



Essex County
Fire & Rescue Service

Strategic Assessment of Risk

Environmental Risk

About

Whilst building development and urban growth is ongoing across the county, Essex also continues to see growth in renewable energy production. These emerging technologies and risks, such as wind and solar farms, and the increasing use of alternatively fuelled vehicles, require assessment and, in an emergency, a safe operational response.

Increasingly we are seeing the impact of climate change, often felt during meteorological events such as heavy rain and storms. This is predicted to increase with more intense rainfall, more extreme weather and wetter winters projected with surface water flooding continuing to present as one of the more likely risks within the National Risk Register risk assessment matrix.

This is changing the types of incidents we attend; hot summers can lead to increased forestry and outdoor fires, wetter weather is leading to more localised and wide-scale flooding and therefore an increasing risk of rescue from water, and storms can lead to damage to structures and properties.

Within this chapter of the Strategic Assessment of Risk, the following areas will be considered:

- The Built Environment and Infrastructure
- Climate Change and Environmental
- Future Developments

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THE BUILT ENVIRONMENT AND INFRASTRUCTURE

AIR TRANSPORT AND AERODROMES

Essex has two major airports and a number of smaller airfields and air strips for local clubs, military and private use. The tables below show the number of commercial and non-commercial movements at London Stansted and London Southend, Table 1 and 2 respectively. What these show us, is that both airports experienced an impact due to COVID-19 travel restrictions in 2020, with numbers increasing close to pre-pandemic levels by the end of 2022.

London Southend was able to recover quicker as it has a higher volume of non-commercial movements than London Stansted which it has capitalised on over the past two years. With airport movements making such a quick rebound from the impacts of COVID-19 further review and analysis of future flight data will provide insight on air travel behaviours. This in turn will have an impact on the surrounding road and rail infrastructure as passengers travel to and from airports within Essex.

London Stanstead Airport	Commercial Movements	Non-Commercial Movements	Total Movements
2022	159,531	17,383	176,914
2021	77,648	15,668	93,316
2020	73,476	12,631	86,107
2019	183,514	16,411	199,925
2018	184,485	17,129	201,614

Table 1

London Southend Airport	Commercial Movements	Non-Commercial Movements	Total Movements
2022	1,478	25,146	26,624
2021	2,480	31,634	34,114
2020	5,306	13,095	18,401
2019	20,108	16,219	36,327
2018	17,613	14,918	32,531

Table 2

ROAD NETWORKS

There are ten major road networks running through Essex, Thurrock and Southend, comprising of two motorways and eight A roads. The section of the M25 within Essex boundaries includes the junction with the M11 which provides access to London Stansted Airport, as well as the Dartford Crossing, connecting Essex and Kent across the river Thames, whilst the A12, A127 and A13 all connect into London. In 2021 8.51 billion vehicles miles were travelled on roads in Essex, 0.35 billion on roads in Southend and 1.00 billion on roads in Thurrock.

Looking at the Figures below (1, 2 and 3) we can see the impact of COVID-19 on road users, which by 2021 was starting to increase, however remains equivalent to 2011 held data in Essex, below 1993 held data in Southend and equivalent to 2013 data in Thurrock. Expansion of the A12 to A120 and the development of the Lower Thames Crossing are both National Significant Infrastructure Projects in Planning to address the anticipated increase in road use prior to COVID-19. Whilst these developments will progress, continued review and analysis of road traffic data will be required to ensure the Service is resourced appropriately to changing vehicle behaviours.

Annual traffic by vehicle type in Essex

Traffic in Great Britain from 1993 to 2021 by vehicle type in vehicle miles (millions)

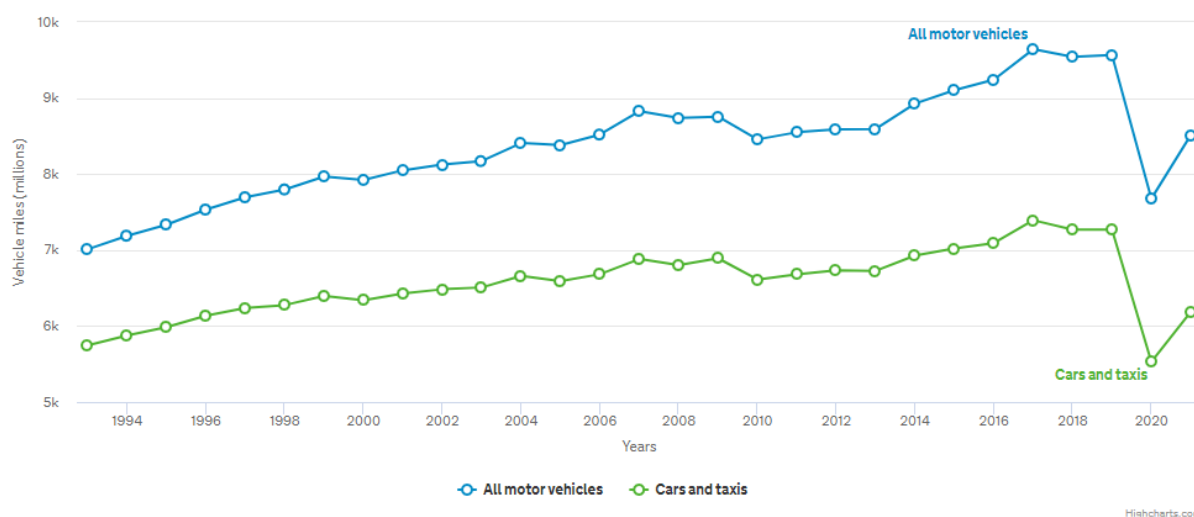


Figure 1

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Annual traffic by vehicle type in Southend-on-Sea

Traffic in Great Britain from 1993 to 2021 by vehicle type in vehicle miles (millions)

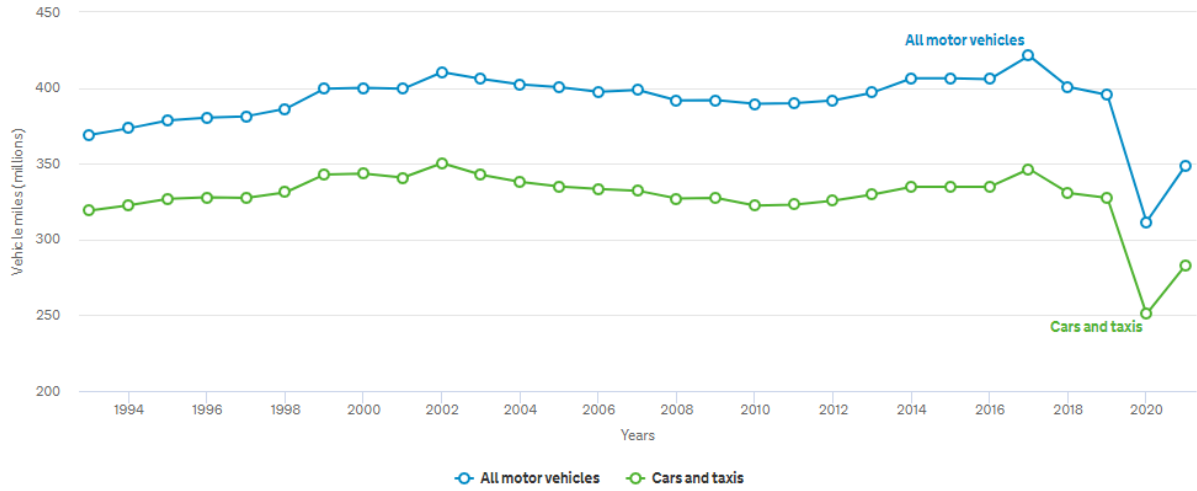


Figure 2

Annual traffic by vehicle type in Thurrock

Traffic in Great Britain from 1993 to 2021 by vehicle type in vehicle miles (millions)

