multiple Deprivation 2010 across Essex



Source: DCLG & Essex County Council, 2011

The IMD 2010 uses a low geographic unit to measure small area deprivation – Lower Super Output Areas (LSOAs). These small areas have an average of 1500 people, a minimum of 1000 and are sub-divisions of wards. There are 863 LSOAs in Essex and 32,482 across England. Essex contains 52 LSOAs in the most deprived 20% nationally and 13 LSOAs in the most deprived 10%. Of the 13, seriously deprived areas 4 are within Basildon Borough, 2 are within Colchester Borough and the remaining 7 are in the District of Tendring. Coastal Jaywick (E01021988) in Tendring District is the most deprived LSOA in the whole of England.

12.4. Summary

Understanding the context of local demographic trends is important in planning for the future of an area, to account for the changing needs of the population, and the needs of people who live and work in Essex. It is important that new mineral management facilities and sites are located in areas that are sensitive to the requirements of the population, yet not contrary to sustainable mineral transportation.

Essex had an estimated population of 1,396,599 people as of 2011, having increased by 83,799 people from the 2001 Census figure. At 6.4% this rate of increase is slightly below both the equivalent regional and national figures. In 2011, Basildon had the largest estimated population within Essex at 174,971 people, followed by Colchester and Chelmsford. The smallest population estimate was in Maldon with 61,720.

According to Essex Trends 2011 Essex has an ageing population and the concentration of over-65s will increase dramatically as the baby-boom children of post-war settlers reach retirement. Although a nation-wide problem, an ageing population will be more evident in Essex as 13% of local people are within ten years of their sixty-fifth birthday; over 26% are within twenty years.

Migration within the county has been predominantly to the north. *"Those moving within the county, tend to move from the more urbanised south to the more rural north"*[2]. Migration across the Essex

[2] Essex Trends 2011, Strategic Services at Essex County Council (September 2011)

border has been recorded between Essex and all neighbouring counties and London. The greatest migration flows are to and from London with migration from London being more dominant at 21,000 people compared to over 11,000 people moving in to London from Essex.

Essex is projected to increase its population by 10.41% to an estimated population of 1,542,010 in 2021. This percentage change is greater than both the national and region levels. It is important to locate new mineral development facilities in close proximity to the areas of greatest need.

There are varying levels of deprivation across Essex, based on the governments 2010 Indices of Multiple Deprivation (IMD), which is composed of the following seven categories; income, employment, health, education, barriers to housing and services, living standards and crime. There are broadly low levels of deprivation recorded across the county when ranked nationally however pockets of severe deprivation do exist.

Essex contains 52 areas known as Lower Super Output Areas (LSOAs) in the most deprived 20% nationally and 13 LSOAs in the most deprived 10%. Of the 13, seriously deprived areas 4 are within Basildon Borough, 2 are within Colchester Borough and the remaining 7 are in the District of Tendring. Coastal Jaywick (E01021988) in Tendring District is the most deprived LSOA in the whole of England.

13. Health

13.1. Introduction

The implications of noise and air quality are dealt with in the Air Quality chapter of this report. As a result road safety issues form the majority of this chapter.

13.2. Health Profile 2011

The Association of Public Health Observatories (APHO) publishes annual health profiles for districts, counties and regions throughout the UK. The headline results for Essex in the 2011 report were as follows:

- The health of people in Essex is generally better than the England average. Deprivation is lower than average, however 46,975 children live in poverty.
- Life expectancy for both men and women is higher than the England average at 79.6 years and 83.1 years respectively. There are however inequalities within Essex. For example life expectancy is 6.8 years lower for men and 4.4 years lower for women in the most deprived areas of Essex than in the least deprived areas (based on the Slope Index of Inequality published on 5th January 2011).
- Over the last 10 years, all cause mortality rates have fallen. Early death rates from cancer and from heart disease and stroke have also fallen and are better than the England average.
- About 16.1% of Year 6 children are classified as obese. A lower percentage than average of pupils spend at least three hours each week on school sport.
- An estimated 18.6% of adults smoke and 24.2% are obese. The rate of road injuries and deaths is higher than average.
- Priorities in Essex include improving educational attainment, reducing inequalities and improving levels of physical activity

13.3. Accessible Natural Greenspace

Accessible local greenspace is an important contributor to good health. It not only provides a daily experience of wildlife but contact with nature boosts people's physical and mental health. Exercise in the outdoors reduces obesity and is shown to reduce heart disease, blood pressure and diabetes – among England's most common medical problems.

Natural England has devised the Accessible Natural Greenspace Standard (ANGSt), which sets out the minimum amount of accessible natural greenspace that any household should be within reach of. The criteria state that:

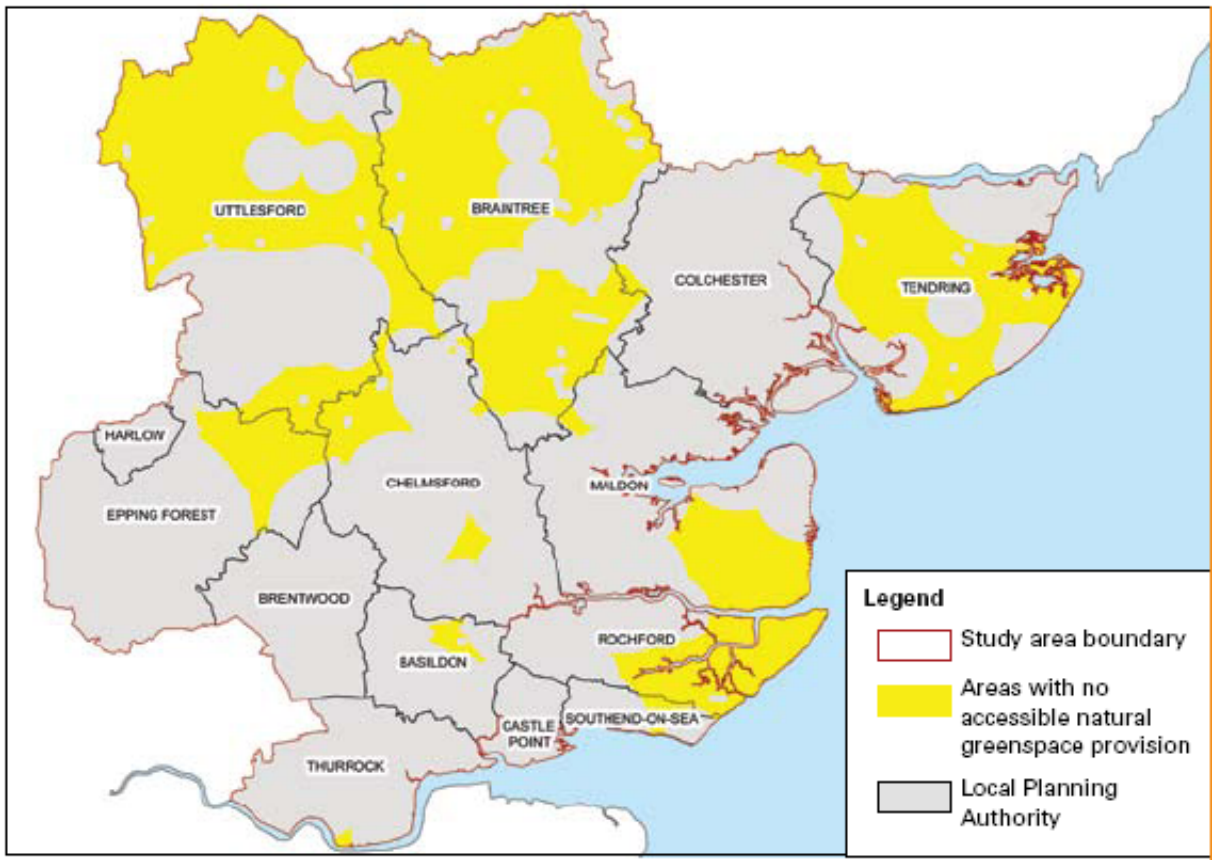
- an accessible natural greenspace of at least 2 hectares in size, no more than 300 metres (5 minutes walk) from home;
- at least one accessible 20 hectare site within two kilometres of home;
- one accessible 100 hectare site within five kilometres of home; and
- one accessible 500 hectare site within ten kilometres of home.

In Essex there is 15,055ha of accessible natural greenspace however only 9% of Essex households have all of their ANGSt requirements met, while 16% of households within Essex have none of their ANGSt requirements met. The areas that fare the worst according to the ANGSt criteria are the more rural parts of the county as there is often limited official public access beyond the footpath network as shown in Figure 31.

The districts of Tendring, Uttlesford and Braintree had the highest proportions of households without access to natural greenspace with 59%, 54% and 35% respectively. There were no

households in Basildon. Braintree, Castle Point, Chelmsford, Rochford and Uttlesford meeting all of their ANGSt requirements and Brentwood, Maldon and Tendring had less than 1% being met.

Figure 31: Areas in Essex with No Accessible Natural Greenspace provision



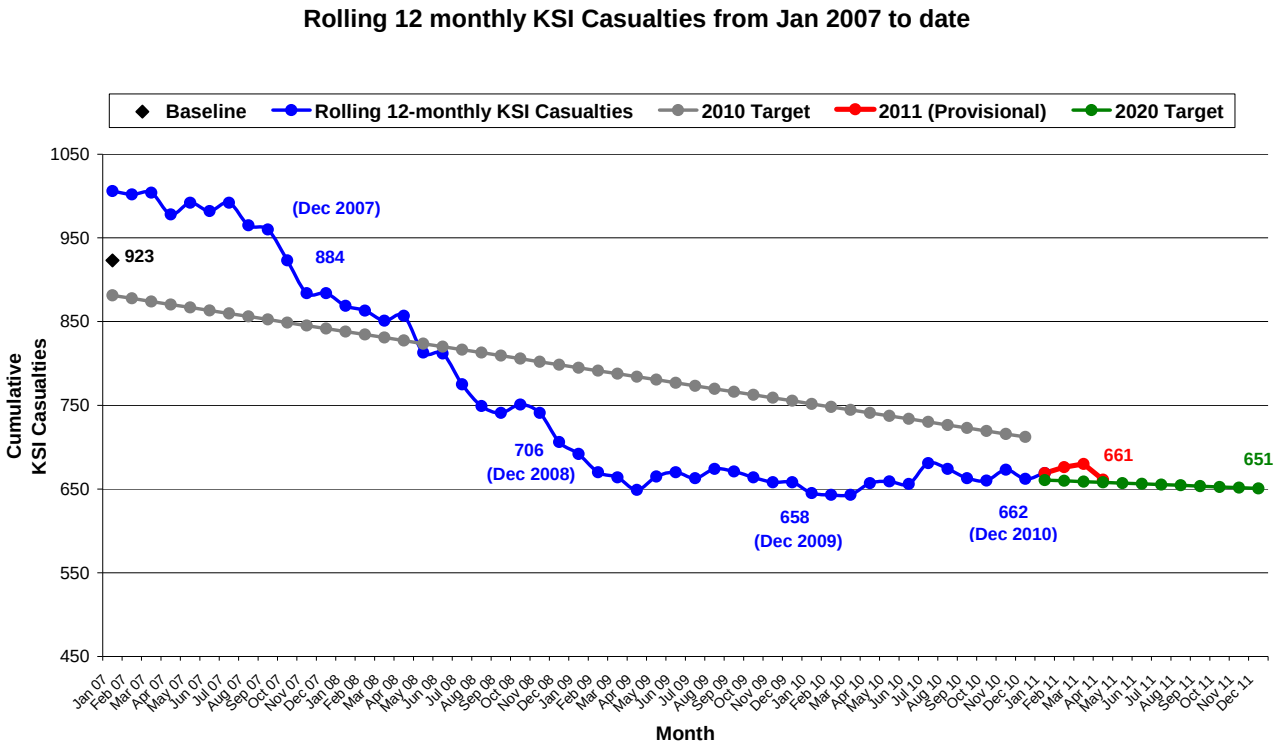
Source: Analysis of Accessible Natural Greenspace Provision for Essex, including Southend-on-Sea and Thurrock Unitary Authorities, Essex Wildlife Trust, August 2009[3].

13.4. Road Safety

The main indicators of road safety are the number of people killed or seriously injured (KSI) in road traffic accidents and the number of children KSI in road traffic accidents. They are collected to assess whether the national casualty reduction target set by the Public Service Agreement (PSA) are being met. The Department for Transport have stated that a 40% reduction of the 1994 – 1998 KSI baseline was needed by 2010, and a 50% reduction in child casualties was required by the same year.

[3] http://www.essexwt.org.uk/news/angst/

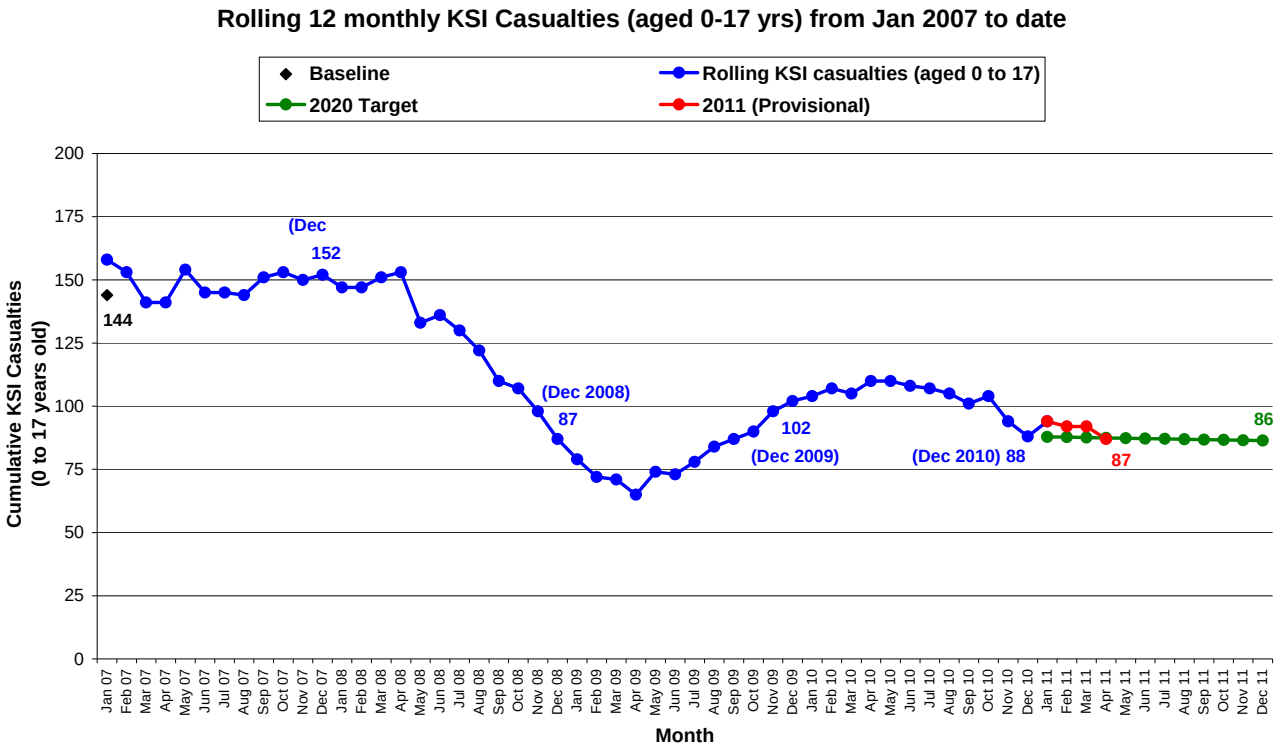
Table 24: KSI casualties in Essex from 2007 to 2011



Source: Driving Casualties Down in Essex, 2012

Between January 2007 and April 2011, the number of KSI casualties in the County has reduced, from 1006 to 661. Since May 2008 the number of KSI casualties per month has been lower than the Department for Transport 2010 based target indicator. Prior to this period Essex was exceeding it.

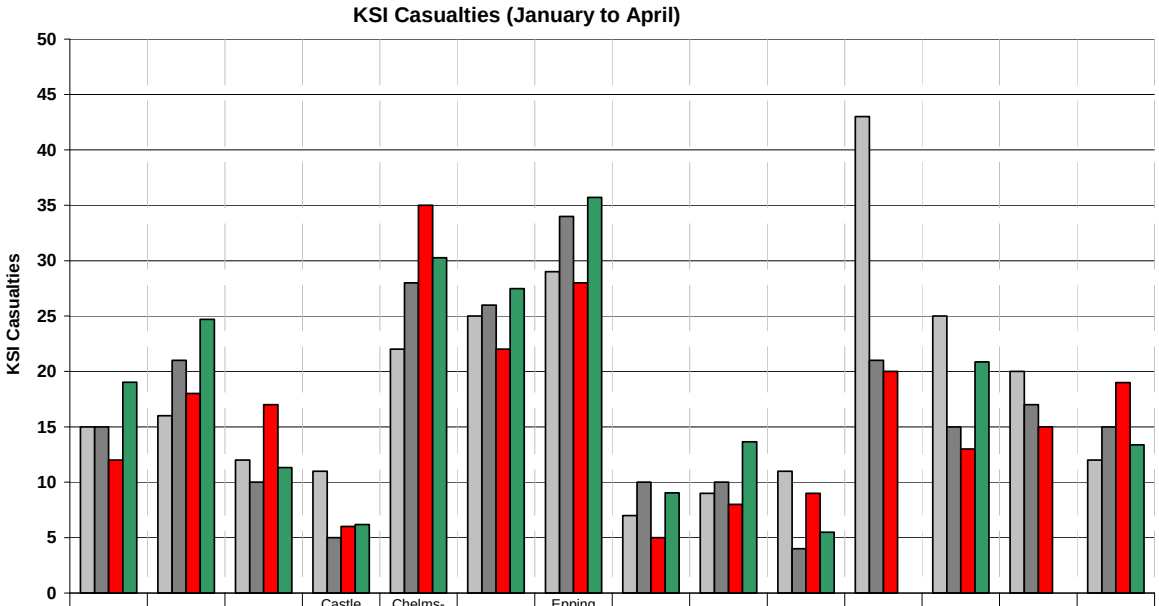
Table 25: Child KSI casualties (Aged 0 – 17) within Essex from 2007 to 2011



Source: Driving Casualties Down in Essex, 2012

Between January 2007 and April 2011, the number of Child KSI casualties in Essex has reduced, from 158 to 85. Between this period there has been both examples exceedences and a meeting of the Department for Transport target indicator.

Table 26: Comparison of Killed or Seriously Injured Casualties within Greater Essex from January to April 2011



	Basildon	Braintree	Brentwood	Castle Point	Chelms-ford	Colchester	Epping Forest	Harlow	Maldon	Rochford	Southend	Tendring	Thurrock	Uttlesford
Same period 2009	15	16	12	11	22	25	29	7	9	11	43	25	20	12
Same period 2010	15	21	10	5	28	26	34	10	10	4	21	15	17	15
2011 YTD (Provisional)	12	18	17	6	35	22	28	5	8	9	20	13	15	19
2011 YTD Target Indicator	19	25	11	6	30	27	36	9	14	5	0	21	0	13

Source: Driving Casualties Down in Essex, 2012

In Essex the local authority areas of Brentwood, Chelmsford, Rochford and Uttlesford are currently exceeding their target indicator for the period January to April 2011.

13.5. Summary

There are health inequalities within Essex by location, gender, deprivation and ethnicity. The health of people in Essex is generally better than the England average. Deprivation is lower than average, however 46,975 children live in poverty. Male and female life expectancy in all local authorities in Essex is better than, or similar to, the England average. However inequalities show that life expectancy is 6.8 years lower for men and 4.4 years lower for women in the most deprived areas of Essex than in the least deprived areas.

Over the past ten years, deaths from all causes for men and women and early death rates from cancer improved in parallel with the England average and from heart disease and stroke the Essex rate is still below the national rates.

Obesity is high with an estimated 24% of adults and are obese and about 16% of year 6 children are classified as obese.

Priorities in Essex include improving educational attainment, reducing inequalities and improving levels of physical activity.

Accessible local greenspace is also an important contributor to good health. It not only provides a daily experience of wildlife but contact with nature boosts people's physical and mental health. In Essex there is 15,055ha of accessible natural greenspace however only 9% of Essex households have full access to it when following criterion of Natural England's Accessible Natural Greenspace Standard (ANGSt). 16% of households within Essex do not have any access to natural greenspace. The areas that fare the worst according to the ANGSt criteria are the more rural parts of the county as there is often limited official public access beyond the footpath network.

Between January 2007 and April 2011, the number of KSI casualties in the County has reduced, from 1006 to 661. Since May 2008 the number of KSI casualties per month has been lower than the Department for Transport 2010 based target indicator.

Between January 2007 and April 2011, the number of Child KSI casualties in Essex has reduced, from 158 to 85. Between this period there has been both examples exceedences and a meeting of the Department for Transport target indicator.

14. Transport

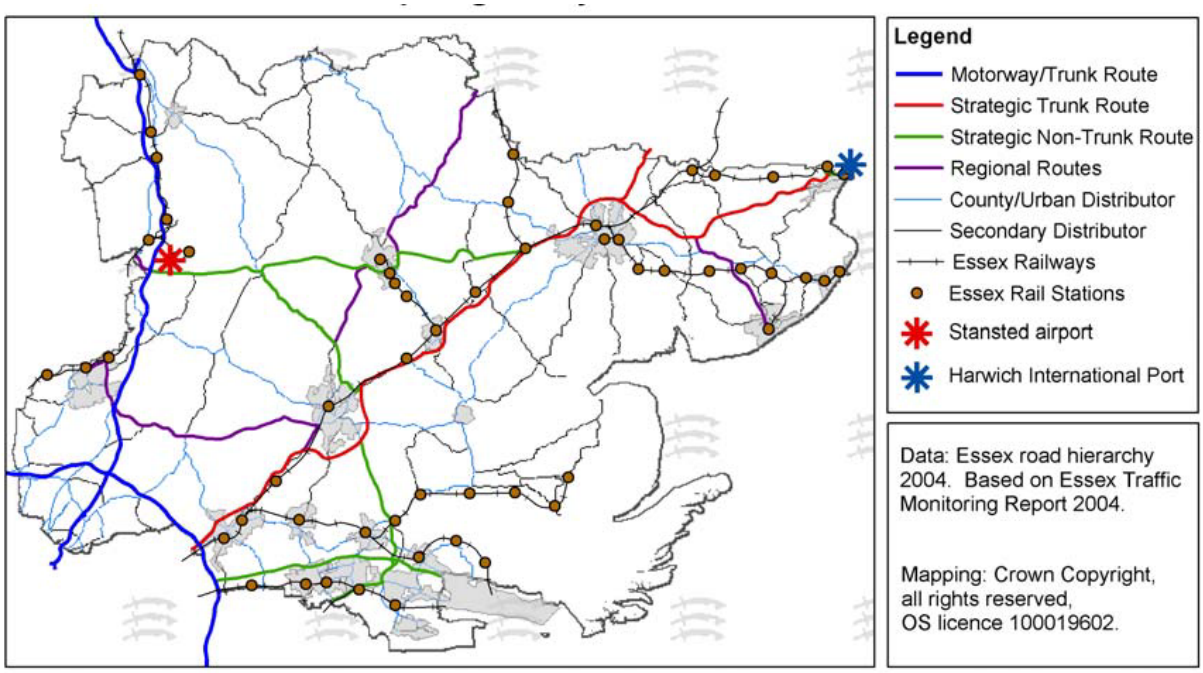
14.1. Introduction

Essex is located in the East of England and lies to the north east of London, the nation's capital and major employment centre. As a result of its proximity to London, there is a large commuter population. Essex has a large rural area, similar in size to Suffolk, whilst also being the site of key international gateways such as Stansted and Harwich. The County also has major national routes including the M25 and the M11 running through it. As a result the transport demands faced by the County are uniquely complex.