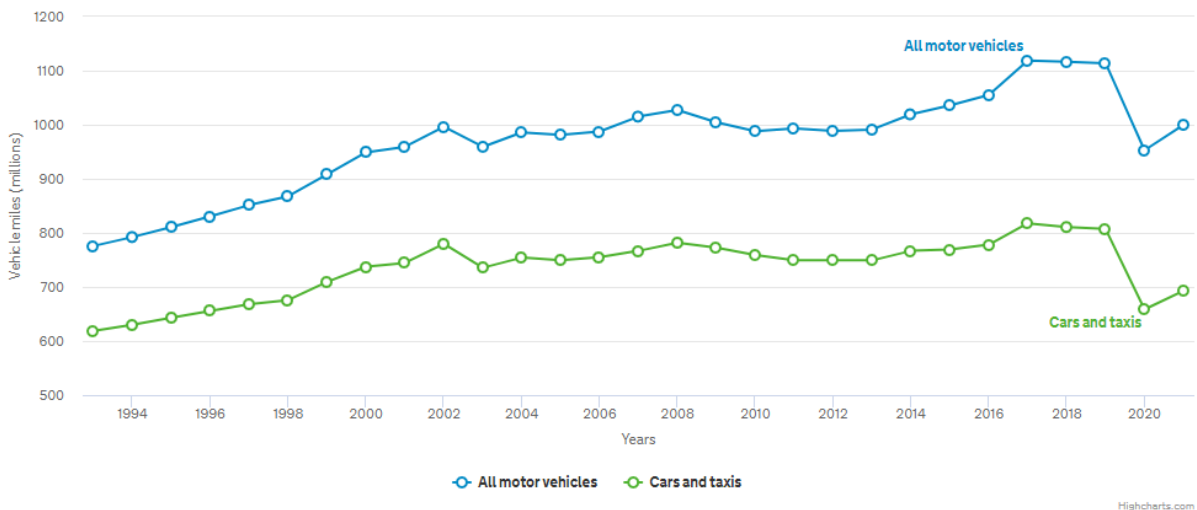


Figure 3

RAIL NETWORKS

There are three main railways and two tube lines traversing Essex, Thurrock and Southend. All of these intersect with or terminate at a central London station, predominantly London Liverpool Street and London Fenchurch Street (see Figure 5). In the year ending March 2022 London Liverpool Street had 32,165,310 entries and exits recorded, whilst London Fenchurch Street had 7,795,346 entries and exits recorded.

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Since March 2020, public transport has been heavily impacted by the COVID-19 pandemic. At the lowest point in April and May 2020, passenger rail journeys were 96% less than an equivalent day in the previous year. Since then, passenger rail journeys began to steadily increase again, at its peak in March 2022, passenger rail journeys were 73% of an equivalent day in pre-COVID-19.

As can be seen in Figure 4) the number of rail journeys following COVID-19 within the East region have been increasing, with 92% of those journeys going to or from London. The Service should continue to monitor and review the use of rail transport following COVID-19 to determine if rail use will continue to increase to pre-pandemic trends and allocate resources appropriately.

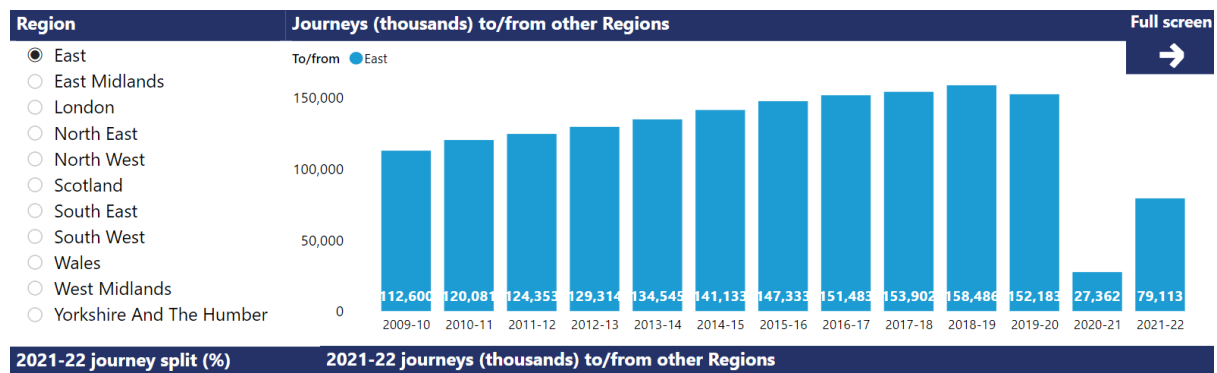


Figure 4

Strategic Assessment of Risk – Environmental Risk

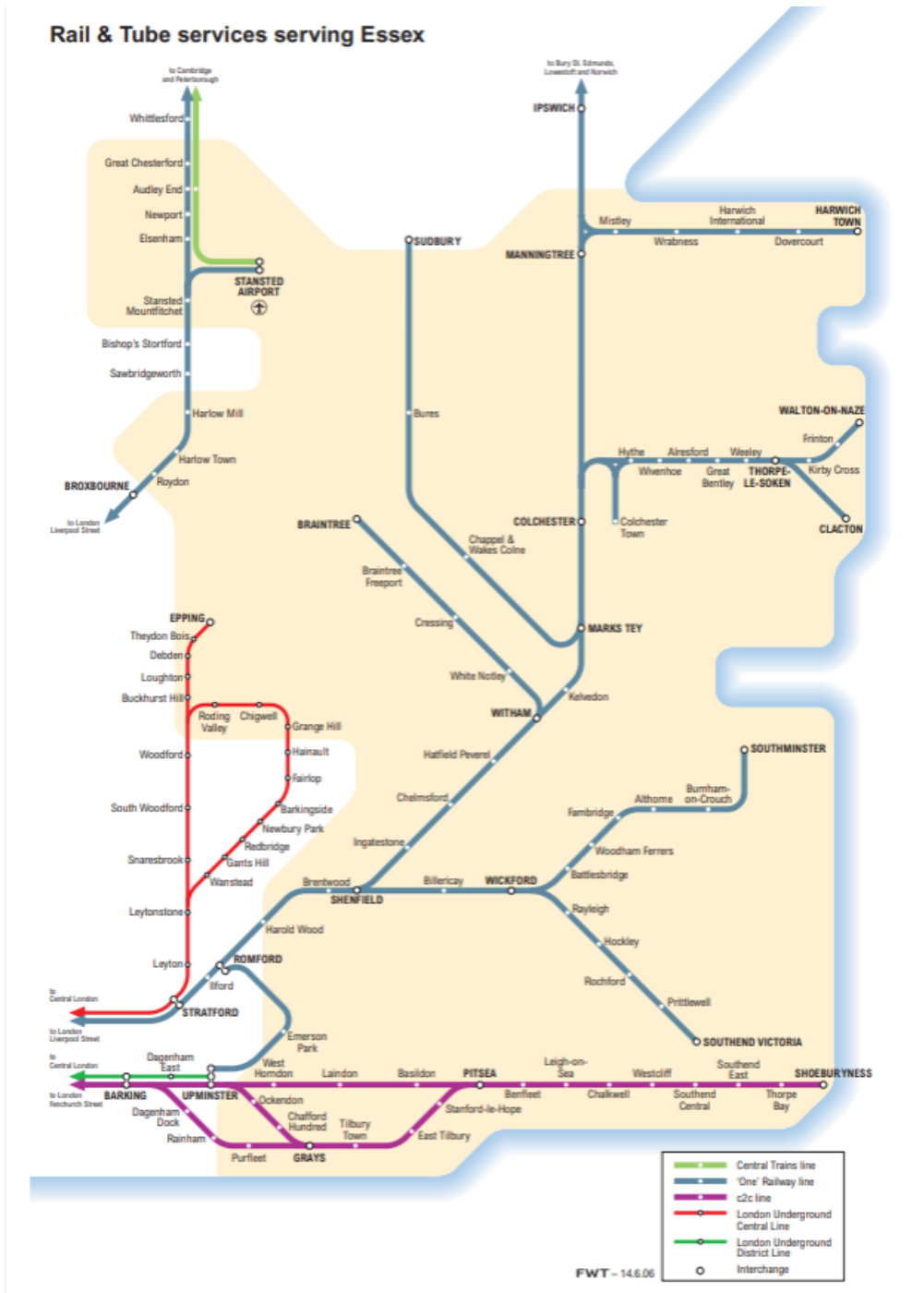


Figure 5 Source: [Essex Rail Diagram \(essexhighways.org\)](http://essexhighways.org)

RIVERS, CANAL NETWORKS, MARINAS, AND PORTS

Essex has an extensive network of rivers and canals as can be seen in Figure 6, the majority of which are interlinked and form pathways to the river Thames and the English Channel. Each waterway presents its own risks through ease of access, depth, width, as well as any tides or currents which have influence its movement.