14.2. Transport infrastructure

Essex has good transport connections by road, rail, air and sea. The nationally important M11, M25, A12 and A120 run through the county, and major local roads including the A13, A127, A130 and A414 provide good coverage. Three main rail lines radiate from London, supplemented by a number of branch lines, serving 57 railway stations, and the London Underground extends into the south of the county. As a result of its proximity to London, there is a large commuter population. The county also contains two major 'International Gateways': the UK's third busiest airport at Stansted (which handles around 20 million passengers each year); and Harwich International sea port which provides nationally important connections to Holland and Denmark[4].

Figure 32: Travel networks and Transport Gateways in Essex



Source: Essex Trends 2011

14.3. Road Network

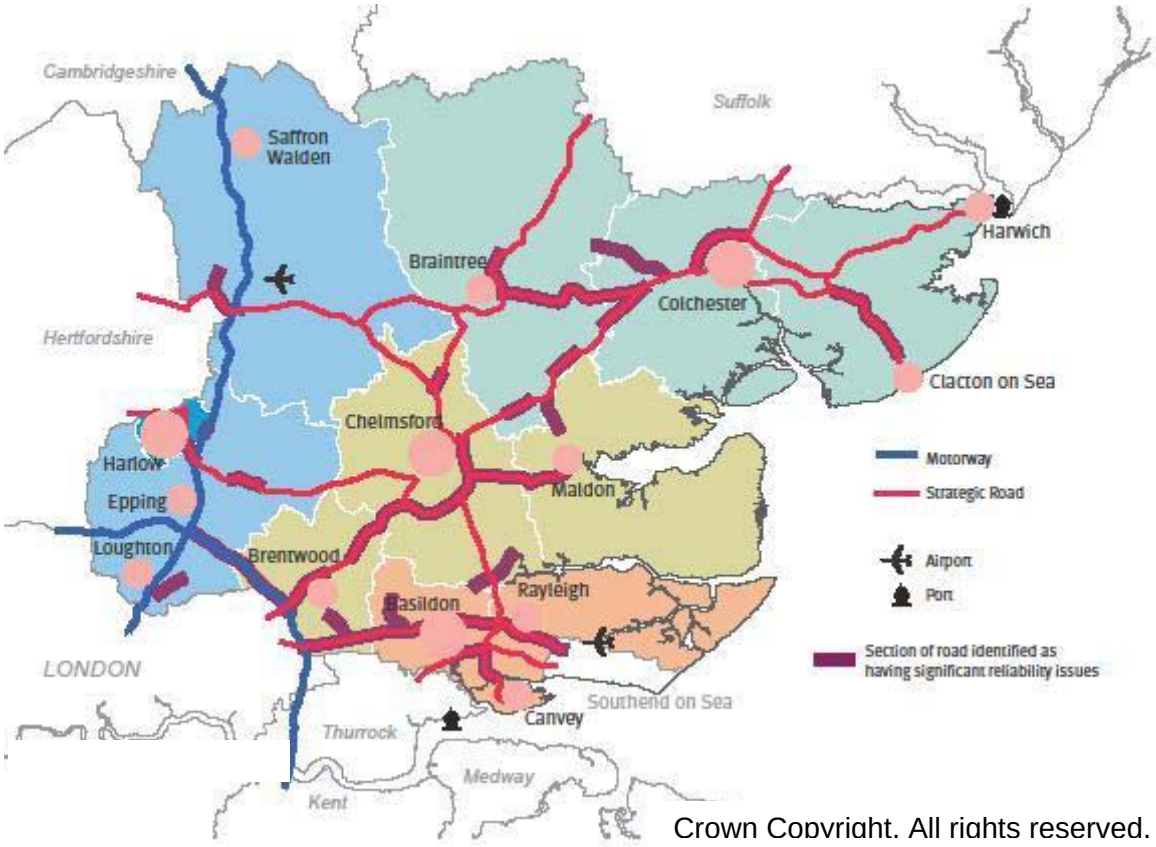
Essex road network operates safely and largely efficiently. According to the Essex Transport Strategy (2011) the number of lives lost on local roads in Essex has been halved since 1998 and journey-time reliability has improved since 2005, particularly in main centres through targeted measures to tackle congestion.

However, persistent network efficiency issues remain, especially on a number of strategic inter-urban routes which are operating at or near to capacity. Figure 33 identifies sections of the road network that are likely to suffer from journey unreliability. These include sections of the A12, M25

[4] Essex Transport Strategy 2011

and M11 which are managed by the Highways Agency and specific sections of the A127, A120 and A414 which are managed by Essex County Council.

Figure 33: Sections of the road network likely to suffer from journey unreliability



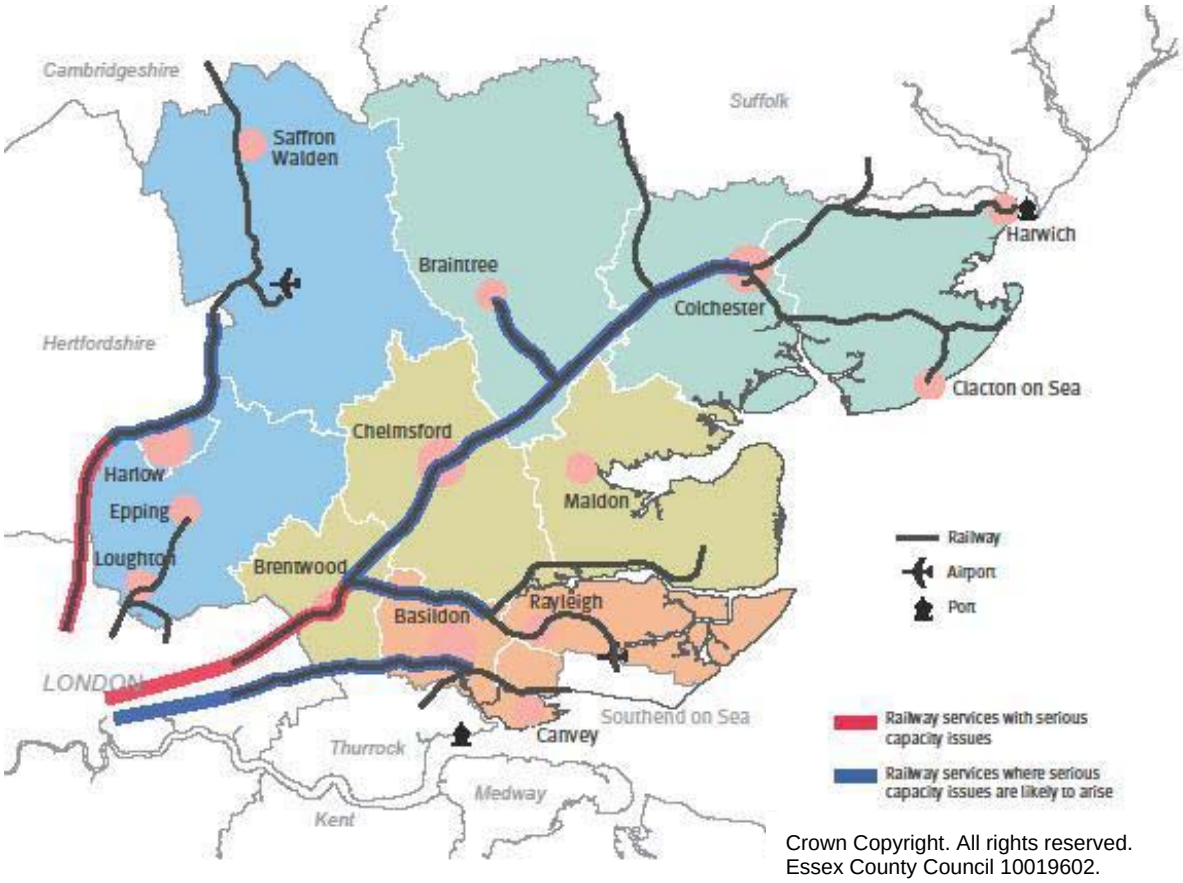
Source: Essex Transport Strategy (2011)

14.4. Rail Network

There are two mainline railway networks that operate across Essex, C2C and Greater Anglia, both of which are important transport and commuter links connecting Essex with London and beyond.

Figure 34 shows that some sections of the railway network in Essex, which are nearest to London, are currently experiencing serious capacity issues. By 2031 it is anticipated that capacity will be a problem on most of the railway network.

Figure 34: Sections of the rail network with capacity issues



Source: Essex Transport Strategy (2011)

14.5. Travel Patterns

Travel by car is the preferred travel choice for most trips within Essex; however travel by train represents a higher proportion of trips made than in other comparable areas. This is largely attributed to the fact that a large proportion of commuting trips out of Essex are accommodated by the rail network.

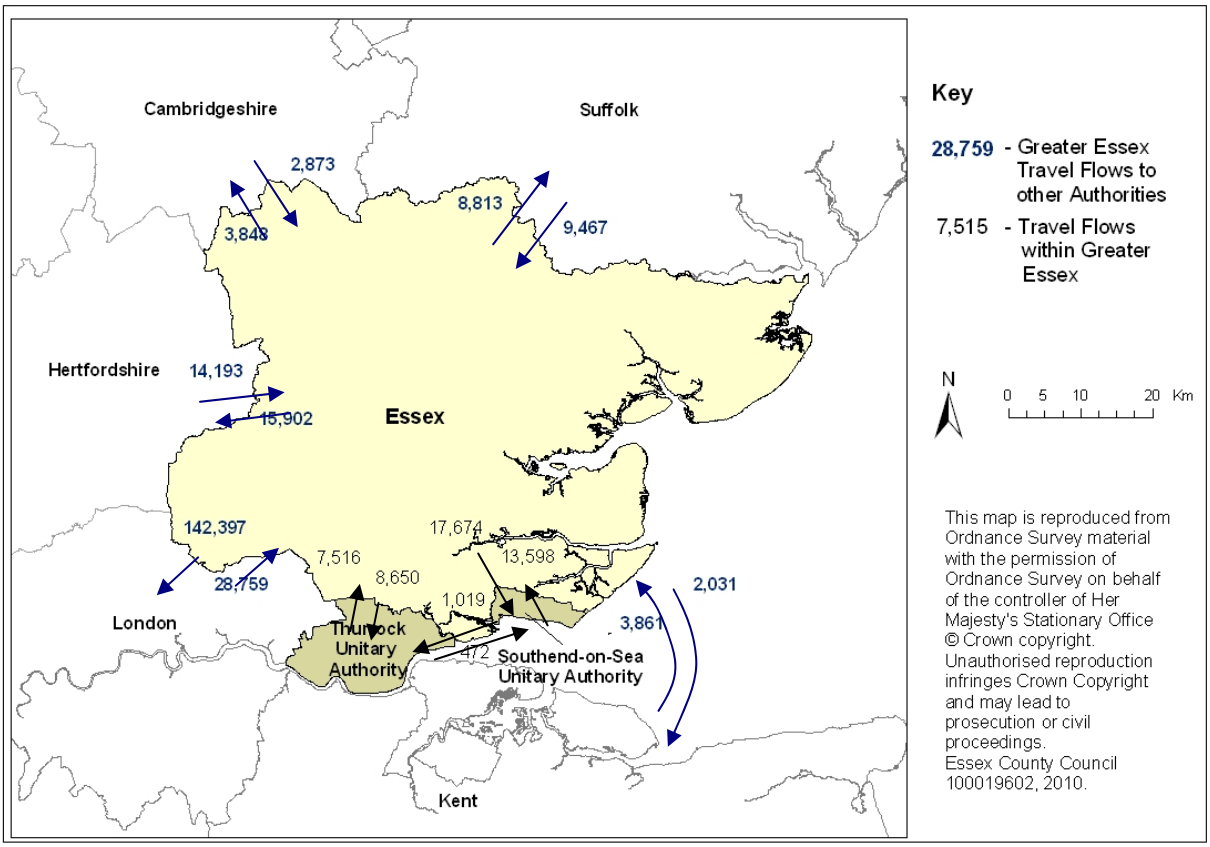
The average Essex resident commuting distance is 14km (9miles) which is 4km (2.5miles) above the national average and also reflects the importance of London as a source of employment, particularly for those living to the west of the county. Apart from those who travel to London, journey to work data for Essex residents indicates that a high proportion of people live in close proximity to their place of work, with 30% of residents living less than 3 miles from their job. [5].