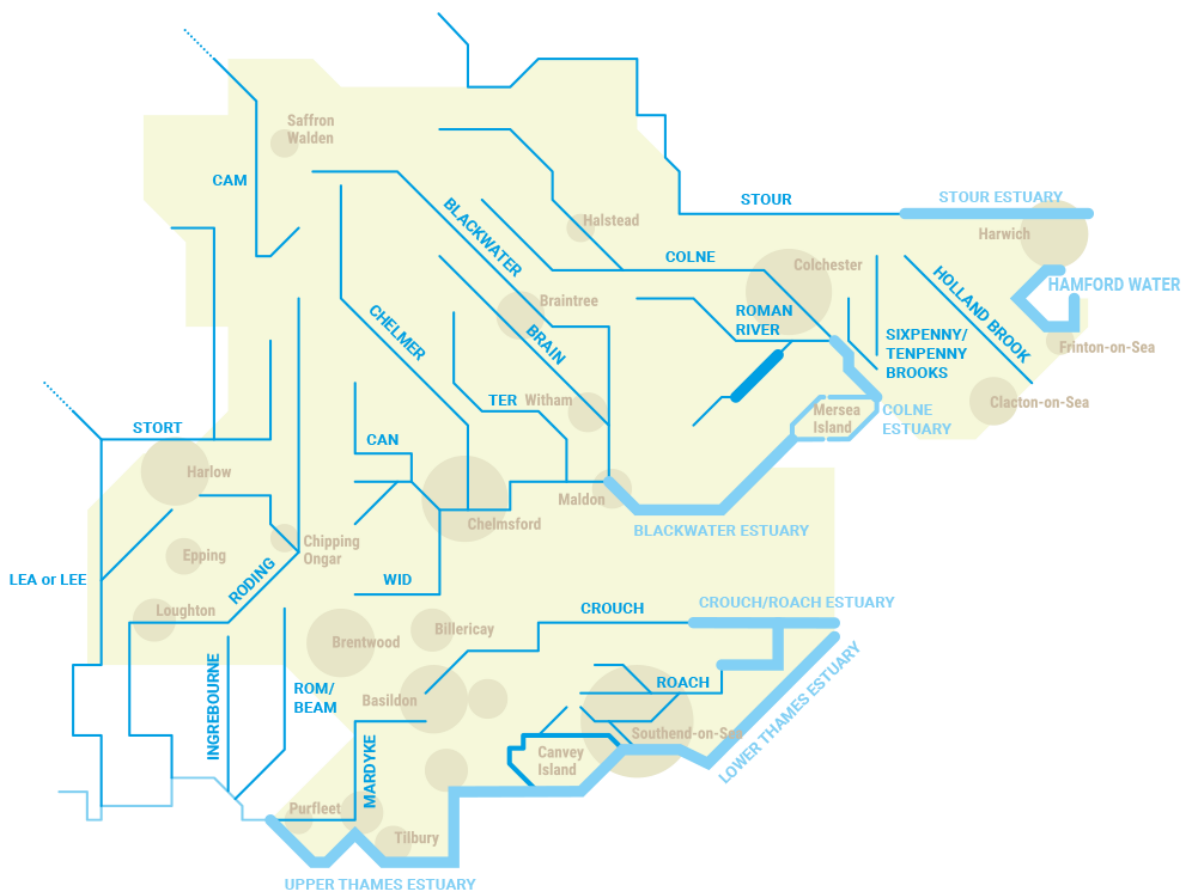


Figure 6 Source: [Essex Rivers Hub - Home](#)

As detailed in Figure 7, information provided by the Maritime & Coastguard Agency provides an overview of swimming fatalities in the UK during 2020. What this shows is the majority of water related incidents occur during the summer months in coastal or river locations which are not necessarily well known to the individual. Given the quantity of coastal areas and associated rivers within Essex, consideration should be given to appropriate resourcing of water incident responses and Prevention based activities.

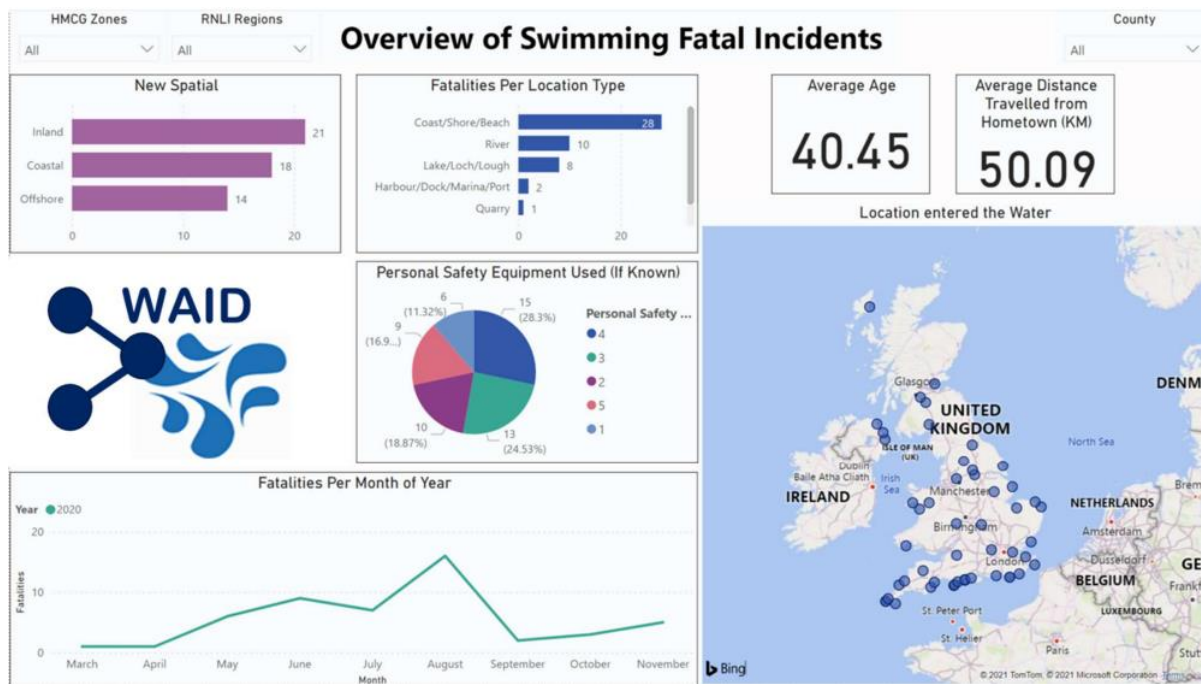


Figure 7 Source: Maritime & Coastguard Agency

Essex has three major ports situated along its coastline. The Port of Tilbury (London) is the largest multi-modal port in the South East with an annual throughput of 16 million tonnes per annum. In 2019 it expanded its premises incorporating a new port Tilbury2, which is built on the former Tilbury Power Station and which acts as a satellite of the main port. DP World London Gateway is situated further East along the Thames in Corringham providing the largest port rail terminal with three mounted gantry cranes to move cargo into and out of the UK through local transport links. Whilst in the North East of the county, Harwich International Port provides both freight and passenger transit to and from Scandinavia and the Benelux nations, with land transit links to the Midlands, London and the South East.

COMAH SITES

Control of Major Accident Hazard (COMAH) Sites are designated to prevent and mitigate the effects of major accidents involving dangerous substances which can cause serious damage/harm to people and/or the environment. Within the scope of the COMAH designation are two tier levels measured on the quantities of dangerous substances identified in the regulations are kept or used.

Lower tier operators are required to:

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- Prepare a major accident prevention policy.

Whilst in addition to this upper tier operators are required to:

- Prepare a safety report.
- Prepare and test an internal emergency plan.
- Supply information to local authorities for external emergency planning purposes.
- Provide certain information to the public about their activities.

Essex County Fire & Rescue Service is a statutory consultee for upper tier emergency plans and the Service engages with all COMAH sites within Essex to support them in testing and exercising their plans according to regulatory standards.