14.6. Work Travel Flows

Work travel flows in the figure below show that there is a large commuter population within Greater Essex. The most significant movement from the area, of nearly 126,500 workers, is into London. There is also net movement of workers from Greater Essex to the neighbouring counties of Hertfordshire and Cambridgeshire and a net in-migration of workers from Kent and Suffolk.

[5] Essex Transport Strategy 2011

Figure 35: Work Travel Flows within and Around Greater Essex



Source: nomis (2001 Census)

14.7. Freight Movement

Around 6% of traffic on Essex's roads is made up of HGVs, rising to nearly a fifth on the Essex section of the M25, 16% on the M11 and around 14% on sections of the A12 and A120[6]. There are also around 50 freight trains passing through Essex each day, travelling mainly between Felixstowe and the North-West via London[7].

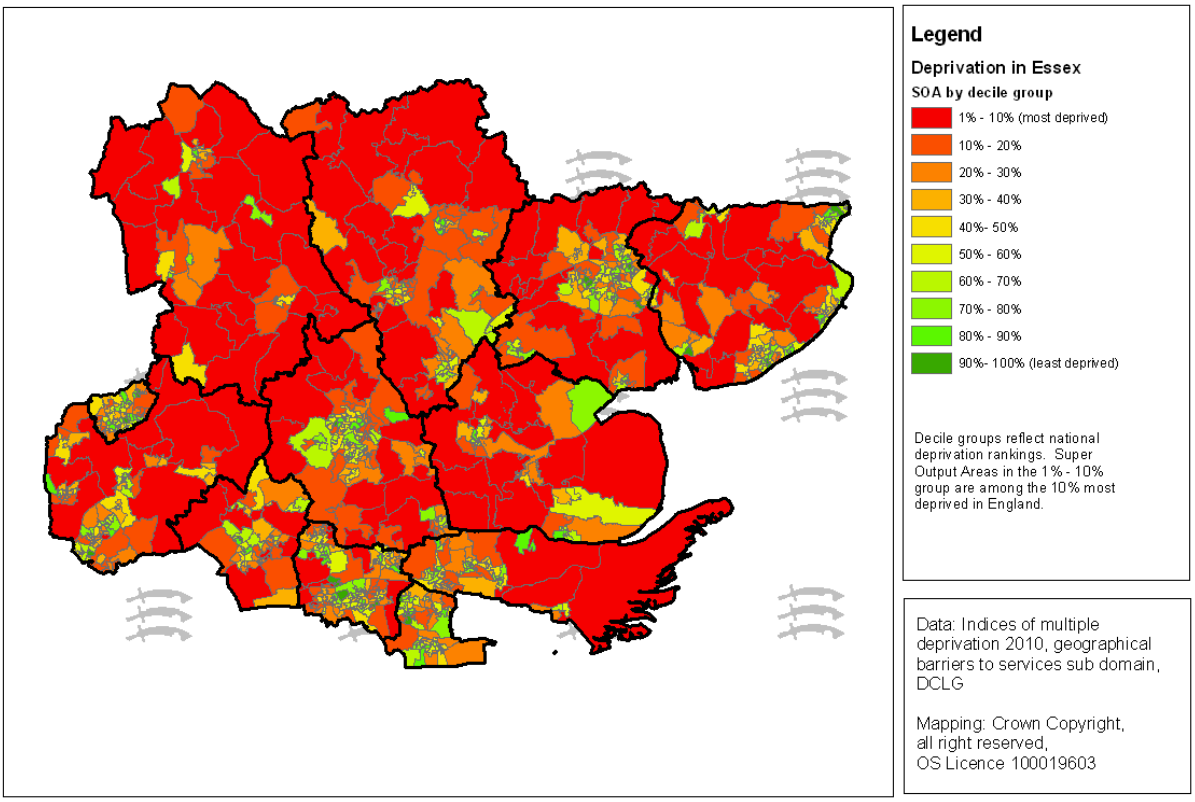
Strategic sites, located in close proximity to the point of use of the minerals are required to comply with sustainable transport policies. In the UK, minerals are moved over longer distances by rail or barge mainly to urban conurbations.

14.8. Accessibility

In Essex vulnerable residents currently have relatively poor access to services as shown in Figure 36. The map illustrates a high level of deprivation, based on the barriers to services domain, for most areas outside of the key urban areas. Data produced by the DfT reports that Essex has one of the lowest number of households with good access to key services or work within the East of England. Values were indexed with a base of 100 for England and Essex scored 87 while neighbouring county of Hertfordshire and the unitary authorities of Thurrock and Southend-On-Sea scored 127, 119 and 142 respectively[8].

[6] Average Annual Daily Traffic Flow (AADF) data produced by the Department for Transport, 2010
[7] Strategic Freight Network (2008) Network Rail
[8] 2010 Accessibility Statistics, Department for Transport

Figure 36: Access to Services

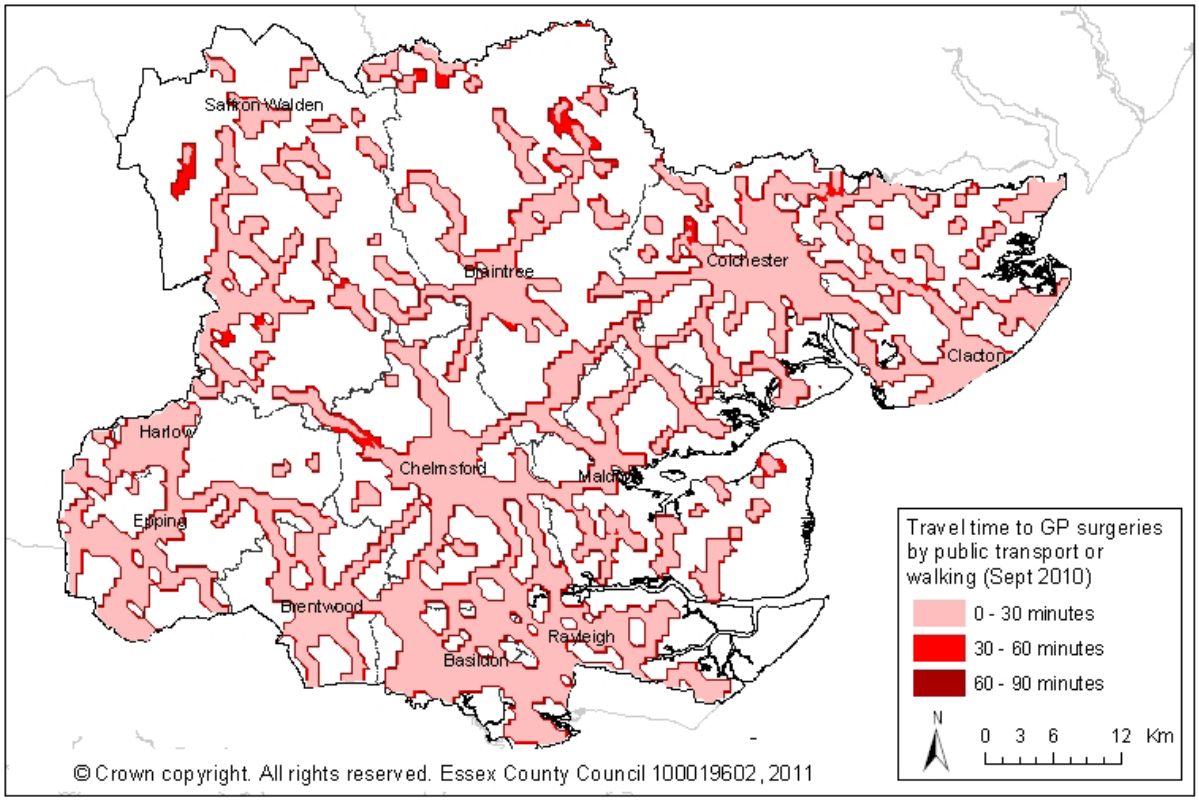


Source: 2010 Super Output Area data from Essex Trends 2011

Figure 37 to Figure 43 are accessibility maps which detail travel time for residents across Essex to services by public transport and walking. Access to these services is between 0 to 15 minutes in the centre of urban settlements with travel time dissipating away from these locations. It is important that mineral movements arising from new strategic sites do not compromise accessibility for residents to important services. There is also a clear linear pattern where travel time is less along major roads such as the A12 and A130. An area of no colour indicates that services are inaccessible for residents via both public transport and walking.

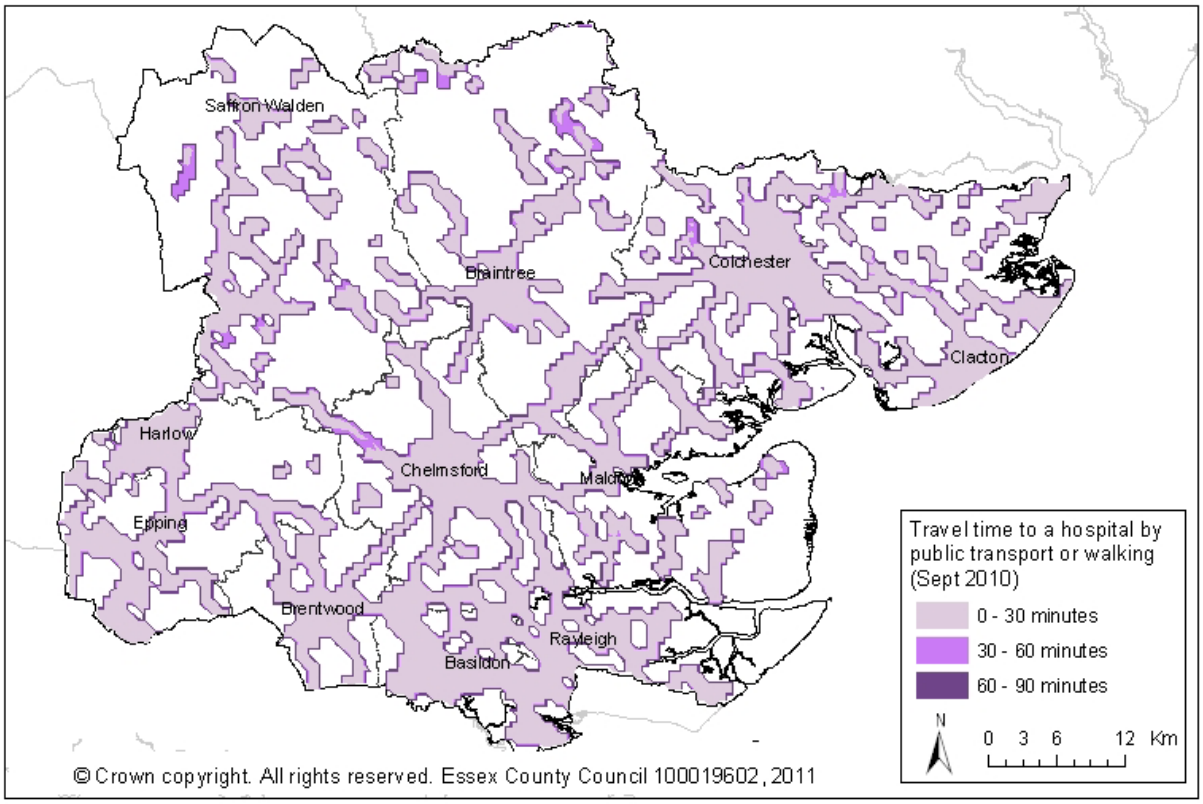
Figure 37 to Figure 43 are accessibility maps which detail travel time for residents across Essex to services by public transport or walking. Access to these services is greater in the centre of urban settlements with travel times dissipating away from these locations. There is also a clear linear pattern where travel time is less along major roads such as the A12 and A130. An area of no colour indicates that services are inaccessible for residents via both public transport and walking within the described times. The maximum travel time shown is up to 90 minutes.