As can be seen from Tables 3 and 4 below the majority of upper tier COMAH sites in Essex are situated in the Southeast and Southwest Command Areas (see Chapter 8 – Organisational Risk for more details), whilst the majority of lower tier COMAH sites are situated in the Northwest Command Area.

Upper Tier COMAH Sites	
Company	Location
Calor Gas Limited	Canvey Island
Calor Gas Limited	Stanford Le Hope
Thames Oil Port	Stanford Le Hope
EPC United Kingdom Plc	Harwich
Esso/Exxon Petroleum Company Ltd	Purfleet
Industrial Chemicals Ltd	Grays
Inter Terminals Ltd	Grays
Oikos Storage Ltd	Canvey Island
Haltermann Carless UK Ltd	Harwich
Procter & Gamble Product Supply (UK) Ltd	Grays
QinetiQ Limited	Southend
Shell UK Oil Products Limited	Stanford Le Hope
Navigator Thames Terminals BV Limited	Grays

Table 3

Lower Tier COMAH Sites	
Company	Location
CLH Pipeline System (CLH-PS) Ltd	Saffron Walden
O-I Manufacturing UK Ltd	Harlow
Robert Stuart Plc	Harlow
Synthomer (UK) Limited	Harlow
S & J D Robertson North Air Ltd	Stansted
Coryton Advanced Fuels Ltd	Stanford Le Hope

Table 4

LARGE CAPACITY PUBLIC VENUES

Tactical Fire Plans are created for all built environments which are rated at a level 4 on the Provision of Risk Information System scale. These are sites which offer high levels of risk and/or the incident is likely to be protracted or escalate. Within Essex, the following locations (Table 5) not only have a Tactical Fire Plan associated with them but are large venues likely to attract and hold large numbers of people at any one time, therefore posing a higher risk of mass casualties should an incident occur.

Venue	Capacity	Location
Eastgate Shopping Centre	30,000 Daily Visitors	Basildon
Cressing Temple	200 Visitor Capacity	Braintree
Clacton Pier	2,600 Daily Visitors	Clacton
Colchester Castle	29,499 Visitor Capacity	Colchester
Colchester United Weston Homes	10,105 Visitor Capacity	Colchester
Colchester Zoo	2,700 Daily Visitors	Colchester
Lakeside (Intu)	70,000 Daily Visitors	Grays
Harvey Centre	17,500 Daily Visitors	Harlow
Ingatestone Hall	1,500 Daily Visitors	Ingatestone
Audley End House	10,000 Visitor Capacity	Saffron Walden
Southend Pier	870 Daily Visitors	Southend
Southend United Football Stadium	12,392 Visitor Capacity	Southend

Table 5

HERITAGE PROPERTIES

Fires in heritage buildings present a unique set of challenges, hazards and risks to operational personnel. Built in different eras, these were constructed using traditional methods and materials. Some of these buildings will have complex layouts with mezzanine floors, basements, tunnels and attics that have been designed with no regards for fire safety regulations. Buildings opened for public access will have been modified to meet existing fire safety regulations with some used as museums or galleries.

Heritage buildings are predominantly found in rural communities where the local planning authorities wish to maintain the historic nature of the village or town. Essex has a high rural population, out of the 270 wards 143 of these are within small towns and rural settings, predominantly in the Northwest of the county. Where local planning encourages the conservation of heritage properties, there are a number of challenges for firefighters when responding to an incident, these include:

- Fire spread due to building design, including chimney compartmentation.
- Fire spread due to non-compliant, potentially flammable, materials.
- Staircase height, width and structural integrity.
- Access through narrow streets, gated, or arched entrances and over unconventional paving materials.
- Road surface weight restrictions due to tunnels or subsurface compartments.
- Local bridges weight or width restrictions.
- Complicated building layouts with hidden access points or blocked sections of the property.
- Environmental considerations where water run-off from firefighting becomes contaminated with toxins.

HIGH RISE BUILDINGS

Tall buildings may be residential, commercial, or mixed use. The use of the building and its occupancy type will affect the evacuation strategy and means of escape provisions. Residential buildings are unlikely to have fire alarm sounders in common areas and have smaller stair capacity and widths. External firefighting or rescue operations may not be possible because of the height, position or design of floors. Appliances, ladders, lines and hose will be of limited use externally on the upper storeys of tall buildings. Therefore, additional firefighting facilities should be provided within the building.

To ensure consistent risk management planning for tall buildings, the following terms have been designed to categorise buildings by their overall height:

- Medium-rise buildings
 - Between 11m and 18m to the highest occupied floor.
- High-rise buildings
 - Between 18m and 30m to the highest occupied floor.
- Supertall buildings
 - Any building over 30m.

Within Essex, there are 196 buildings which fall under the definition of high-rise, these are predominantly found in Chelmsford, Southend, Colchester and Thurrock.

PENAL ESTABLISHMENTS

HMP and YOI Chelmsford is currently the only penal establishment in Essex. A category B prison housing a total of 745 adult and youth males it requires a minimum attendance of two appliances for each incident.

A planning proposal has been issued for public consultation in regards to redeveloping part of the land at Wethersfield Airfield into a category B and category C prison. The Service responded to this planning application both independently and as part of a Tri-Service response through its Future Infrastructure Risk team (see page 27). Due to the location of the proposed prisons in relation to existing Service estate allocation of facilities and/or funding to create additional facilities to support the Service providing a two appliance attendance within our agreed timescales (10 minutes to life threatening and 15 minutes to non-life threatening incidents) was highlighted as a key consideration for the applicant in the Services initial response to consultation.

UTILITIES

Essex receives water supply from four companies, Essex & Suffolk Water, Anglian Water, Affinity Water and Thames Water. Essex & Suffolk Water provides approximately 41,8416,000 litres of water to 794,000 properties across Essex and Suffolk on a daily basis. The water is drawn from reservoirs, rivers and groundwater sources. Within Essex their main areas of distribution are within Chelmsford and Southend. Anglian, Affinity and Thames Water companies also provide sewage water services alongside water supply.

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Hanningfield Reservoir in Billericay and Abberton Reservoir in Chelmsford are owned and managed in conjunction with Essex Wildlife Trust by Essex & Suffolk Water. In addition to being a key source of water supply for the provision of housing in Essex, these sites are also recognised nature reserves of scientific importance.

Essex is provided with electricity by UK Power Networks, which is distributed via the National Grid load block divisions as detailed in Table 6. UK Power Networks also provide electricity to London, the South East and East of England regions. This equates to 8.4m sites and 19m people, providing 13,150MW of power at peak demand. As can be seen in Table 6, should a localised power outage occur affecting only one load block, the maximum impact it would have on Service delivery would be to reduce building facilities at 6 Service sites. Each site has at a minimum sufficient battery backup supply to enable a safe evacuation of the building, more details can be found in the Power Outage Plan.

Site	Postcode	Electricity Load Block
Basildon	SS14 1EH	A
Harlow Central	CM20 1DU	A
Old Harlow	CM17 0DR	A
Manningtree	CO11 1AU	A
Rayleigh Weir	SS7 3TR	B
Orsett	RM16 3DU	C
Maldon	CM9 6SH	C
Kelvedon Park	CM8 3HB	D
Hawkwell	SS5 4EG	D
Loughton	IG10 4PE	D
Rochford	SS4 1BL	D
Witham	CM8 1EW	D
Leaden Roding	CM6 1QB	E
Stansted	CM24 8AE	E
Billericay	CM12 9LL	G
Great Dunmow	CM6 1DA	G
Great Baddow	CM2 7EZ	H
Halstead	CO9 1EZ	H
Sible Hedingham	CO9 3NU	H
Wethersfield	CM7 4BN	H