Figure 37: Access to GP Surgeries September 2010



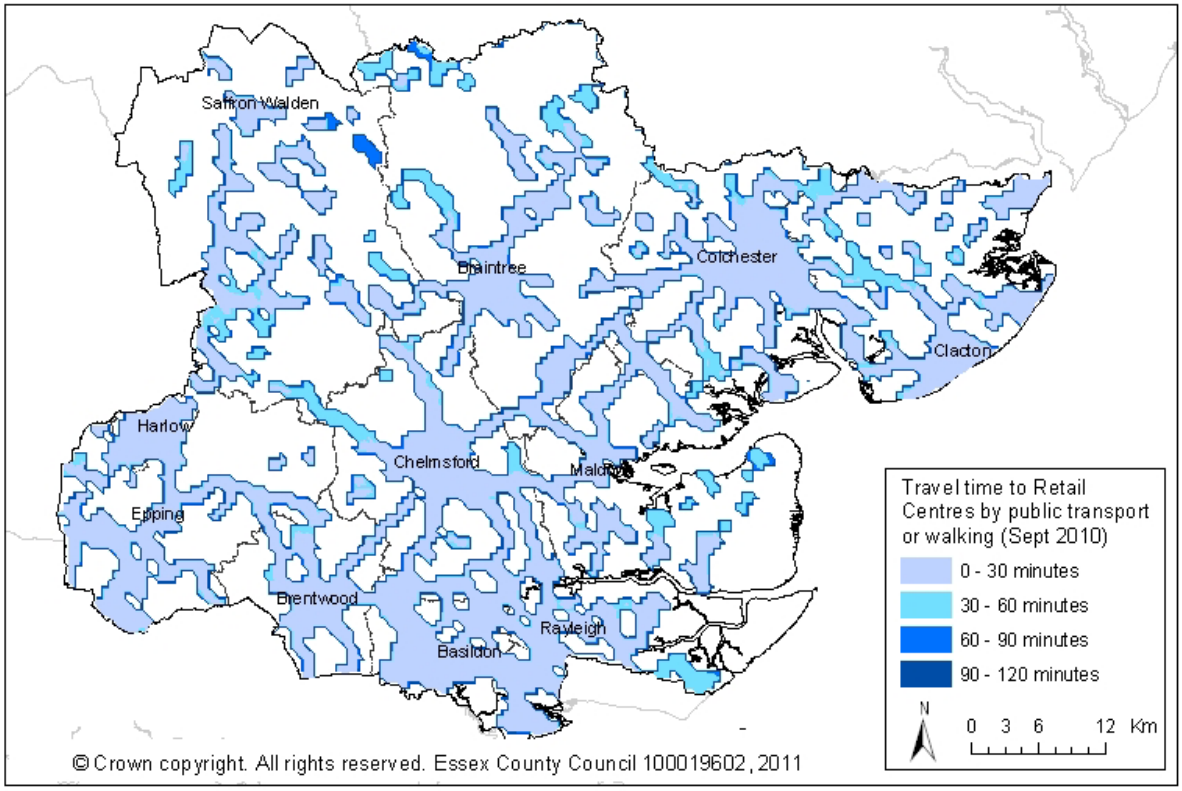
Source: Essex County Council, 2011

Figure 38: Access to Hospitals September 2010



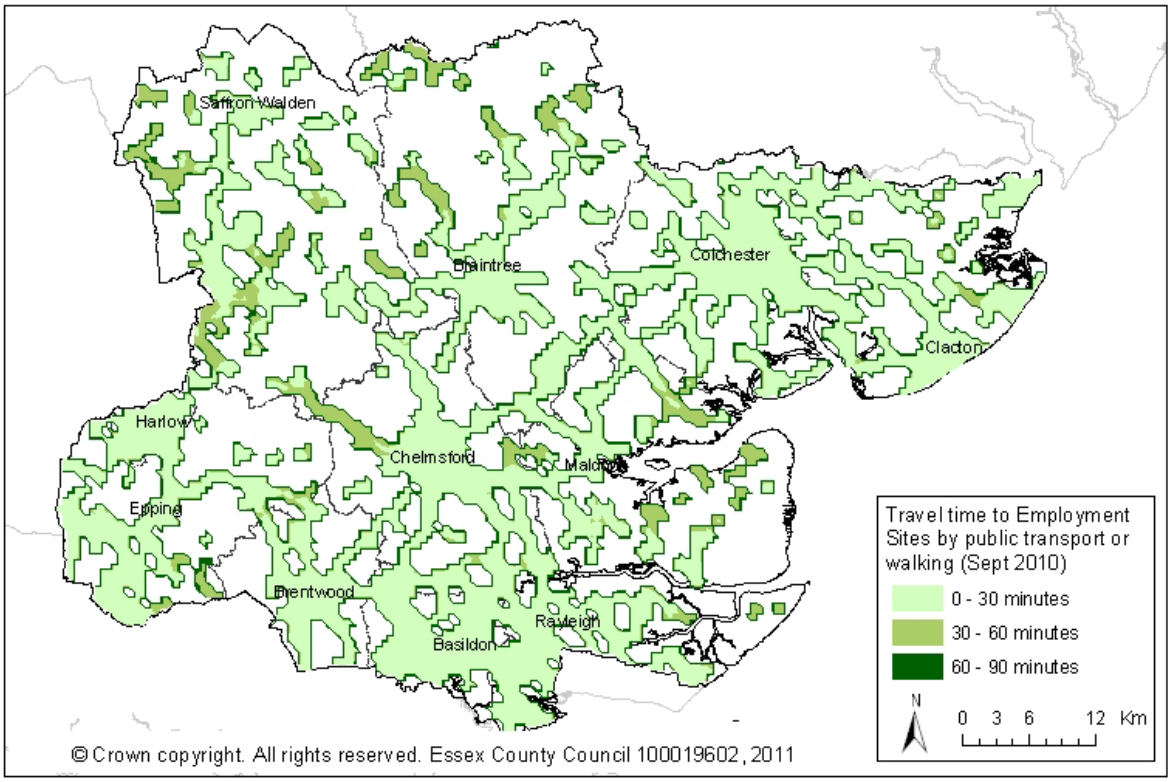
Source: Essex County Council, 2011

Figure 39: Access to Retail Centres September 2010



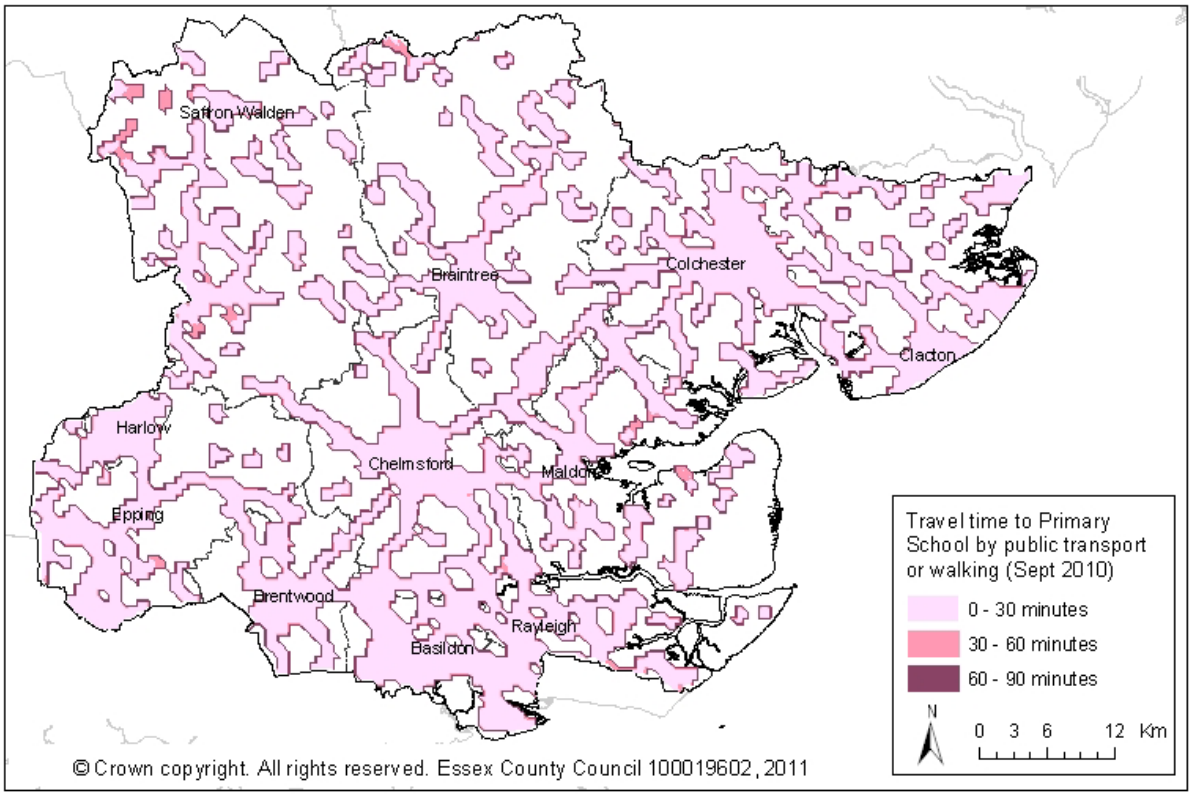
Source: Essex County Council, 2011

Figure 40: Access to Employment Sites May 2009



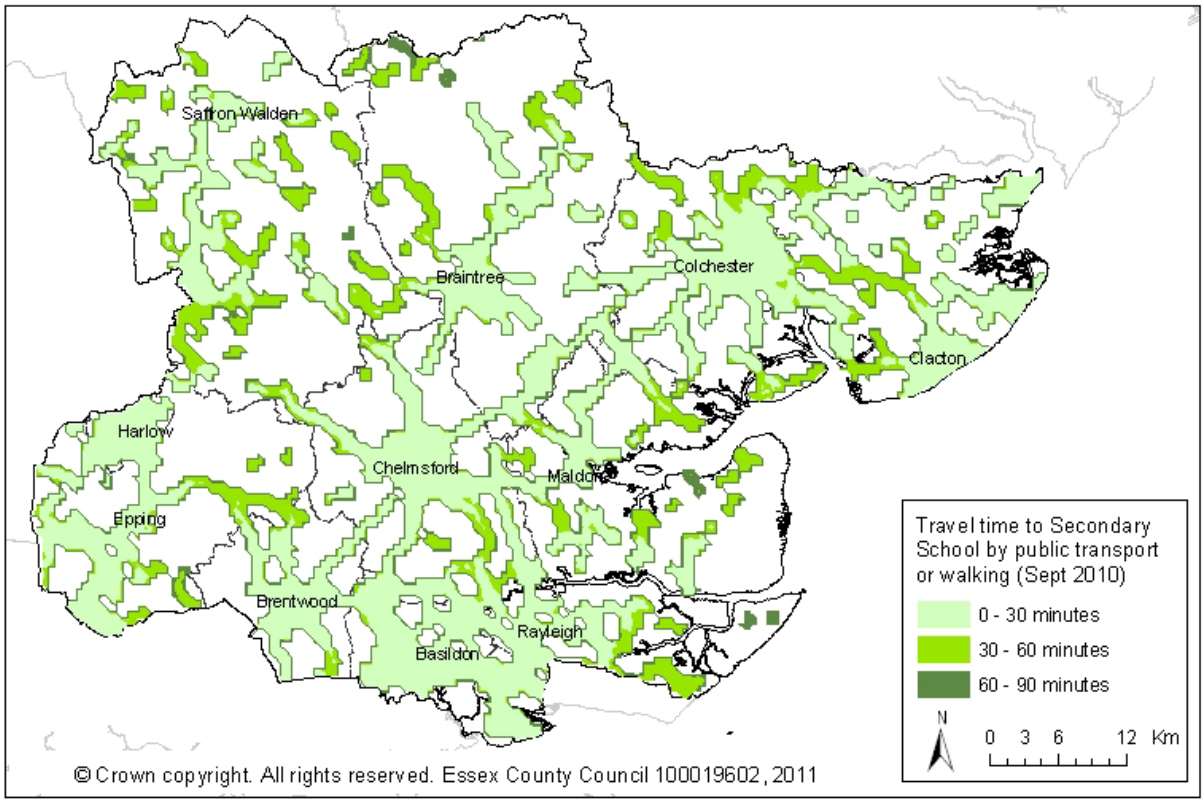
Source: Essex County Council, 2009

Figure 41: Access to Primary Schools September 2010



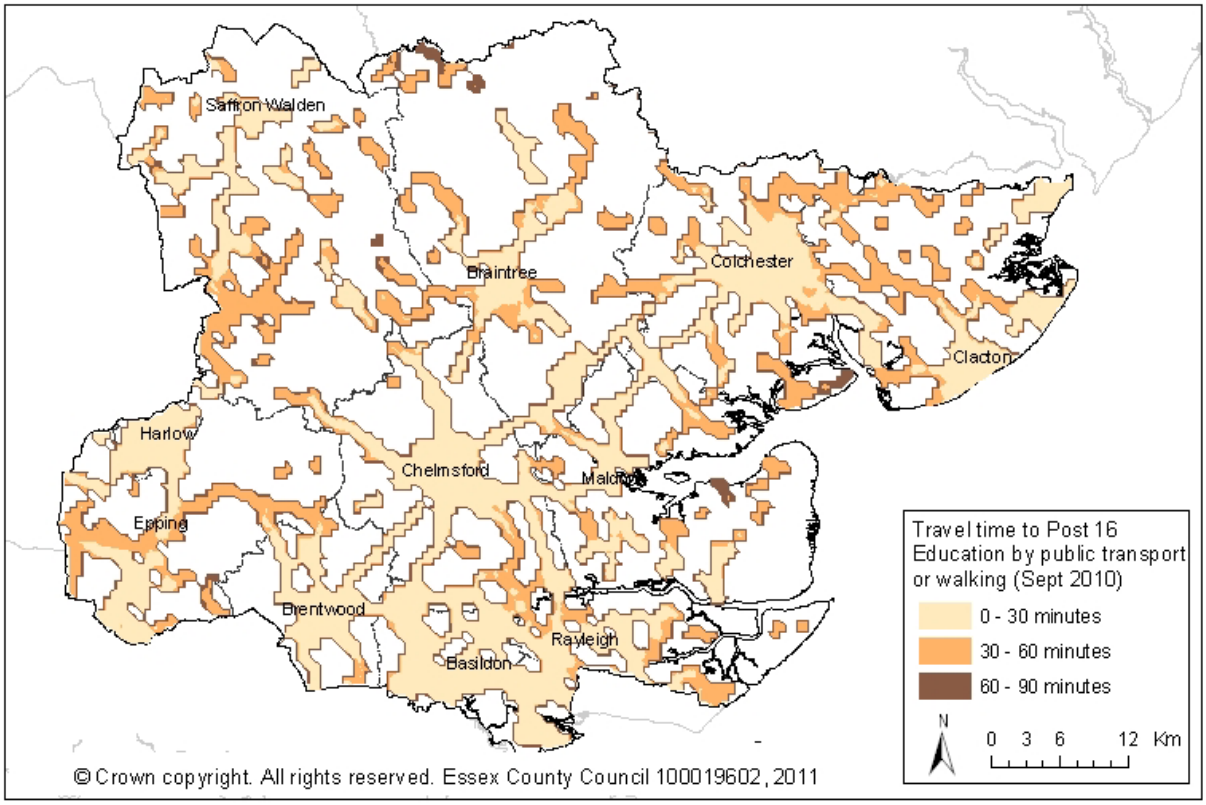
Source: Essex County Council, 2011

Figure 42: Access to Secondary Schools September 2010



Source: Essex County Council, 2011

Figure 43: Access to Post 16 Educational Facilities September 2010



Source: Essex County Council, 2011

14.9. Summary

Essex has good transport connections by road, rail, air and sea. The nationally important M11, M25, A12 and A120 run through the county, and major local roads including the A13, A127, A120 and A414 provide good coverage. Three main rail lines radiate from London, supplemented by a number of branch lines, serving 57 railway stations, and the London Underground extends into the south of the county. As a result of its proximity to London, there is a large commuter population. The county also contains two major 'International Gateways': the UK's third busiest airport at Stansted (which handles around 20 million passengers each year); and Harwich International sea port which provides nationally important connections to Holland and Denmark.[9]

However there are persistent network efficiency issues on both the roads and rail with a number of strategic inter-urban routes operating at or near to capacity and the two mainline railway networks being at or above their capacity during the morning and evening peaks.

Around 6% of traffic on Essex's roads is made up of HGVs, rising to nearly a fifth on the Essex section of the M25, 16% on the M11 and around 14% on sections of the A12 and A120[10]. There are also around 50 freight trains passing through Essex each day, travelling mainly between Felixstowe and the North-West via London[11].

Strategic sites, located in close proximity to the point of use of the minerals are required to comply with sustainable transport policies. In the UK, minerals are moved over longer distances by rail or barge mainly to urban conurbations.

Travel by car is the preferred travel choice for most trips within Essex; however travel by train represents a higher proportion of trips made than in other comparable areas. This is largely

[9] Essex Transport Strategy 2011
[10] Average Annual Daily Traffic Flow (AADF) data produced by the Department for Transport, 2010
[11] Strategic Freight Network (2008) Network Rail

attributed to the fact that a large proportion of commuting trips out of Essex are accommodated by the rail network.

The average Essex resident commuting distance is 14km (9miles) which is 4km (2.5miles) above the national average and also reflects the importance of London as a source of employment, particularly for those living to the west of the county. Apart from those who travel to London, journey to work data for Essex residents indicates that a high proportion of people live in close proximity to their place of work, with 30% of residents living less than 3 miles from their job[12].