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Wethersfield Training Centre	CM7 4AZ	H
Lexden (USAR)	CO3 9AA	J
Corringham	SS17 9BN	K
Southend	SS2 5PX	K
Tollesbury	CM9 8RG	K
West Mersea	CO5 8QT	K
Colchester	CO1 1XT	L
Dovercourt	CO12 4JE	L
Thaxted	CM6 2LP	L
Coggeshall	CO6 1SX	M
Epping	CM16 4AF	M
Shoeburyness	SS3 9AR	M
Frinton	CO13 9NG	N
Burham-on-Crouch	CM0 8DZ	P
South Woodham Ferrers	CM3 5XH	P
Wivenhoe	CO7 9EU	P
Braintree	CM7 3JD	Q
Grays	RM17 5QS	Q
Waltham Abbey	EN9 1PA	Q
Brightlingsea	CO7 0BP	R
Ingatestone	CM4 9EY	R
Newport	CB11 3RU	R
Saffron Walden	CB10 1EH	R
Tiptree	CO5 0SU	R
Weeley	CO16 9ED	R
Ongar	CM5 9DT	S
Canvey	SS8 0JD	T
Chelmsford	CM1 2QS	T
Clacton	CO16 8DB	T
Tillingham	CM0 7SQ	T
Brentwood	CM14 4UZ	U

Leigh	SS9 4AA	U
Wickford	SS12 0QG	U

Table 6

Oil and gas pipelines transporting products including petrol, diesel, aviation fuel, crude oil and biofuels travel through Essex from refineries, shipping terminals and storage terminals to their destinations. Predominantly these facilities are located along the Thames Estuary and deliver their products through high-pressure underground pipelines connecting to East London, North London, the Midlands and North West of England via the North West of Essex. Each site is a designated Control of Major Accident Hazard (COMAH) Sites (see page 10 for more detail) which the Service works with to support their safety requirements.

HOSPITALS AND UNIVERSITIES

Hospitals and Universities pose similar risks in relation to large numbers of people staying overnight for potentially long periods in specially built accommodation units and away from the known safety routes of their own homes.

Within Essex there are four hospitals:

- Princess Alexandra Hospital in Harlow with 460 beds.
- Broomfield Hospital in Chelmsford with 800 beds.
- Basildon University Hospital with 637 beds.
- Colchester University Hospital with 763 beds.
- Southend University Hospital with 737 beds.

Essex is home to three universities, each attracting students from national and international locations. With the highest number of students, the University of Essex is spread out over three campuses in Colchester, Southend and Loughton. Their students are from more than 140 countries, with a total of 17,800 students 12.8% (2278 students) from the European Union and 21.5% (3827 students) from overseas.

Within Chelmsford there are two university campuses, one is a campus from the East Anglia Ruskin University which provides accommodation for 511 students, whilst the second, Writtle University College provides accommodation for 382 students. The annual change to the local populations of Chelmsford, Colchester, Southend and Loughton should be taken into consideration when reviewing the risk profile of these areas and the resources required to provide appropriate support.

CLIMATE CHANGE AND ENVIRONMENTAL

CLIMATE CHANGE

Climate change is the result of human production of greenhouse gases at extreme levels to create a warming effect on the planet. Whilst greenhouse gases are beneficial to the planet and maintaining a temperature to sustain life, the impact of human production of greenhouse gases is increasing this level beyond a stable temperature causing the planet to heat up.

The Met Office projections for climate change in a high emission scenario anticipate that the UK will experience:

- Warmer and wetter winters.
- Hotter and drier summers.
- More frequent and intense weather extremes.

By 2070, the Met Office projects:

- Winters will be between 1 and 4.5°C warmer and up to 30% wetter.
- Summers will be between 1 and 6°C warmer and up to 60% drier.

The impacts of climate change are likely to include:

- Rising ocean levels.
- Ocean acidification.
- Extreme weather events.
- Flooding of coastal regions.
- Food insecurity.
- Conflict and climate migrants.
- Damage to marine ecosystems.

As can be seen in Figures 8 and 9, taking Met Office observation and projection data for temperatures for Essex show us that the annual average surface temperatures are expected to increase by approximately 35% by 2079 with the hottest areas remaining closest to built up areas of Essex which neighbour London. Whilst the lowest temperature ranges closer to Cambridgeshire will still be a 34% increase on the annual averages between 1981 and 2010.

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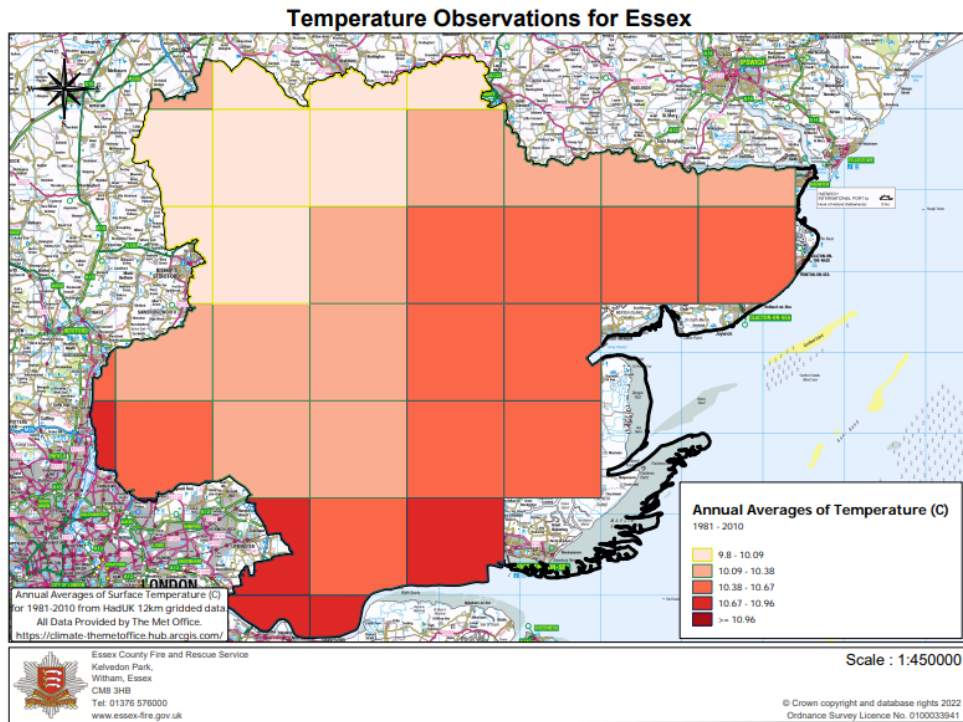


Figure 8

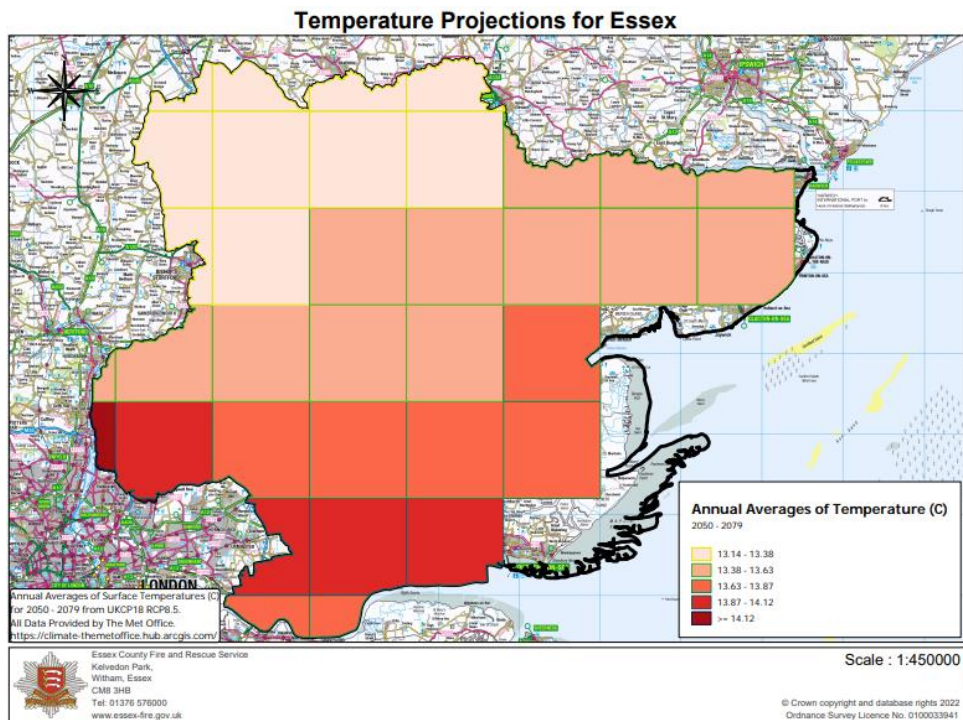


Figure 9

Strategic Assessment of Risk – Environmental Risk

In Figures 10 and 11, we can see that alongside the increase in annual surface temperatures across Essex, the annual averages of precipitation are due to decrease by approximately 99%. These projected figures indicate that Essex will experience extreme weather conditions of predominantly hot, dry weather. Where wetter weather does fall, this is likely to be onto surfaces which are too dry to absorb the water and lead to localised flooding.