Accessibility to key services such as employment, healthcare, education and retail provision for Essex residents is greatest in the centre of urban settlements and decreases considerably in the most rural parts of the county. Vulnerable Essex residents currently have relatively poor access to services and Essex has one of the lowest numbers of households with good access to key services or work within the East of England. Values were indexed with a base of 100 for England and Essex scored 87 while neighbouring county of Hertfordshire and the unitary authorities of Thurrock and Southend-On-Sea scored 127, 119 and 142 respectively[13].

[12] Essex Transport Strategy 2011
[13] 2010 Accessibility Statistics, Department for Transport

15. Housing

15.1. Introduction

The latest population trend data shows that the population in Essex is growing; therefore the provision of adequate housing is a key issue. Not only should there be sufficient housing for the growing population, there should also be suitable housing to meet a wide range of needs.

15.2. Dwelling Trajectory

The Regional Spatial Strategy for the East of England which contained housing targets on a District basis is soon to be abolished. Each authority must now set their own housing provision targets. Those which have already adopted their Core Strategy, as shown in Table 27, may decide to review their dwelling provision targets in the future in light of the revocation of RSS but at present have targets outlined within adopted policy. However, the majority of authorities within Essex do not have an adopted Core Strategy / Local Plan and therefore do not have dwelling provision targets. The following section reports on recent completions and the future trajectory of housing growth within Essex.

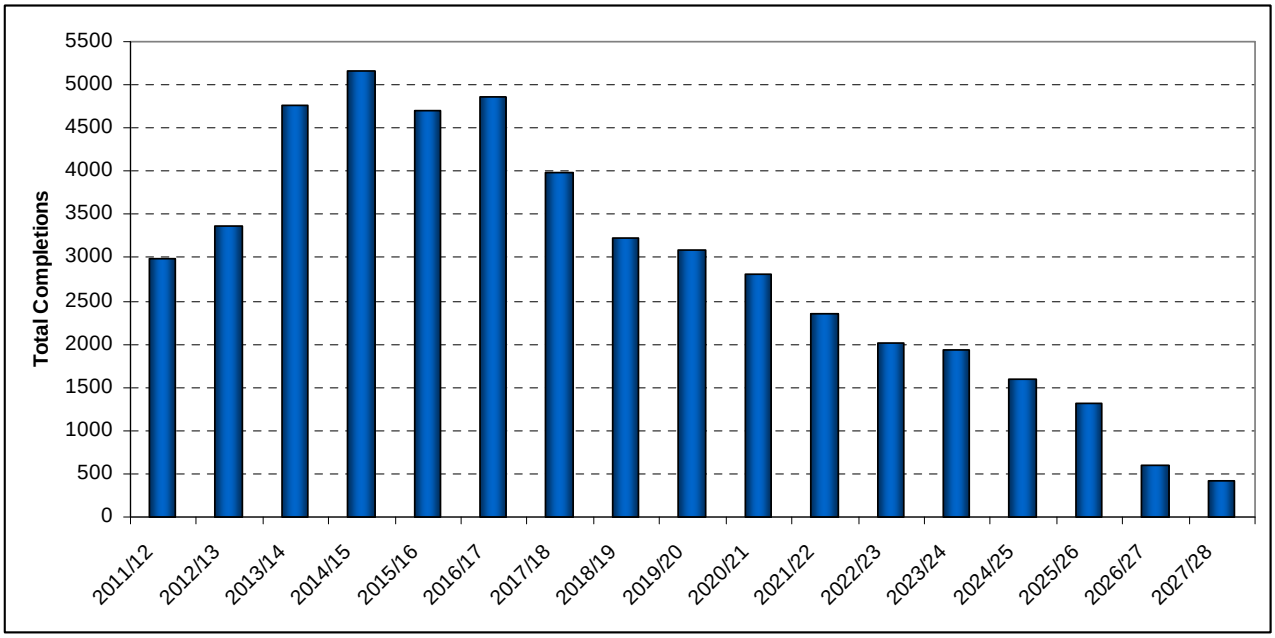
Table 27: Forecasted Dwelling Completions in Essex

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28
Basildon	370	173	925	862	491	630	492	203	200	183	183	42	42	42	42	42	0
Braintree	221	233	334	307	335	414	292	230	247	215	270	285	279	210	180	0	0
Brentwood	119	218	168	165	99	92	84	94	106	119	98	95	95	95	77	0	0
Castle Point	81	81	81	82	82	197	197	197	197	198	116	116	116	116	116	117	117
Chelmsford	254	390	1,098	1,504	1,383	1,358	1,267	1,008	847	485	0	0	0	0	0	0	0
Colchester	837	751	853	997	944	891	870	826	879	865	849	791	699	423	250	0	0
Epping Forest	67	304	181	152	123	126	0	0	0	0	0	0	0	0	0	0	0
Harlow	282	287	190	253	480	515	459	317	258	500	500	300	300	300	300	300	300
Maldon	84	65	54	88	23	0	0	0	0	0	0	0	0	0	0	0	0
Rochford	92	191	284	165	327	361	250	286	290	190	275	325	300	300	250	100	0
Tendring	278	217	226	207	149	0	0	0	0	0	0	0	0	0	0	0	0
Uttlesford	298	453	360	375	272	287	79	65	56	57	57	62	106	100	99	40	0
Essex	2,983	3,363	4,754	5,157	4,708	4,871	3,990	3,226	3,080	2,812	2,348	2,016	1,937	1,586	1,314	599	417

Source: Essex County Council and Individual Districts / Boroughs, 2012

Note: A value of '0' indicates that no forecasted provision has been calculated for that year.
Castle Point recently withdrew their Core Strategy meaning that all Green Belt housing sites have been removed from the housing land supply.

Figure 44: Forecasted Dwelling Completions in Essex



Source: Essex County Council and Individual Districts / Boroughs, 2012

Across the period 2012 to 2029, Essex is expecting to experience a net increase of at least 49,161 new dwellings. In the absence of some districts having published their housing trajectories up to 2029, this figure should be considered as a minimum forecast for the total number of completions expected. The need to provide housing trajectories in the preparation of Local Plans, and when reviewing those that have already been adopted, will lead to a fuller picture of future completion in Essex.

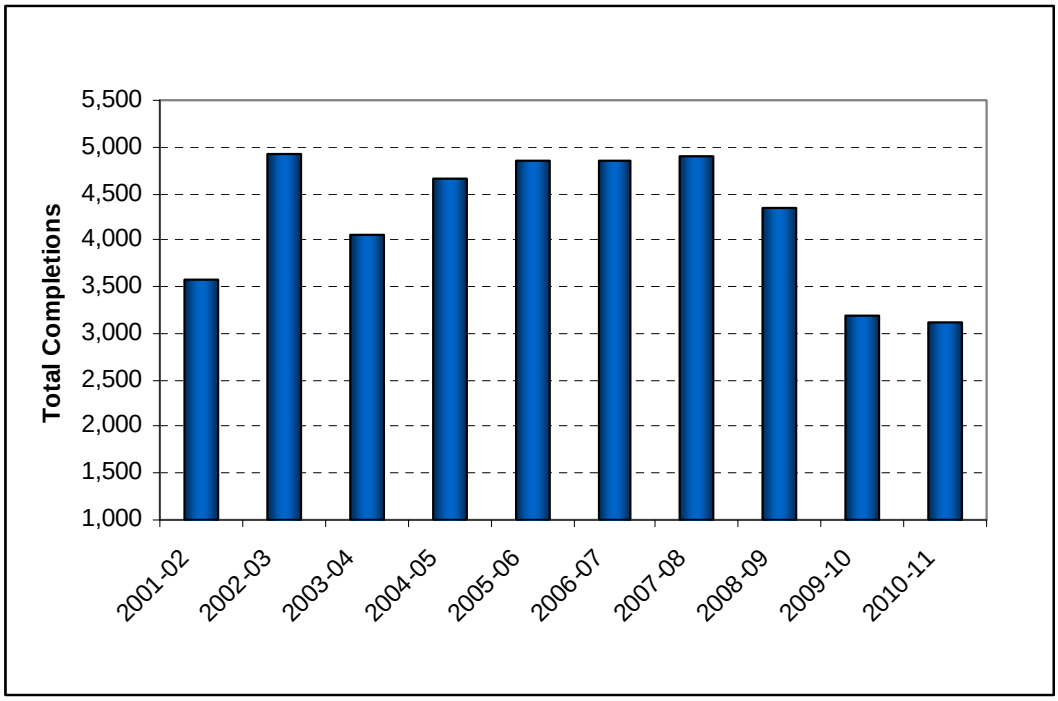
The number of completions in 2011/12 is expected to be lower than the completions recorded in 2010/11; however an increase is forecasted from 2012/13 onwards peaking at 5,157 in 2014/15.

Table 28: Net Dwelling Completions across Essex

Year	Net Completions
2001-02	3,573
2002-03	4,914
2003-04	4,055
2004-05	4,652
2005-06	4,840
2006-07	4,851
2007-08	4,908
2008-09	4,344
2009-10	3,201
2010-11	3,114

Source: Essex County Council and Individual Districts / Boroughs, 2012

Figure 45: Net Dwelling Completions across Essex



Source: Essex County Council and Individual Districts / Boroughs, 2012

Between 2001 and 2011 42,452 net additional dwellings had been built within Essex. Completions peaked in 2002/03 at 4,914 and since 2007/08 have continually declined to the lowest rate of completions across the period in 2010/11 at 3,114.

15.3. Housebuilding

Not only should there be sufficient housing for the growing population, there should also be suitable housing to meet a wide range of needs.

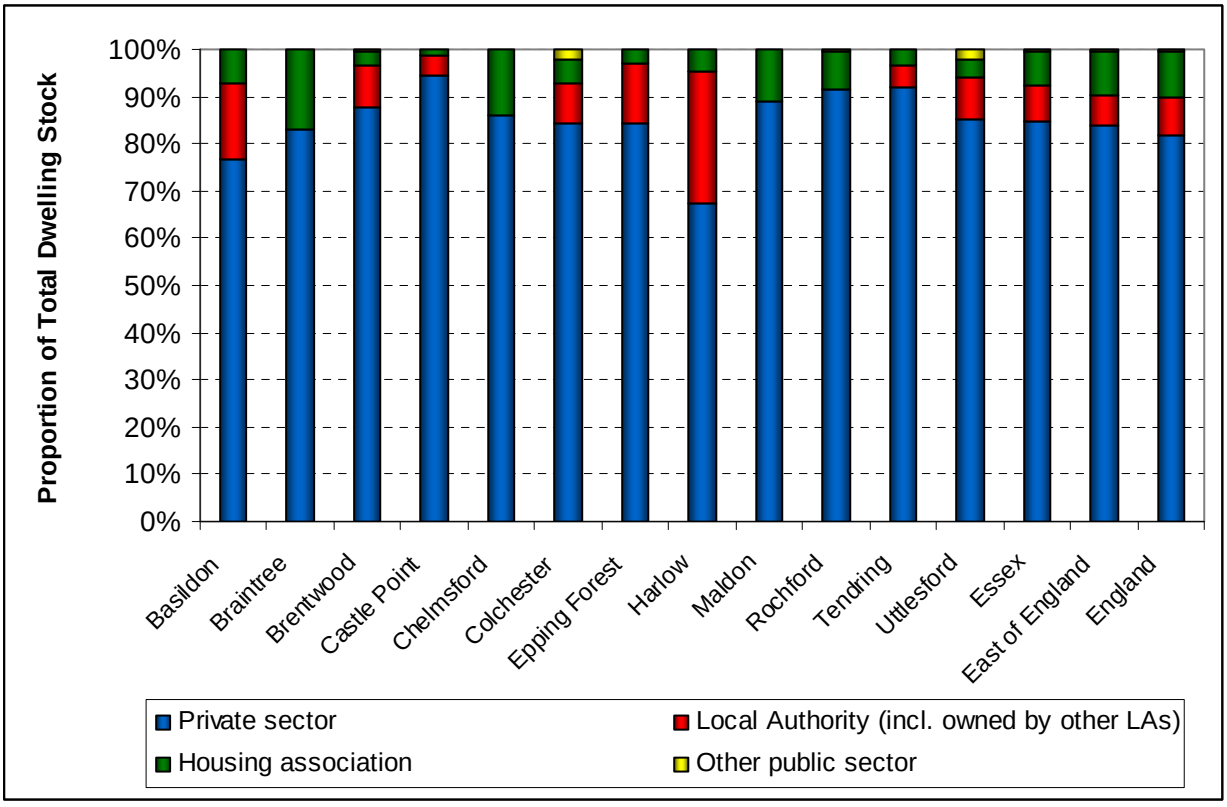
Table 29: Total Dwelling Stock by Tenure and District 2010

Local Authority	Private sector	Local Authority (incl. owned by other LAs)	Housing association	Other public sector	Total
Basildon	56,450	11,596	5,327	64	73,430
Braintree	50,540	49	10,233	22	60,840
Brentwood	27,650	2,863	951	75	31,540
Castle Point	35,120	1,537	486	0	37,140
Chelmsford	61,610	38	9,895	66	71,610
Colchester	62,540	6,303	3,924	1,436	74,200
Epping Forest	45,510	6,655	1,605	80	53,850
Harlow	23,700	9,915	1,575	65	35,250
Maldon	23,650	0	2,875	3	26,530
Rochford	31,410	1	2,725	170	34,300
Tendring	62,920	3,221	2,410	27	68,580
Uttlesford	27,310	2,872	1,223	687	32,090

Local Authority	Private sector	Local Authority (incl. owned by other LAs)	Housing association	Other public sector	Total
Essex	508,410	45,050	43,229	2,695	599,360
East of England	2,099,000	163,433	231,745	8,419	2,502,600
England	18,599,000	1,785,845	2,242,657	65,491	22,693,000

Source: Communities and Local Government, Provisional Figures, 2012

Figure 46: Total Dwelling Stock by Tenure and District



Source: Communities and Local Government, Provisional Figures, 2012

A mix of housing types and tenures is important to ensure an adequate housing provision for everyone. Castle Point has the highest proportion of private sector stock, accounting for 95% of the total dwelling stock in the borough. Rochford and Tendring also have private stock accounting for over 90% of their total housing stock. Harlow has the smallest proportion of private stock accounting for only 67% of the district's total stock but this is supported by 28% being local authority owned. Rochford and Tendring do not have any local authority owned dwellings in their total dwelling stock but they do provide stock owned by housing associations, as do all the other local authorities in Essex.

15.4. Summary

The latest population trend data shows that the population in Essex is growing; therefore the provision of adequate housing is a key issue. Not only should there be sufficient housing for the growing population, there should also be suitable housing to meet a wide range of needs.

Across the period 2011 to 2029, Essex is expecting to experience a net increase of at least 49,161 new dwellings. In the absence of some districts having published their housing trajectories up to 2029, this figure should be considered as a minimum forecast for the total number of completions expected. The need to provide housing trajectories in the preparation of Local Plans, and when

reviewing those that have already been adopted, will lead to a fuller picture of future completion in Essex.

The number of completions in 2011/12 is expected to be lower than the completions recorded in 2010/11; however an increase is forecasted from 2012/13 onwards peaking at 5,157 in 2014/15.

Between 2001 and 2011 42,452 net additional dwellings had been built within Essex. Completions peaked in 2002/03 at 4,914 and since 2007/08 have continually declined to the lowest rate of completions across the period in 2010/11 at 3,114.

A mix of housing types and tenures is important to ensure an adequate housing provision for everyone. Castle Point has the highest proportion of private sector stock, accounting for 95% of the total dwelling stock in the borough. Rochford and Tendring also have private stock accounting for over 90% of their total housing stock. Harlow has the smallest proportion of private stock accounting for only 67% of the district's total stock but this is supported by 28% being local authority owned. Rochford and Tendring do not have any local authority owned dwellings in their total dwelling stock but they do provide stock owned by housing associations, as do all the other local authorities in Essex.

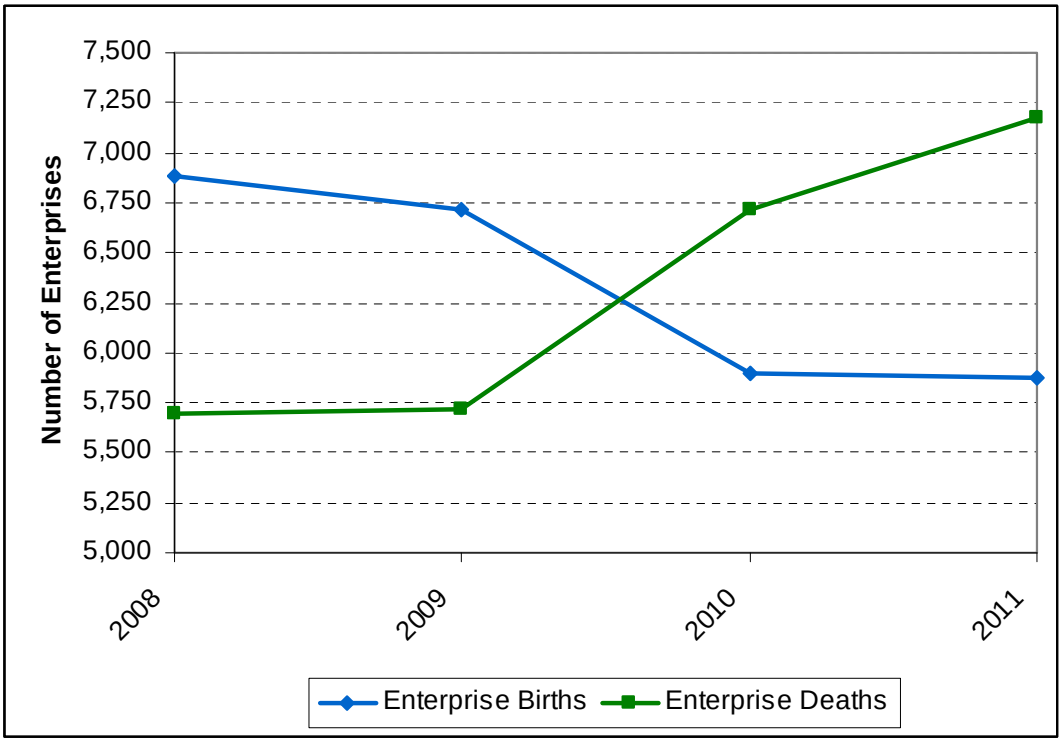
16. Economy

16.1. Introduction

The economy of Essex is large and generally prosperous, with high standards of living. Although unemployment remains high at 6.4% in 2011 it remains below the national average. Wages are higher than the national averages for both residence based (£563.3) and workplace based (£498.7) earnings[14]. Higher value earnings are found in the west of Essex largely due to greater connections into London. In relation to mineral management, new development from employment growth has implications on the need for minerals which will increase with development. There is also scope for mineral management to supply further employment opportunities across all strategic to non-strategic mineral sites and functions in the MLP plan area.