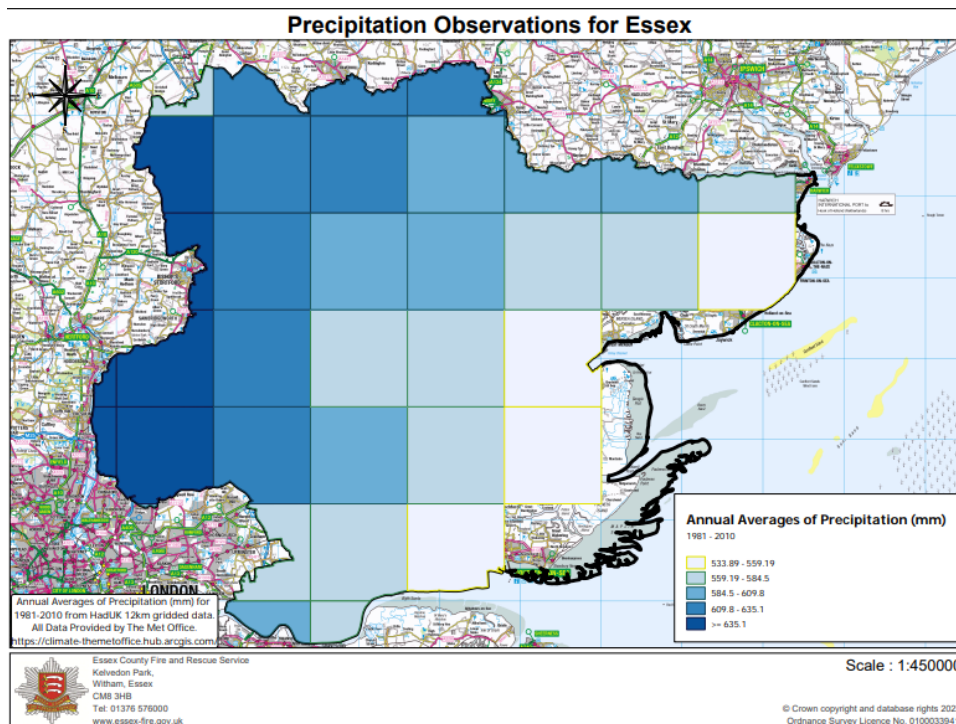


Figure 10

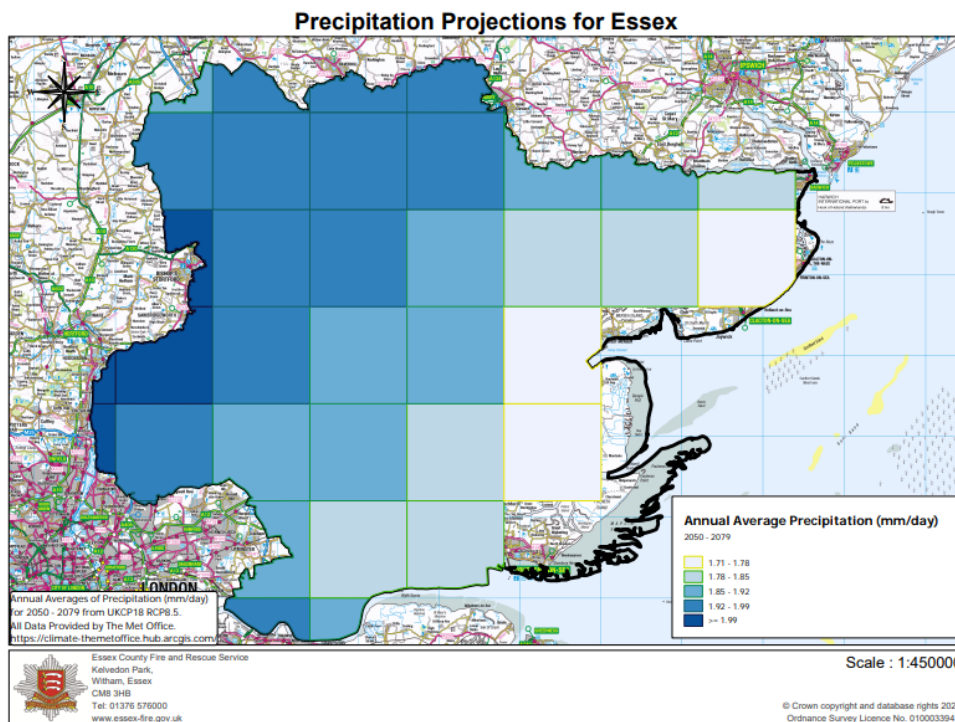


Figure 11

EXTREME WEATHER EVENTS

During July and August 2022 national heatwave weather warnings were issued by the Met Office which impacted Essex County Fire & Rescue Service. Red weather warnings for extreme heat were issued with temperatures exceeding 40°C over multiple days. During this time period the Service saw a spike increase in mobilisations, with a 46% increase on the five year average in July and a 60% increase on the five year average in August for calls received by the Control room. This equated to 3,916 mobilisations and 2,325 reported incidents for July and 3,674 mobilisations and 2,285 reported incidents in August.

For both months, 82% of fires reported were outdoor fires, and cross border mobilisations were also high with 87 appliances travelling out of Essex and 134 appliances travelling into Essex in July, and 56 appliances travelling out of Essex and 216 appliances travelling into Essex in August. In between the ongoing responses to hot weather related outdoor fires, there were 70 flood related incidents on 17th August when the weather changed for a brief period.

With the weather predictions as outlined in the above section Climate Change (see page 19), anticipation of future extreme weather events should be considered by the Service. Utilising the learning from the 2022 heatwave debrief alongside National

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Operational Learning and Joint Organisation Learning to ensure that the Service is effectively resourced for future extreme weather events.

FLOODING

Essex is primarily within Flood Zone 3 which means it has a high probability of flooding from rivers and the sea. Flood defences have been built primarily within the Thurrock and Southend areas to protect against flooding from the river Thames and the English Channel. These defences reduce, but do not completely stop the chance of flooding because they can be overtopped or fail. The map in Figure 12 shows the flood risk from rivers and seas only, it represents data based on present day flood risk and doesn't take into account future changes or the effect fully functional flood defences could have.