16.2. Business Registration and Growth Rates

Figure 47: Enterprise Birth and Deaths within Essex



Source: ONS Business Demography, 2012

Since 2008 the number of new enterprises has decreased yearly from 6,880 in 2008 to 5,875 in 2011. At the same time the number of enterprises which have ceased has increased annually from 5,690 in 2008 to 7,170 in 2011. The total number of enterprises within Essex was reported to be 57,850 in 2011.

Table 30: Local Business Units

	Mar-08	Mar-09	Mar-10	Mar-11
Essex	62,330	62,375	61,250	60,330
East of England	259,050	259,125	253,120	249,985
England	2,244,290	2,237,555	2,183,845	2,161,190

Source: ONS Business Demography, 2012

[14] NOMIS data for 2011

There has been a 3% decline in the total number of local business units within Essex to 60,330 in 2011 compared to 2008 figures. This is a smaller proportionate decrease than those experienced at the regional and national levels over the same time period.

16.3. Employment

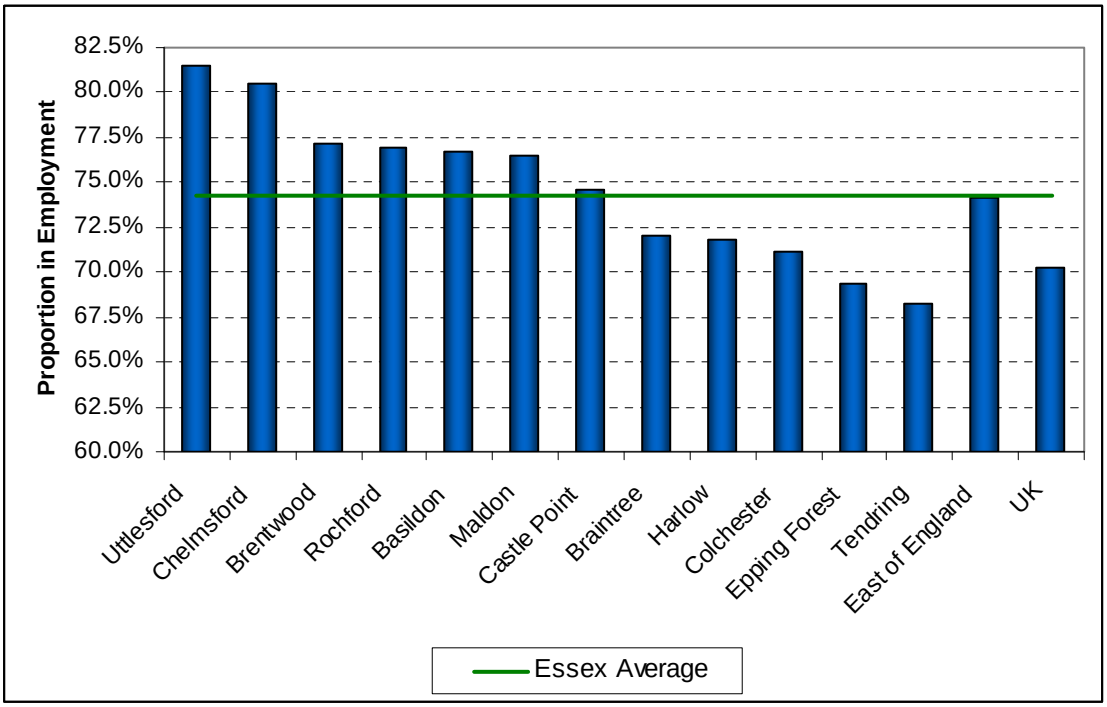
Table 31: Peak Employment in Essex (000's Population)

	Peak Employed	2010	Peak Year	Recovery Year
Basildon	84.4	79.5	2008	post 2031
Braintree	58.9	54.5	2007	2025
Brentwood	40.2	34.7	2009	post 2031
Castle Point	24.1	23.7	2009	2015
Chelmsford	89.9	89.7	2009	2011
Colchester	81	79.7	2009	2011
Epping Forest	51.2	50.6	2009	2013
Harlow	42.8	38.3	2008	post 2031
Maldon	22.5	21.8	2008	2014
Rochford	23.2	21.9	2009	2019
Tendring	47	45.9	2007	2015
Uttlesford	38.8	37.9	2008	2014
Essex	595.6	578.3	2009	2014
East of England	2589.5	2534.1	2008	2013
UK	27852.4	27166.3	2009	2015

Source: Draft Local Aggregate Assessment 2012

Across Essex, employment levels by district peaked between 2007 and 2009 which is in line with regional and national trends. For the whole of Essex employment reached 595,600 people in 2009 and has subsequently declined to 578,300 in 2010. Recovery to these peak levels for Harlow, Basildon and Brentwood is not expected prior to 2031 and for Braintree it is not expected till 2025. Employment in all other administrative areas will reach their peak levels broadly around 2014.

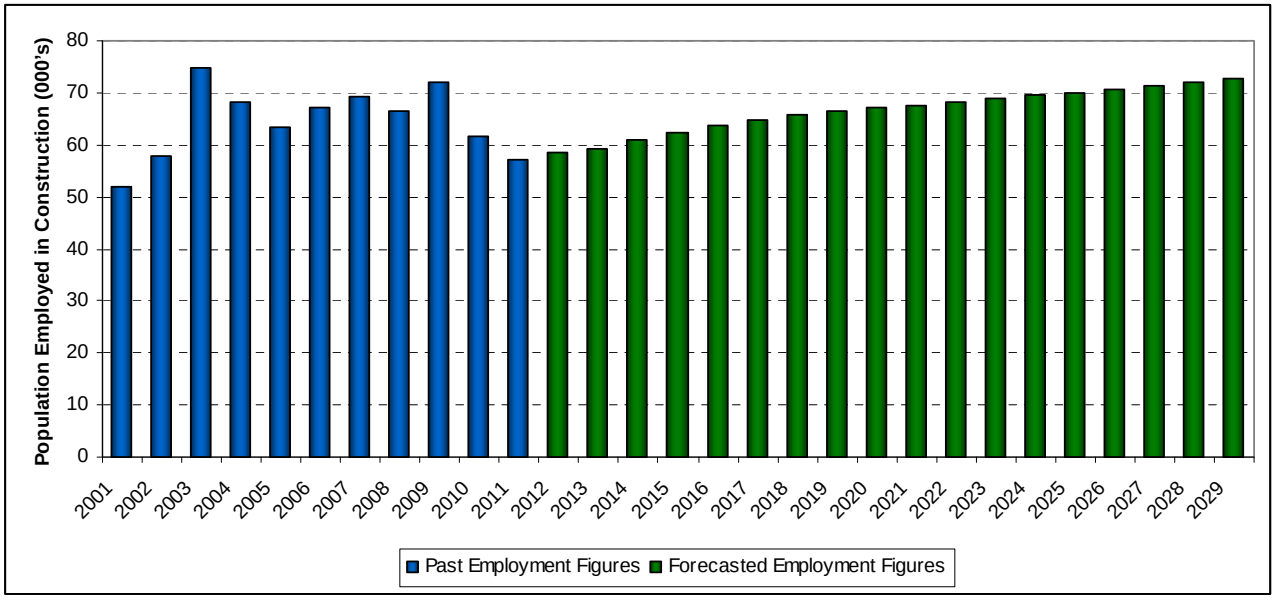
Figure 48: Proportion of Working Age Population in Employment across Essex June 2011 – June 2012



Source: nomis, 2010

74.3% of the working age population in Essex were recorded as being in employment between June 2011 and June 2012. Seven districts within Essex had a higher proportion of their working age population in employment compared to Essex as a whole and the East of England while Braintree, Harlow, Colchester, Epping Forest and Tendring all have lower proportions. Epping Forest and Tendring both reported lower proportions of their working age population in employment than the county, regional and UK averages at 69.4% and 68.2% respectively.

Figure 49: Employment within the Construction Industry in Essex



Source: Essex County Council, 2012

Note: Data from 2012 onwards has been forecasted

In Essex, employment in the construction sector has fluctuated over the few years with a clear period of growth between 2001 and 2003 where it peaked at 74,900 people, and an equally clear

decline in employment between 2009 and 2011 from 72,200 to 57,100 people. The forecasted employment figures to 2029 report a steady recovery to the recorded 2009 figures by 2029.

This sector is considered to be of most relevance to minerals planning.

16.4. Summary

The economy of Essex is large and generally prosperous, with high standards of living. Although unemployment remains high at 6.4% in 2011 it remains below the national average. Wages are higher than the national averages for both residence based (£563.3) and workplace based (£498.7) earnings[15]. Higher value earnings are found in the west of Essex largely due to greater connections into London. In relation to mineral management, new development from employment growth has implications on the need for minerals which will increase with development. There is also scope for mineral management to supply further employment opportunities across all strategic to non-strategic mineral sites and functions in the MLP plan area.

Since 2008 the number of new enterprises has decreased yearly from 6,880 in 2008 to 5,875 in 2011. At the same time the number of enterprises which have ceased has increased annually from 5,690 in 2008 to 7,170 in 2011. The total number of enterprises within Essex was reported to be 57,850 in 2011.

There has also been a 3% decline in the total number of local business units within Essex to 60,330 in 2011 compared to 2008 figures. This is a smaller proportionate decrease than those experienced at the regional and national levels over the same time period.

Across Essex, employment levels by district peaked between 2007 and 2009 which is in line with regional and national trends. For the whole of Essex employment reached 595,600 people in 2009 and has subsequently declined to 578,300 in 2010. Recovery to these peak levels for Harlow, Basildon and Brentwood is not expected prior to 2031 and for Braintree it is not expected till 2025. Employment in all other administrative areas will reach their peak levels broadly around 2014.

74.3% of the working age population in Essex were recorded as being in employment between June 2011 and June 2012. Seven districts within Essex had a higher proportion of their working age population in employment compared to Essex as a whole and the East of England while Braintree, Harlow, Colchester, Epping Forest and Tendring all have lower employment levels. Epping Forest and Tendring in particular, reported lower proportions of their working age population in employment than the county, regional and UK averages at 69.4% and 68.2% respectively.

In Essex, employment in the construction sector has fluctuated over the few years with a clear period of growth between 2001 and 2003 where it peaked at 74,900 people, and an equally clear decline in employment between 2009 and 2011 from 72,200 to 57,100 people. The forecasted employment figures to 2029 report a steady recovery to the recorded 2009 figures by 2029.

[15] NOMIS data for 2011

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