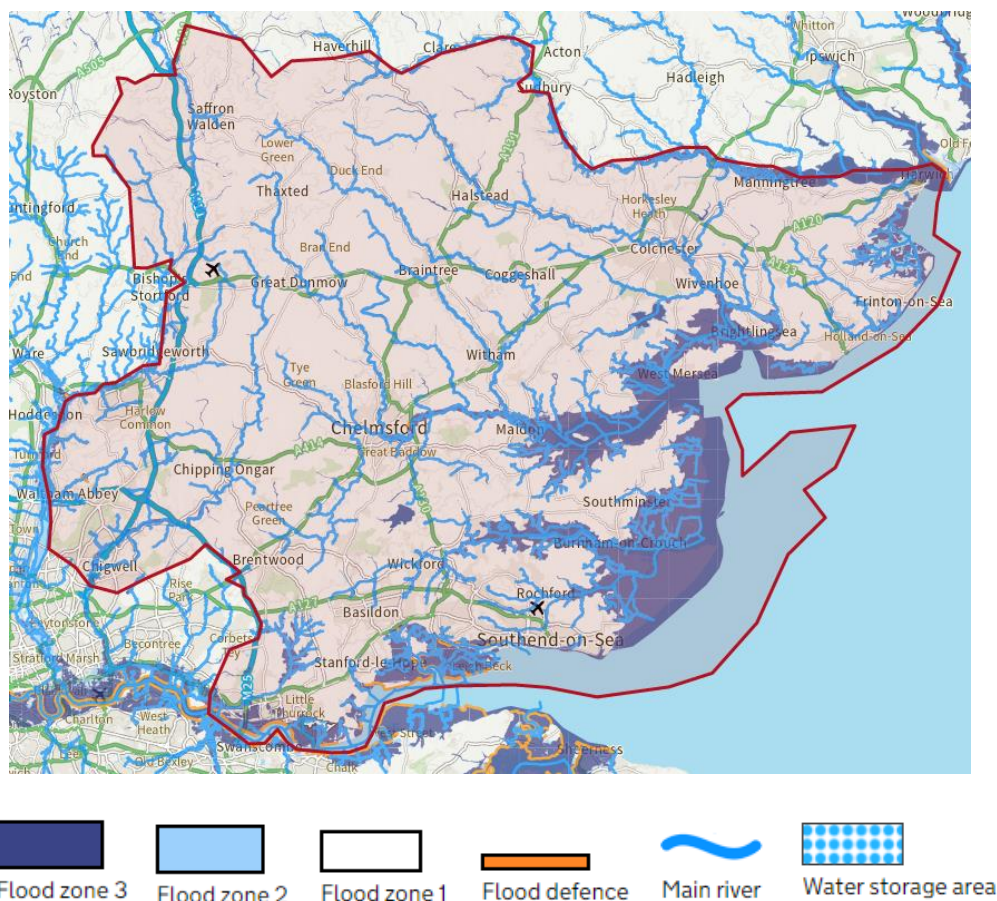


Figure 12 Source: [Flood risk information for this location - Flood map for planning - GOV.UK \(flood-map-for-planning.service.gov.uk\)](https://www.gov.uk/flood-map-for-planning)

In addition to flooding by rivers and seas, flooding can also be caused by surface water, ground water and reservoirs. The Service has a number of stations which are in either directly affected by or situated near to road networks affected by fluvial, pluvial, tidal and reservoir related flooding, these are:

- Brightlingsea Fire Station
- Canvey Island Fire Station
- Halstead Fire Station
- Manningtree Fire Station
- Old Harlow Fire Station
- Ongar Fire Station
- Rochford Fire Station
- Rayleigh Weir Fire Station
- Saffron Walden Fire Station
- Sible Hedingham Fire Station
- South Woodham Ferrers Fire Station
- Thaxted Fire Station
- Tiptree Fire Station
- Waltham Abbey Fire Station
- West Mersea Fire Station
- Wickford Fire Station

WATER SHORTAGES AND DROUGHT

Data provided by the Met Office has been incorporated into the map in Figure 13 which shows the drought severity projections for Essex. This has been calculated by using 12 month rainfall deficits provided as a percentage of the mean annual climatological total rainfall (1981-200) for that location. Higher values (darker shades of red) indicate more severe drought.

This indicates that Essex will increasingly suffer from droughts in the future which will in turn create an increased risk of wildfires occurring coupled with a reduced availability of water for firefighting. Further analysis should be conducted to determine the combined impact of water shortages on incidents and firefighting technologies to determine alternative options to resolving incidents, as well as effective resourcing into appropriate Prevention activity delivery.

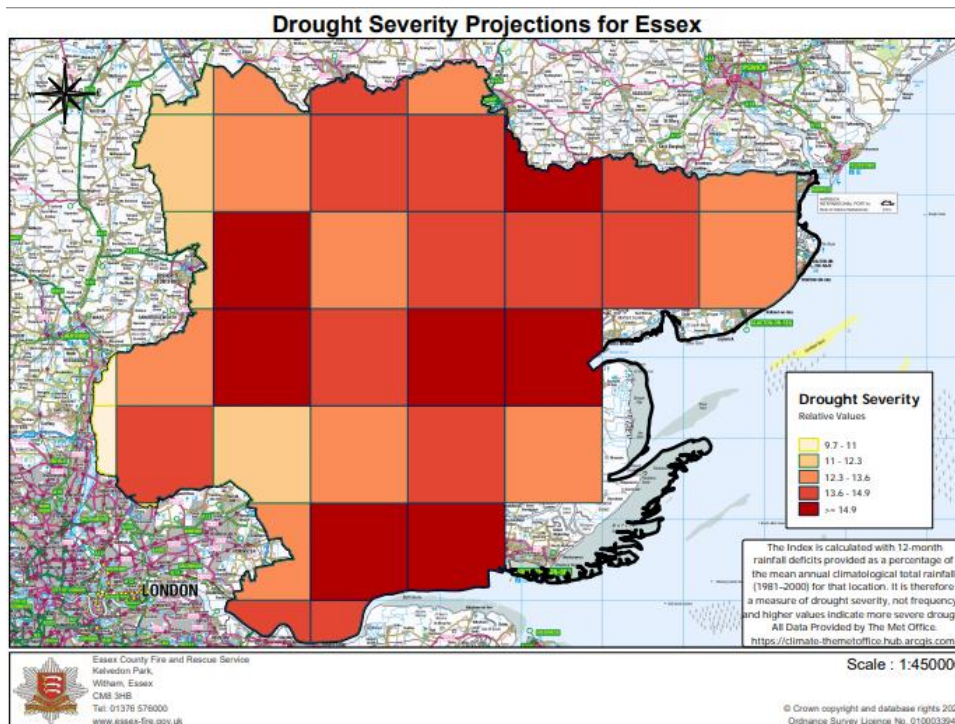


Figure 13

SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)

Essex, Thurrock and Southend are home to multiple Sites of Special Scientific Interest (SSSI), these sites support plants, animals, protected species or natural habitats that find it more difficult to survive in the wider countryside. There are over 4,100 Sites of Special Scientific Interest in England, covering 8% of the country’s land area. Over half of these locations are internationally important for their wildlife and designated as Special Areas of Conservation, Special Protection Areas or Ramsar sites. Many Sites of Special Scientific Interest are also National Nature Reserves or Local Nature Reserves.

Essex County Fire and Rescue Service must protect land and bodies of water designated as Sites of Special Scientific Interest, under the Environmental Damage (Prevention and Remediation) Regulations 2009 the Service must take steps to prevent or reduce environmental damage.

Sites of Special Scientific Interest include:

- Wetlands
- Rivers
- Heathlands

FUTURE DEVELOPMENTS

FUTURE INFRASTRUCTURE RISK TEAM

The Planning Reform White Paper, titled the Levelling-Up and Regeneration Bill is progressing through parliament process with the final stages of approval due to be reached in June 2023. Within this paper, under Schedule 11 provision is made for emergency and rescue services to access infrastructure levy funding which will provide Essex County Fire & Rescue Service with an improved access route to funding from developments in its area of responsibility.

With the projected increase in housing developments across Essex currently detailed at an additional 187,331 dwellings by 2040 (see Table 7) and 13 National Significant Infrastructure Projects (see Table 8) currently ongoing across Essex, Thurrock and Southend the Service initiated a review into current planning engagement and recommendations for improvements.

Out of this review and recommendations paper the set up and resourcing of the Future Infrastructure Risk team was approved. This team works in alignment with the Protection department, triaging and responding appropriately to all new developments from a strategic perspective, incorporating Prevention, Protection, Response and Corporate considerations in its submissions, identifying areas to reduce risk and improve emergency service provision.

The Future Infrastructure Risk team is also designed to work collaboratively with partners and has formed part of a Tri-Service engagement team with Essex Police's Strategic Planning team and East of England Ambulance Trust's Planning Notifications team. As part of the collaborative approach the three Service leads are working proactively with the Essex Developers Group to improve the Essex Developers Guide and Essex Design Guide Emergency Services information sections. Work is also ongoing to create an Emergency Services Developers Protocol to support Planning Authorities to develop and approve applications which incorporate safer building designs.

ESSEX PLANNING AUTHORITIES

Within Essex there are 14 separate planning authorities, comprised of 12 districts and 2 unitary authorities, the table below highlights the total number of dwellings identified as required in each of their current local plans and the likely population increase associated with that based on 2.4 persons occupying a dwelling.

Planning Authority	Local Plan Timescales	Number of Dwellings	Population Increase
Basildon	2020 – 2040	20,820	49,968
Braintree	2013 – 2033	14,320	34,368
Brentwood	2016 – 2033	7,752	18,605
Castle Point	2020 – 2033	4,576	10,982
Chelmsford	2013 – 2036	21,843	52,423
Colchester	2017 – 2033	14,720	33,856
Epping Forest	2011 – 2033	11,400	27,360
Harlow	2011 – 2033	9,200	22,080
Maldon	2014 – 2029	4,650	11,160
Rochford	2019 – 2040	8,700	21,750
Southend	2020 – 2040	23,600	54,280
Tendring	2013 – 2033	11,000	24,200
Thurrock	2020 – 2040	23,620	59,050
Uttlesford	2023 – 2038	11,130	27,825
Total	Up to 2040	187,331	447,907

Table 7 Source: Essex Growth Horizon Planning – Essex Blue Light Update – JLP 27.3.23

From these local plan housing considerations, we can anticipate the change in risk levels within each District or Unitary Authority. Detailed analysis by the Protection and Future Infrastructure Risk teams will enable the Service to identify future resourcing requirements to be allocated across Essex.

NATIONAL SIGNIFICANT INFRASTRUCTURE PROJECTS

National Significant Infrastructure Projects are major infrastructure projects such as new harbours, roads, power generating stations (including offshore wind farms) and electricity transmission lines, which require a type of consent known as ‘development consent’ under procedures governed by the Planning Act 2008. Following the Localism Act 2011 the Planning Inspectorate became the government agency responsible for operating the planning process for Nationally Significant Infrastructure Projects who make a recommendation to the Secretary of State, who will make the decision on whether to grant or to refuse development consent.

By their nature, the size and scale of National Significant Infrastructure Projects take years to progress through the application, construction, delivery and in some cases

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decommissioning processes. As such, the Future Infrastructure Risk team coordinates the capture of all information pertaining to the Service engagement with projects to ensure an effective and consistent approach.

Table 8 outlines the 13 National Significant Infrastructure Projects currently ongoing within Essex.

Projects In Essex	Planning Stage
North Falls Offshore Wind Farm	Pre-Application
Galloper Offshore Wind Farm	Decided
Bramford to Twinstead	Pre-Application
Bradwell B new nuclear power station	Pre-Application
Rivenhall IWMF and Energy Centre	Pre-Application
A12 Chelmsford to A120 Widening Scheme	Examination
Longfield Solar Farm	Recommendation
M25 Junction 28 Improvements	Decided
Oikos Marine & South Side Development	Pre-Application
Lower Thames Crossing	Pre-Examination
Tilbury 2	Decided
Thurrock Flexible Generation Plant	Decided
East Anglia Green Energy Enablement (GREEN) Project	Pre-Application

Table 8

SOLAR FARMS

Solar Photovoltaic Sites or Farms are becoming increasingly more prominent in Essex as local government initiatives move towards green technologies. Currently solar farms are low risk sites, however additional risks are incorporated when a solar farm has a Battery Energy Storage Site at the same location.

As can be seen by the graph below (Figure 15), the number of solar farms within Essex are set to increase steadily over the next few years with the number awaiting construction creating a 67% increase to current operational sites. Including those applications submitted the number of potential operational sites within the short term increases by 126% from 31 to 70. However, as can be seen by the following section,

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this increase is not aligned to the number of Battery Energy Storage Sites due to be operational. Given this disparity, consideration should be taken to the potential number of solar farms which could be connected to the proposed Battery Energy Storage Sites.

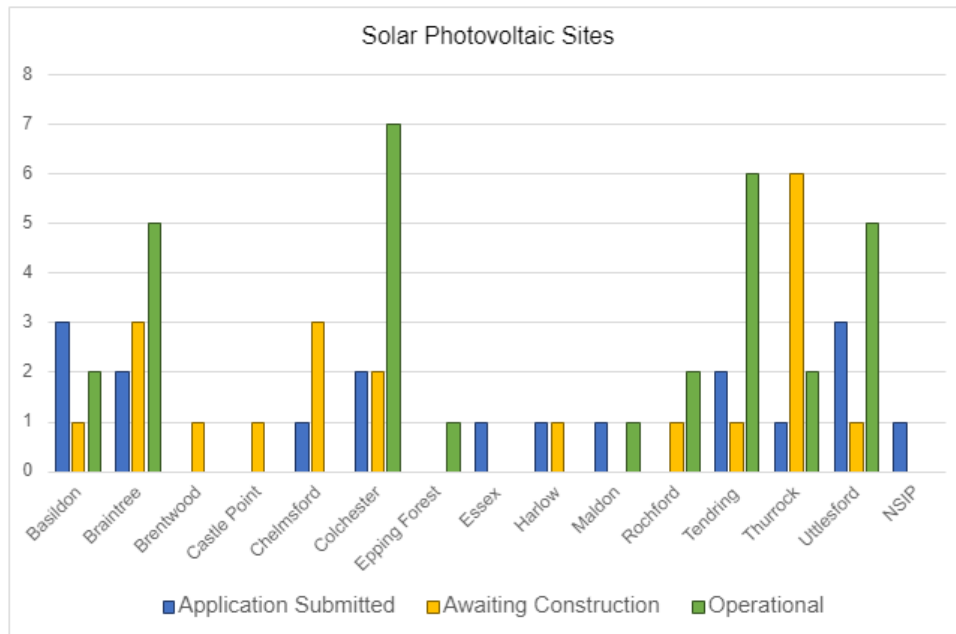


Figure 15

BATTERY ENERGY STORAGE SITES

Battery Energy Storage Sites are designed to store the energy created by green infrastructure such as solar photovoltaics and wind turbines. This energy is then transferred into the National Grid through a series of substations.

As can be seen in the graph below (Figure 16), the number of operational sites across Essex will increase by 533% within the short term based on those awaiting or under construction. If the number of applications submitted is also included, that equates to an increase of 900% on existing operational battery energy storage sites.

Whilst the technology to deliver these sites remains an emerging field there is no national guidance provided through the National Fire Chiefs Council National Operational Guidance programme to support resourcing requirements or alternative firefighting technologies to respond effectively to incidents occurring at these locations. Consideration should be taken alongside details provided in Chapter 5 – Technological Risk in relation to the Lithium-Ion batteries used and the relevant planning requirements required for their approval.

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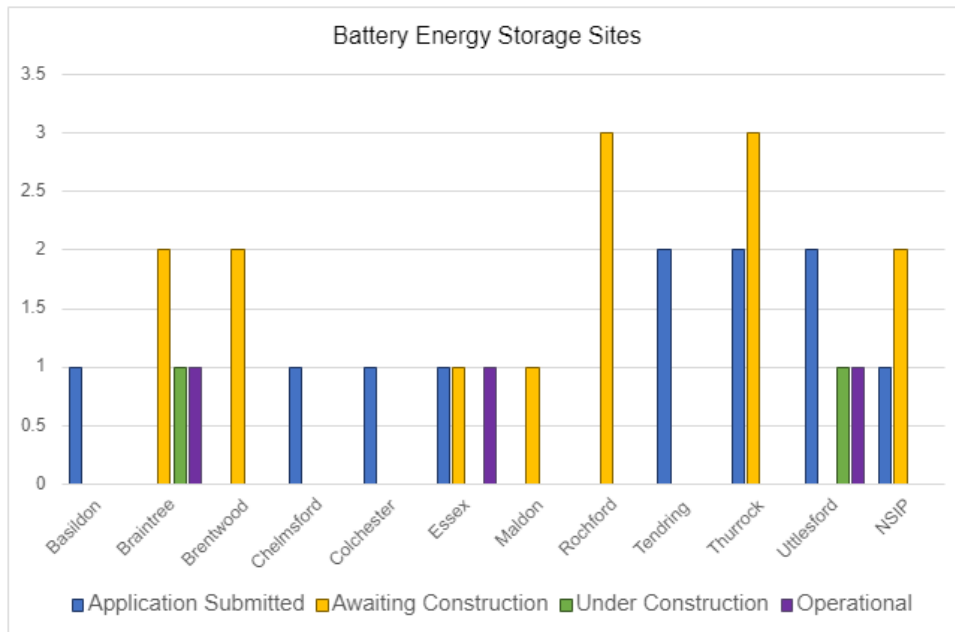


Figure 16

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