

Chapter 10

Landscape

Policy context

International

10.1 The European Landscape Convention (2000) [See reference 265]: Promotes landscape protection, management and planning. The Convention is aimed at the protection, management and planning of all landscapes and raising awareness of the value of a living landscape.

National

10.2 The NPPF (2021) [See reference 266] includes, as part of its approach to protecting the natural environment, recognition for the intrinsic character and beauty of the countryside, and the wider benefits to be secured from natural capital. Importantly, great weight is to be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty (AONB).

10.3 As part of the approach to achieving well-designed places the NPPF states that planning policies and decisions should ensure that developments “are sympathetic to local character and history, including the surrounding built environment and landscape setting.”

10.4 The NPPF is supported by planning practice guidance relating to:

- **Natural environment** (2019) [\[See reference 267\]](#) - Highlights key issues in implementing policy to protect and enhance the natural environment, agricultural land, soils and brownfield land of environmental value, green infrastructure, biodiversity, geodiversity, ecosystems and landscapes.
- **Green Belt** (2019) [\[See reference 268\]](#) - Provides advice on the role of the Green Belt in the planning system, removal of land from the Green Belt and compensatory improvements.

10.5 The Environment Act 2021 [\[See reference 269\]](#) sets out the UK's new framework for environmental protection. It includes the creation of Conservation Covenant agreements between a landowner and a responsible body for the purposes of conservation of the natural environment of the land or its natural resources, or to conserve the place or setting of the land for its 'archaeological, architectural, artistic, cultural or historic interest.'

10.6 A Green Future: Our 25 Year Plan to Improve the Environment [\[See reference 270\]](#): Sets out goals for improving the environment within the next 25 years. It details how the Government will work with communities and businesses to leave the environment in a better state than it is presently. Identifies six key areas around which action will be focused. Those of relevance to this chapter are 'recovering nature' and 'enhancing the beauty of landscapes'. Actions that will be taken as part of this key area are as follows:

- Working with AONB authorities to deliver environmental enhancements; and
- Identifying opportunities for environmental enhancement of all England's Natural Character Areas, and monitoring indicators of landscape character and quality.

10.7 Countryside and Rights of Way Act 2010 [\[See reference 271\]](#): An Act of Parliament to make new provision for public access to the countryside.

10.8 National Parks and Access to the Countryside Act 1949 [\[See reference 272\]](#): An Act of Parliament to make provision for National Parks and

the establishment of a National Parks Commission; to confer on the Nature Conservancy and local authorities' powers for the establishment and maintenance of nature reserves; to make further provision for the recording, creation, maintenance and improvement of public paths and for securing access to open country.

Regional and local

10.9 South Essex Green and Blue Infrastructure Strategy: Resilient by Nature [See reference 273]: This strategy sets out a vision for an integrated green and blue infrastructure (GBI) network across South Essex and key objectives and projects to achieve this. This includes building landscape connectivity, celebrating unique landscape features and creating a sense of place.

10.10 Green Essex Strategy [See reference 274]: This Strategy seeks to enhance, protect and create an inclusive and integrated network of high-quality green infrastructure in Greater Essex, to create a county-wide understanding of green infrastructure – its functions and values, and to identify opportunities for implementing green infrastructure. The Strategy notes that enhancing environmental and landscape quality is one of the functions of green infrastructure.

10.11 South East Inshore Marine Plan [See reference 275]: The Plan introduces a strategic approach to planning within the inshore waters between Suffolk and Kent, including the Thames Estuary. This includes a policy that seeks to avoid, minimise and mitigate adverse effects on seascapes and landscapes.

10.12 Thurrock Green Belt Assessment Stages 1a and 1b [See reference 276]: The Thurrock Green Belt Assessment was conducted on behalf of Thurrock Council with the aim of assessing the Green Belt. Stage 1a of the assessment relates to the identification of strategic Green Belt parcels and the assessment of each parcel against the purposes of the Green Belt, as set out in

NPPF. Stage 1B of the assessment relates specifically to the proposed new Lower Thames Crossing route, and the implications for the Green Belt. This report is a precursor to Stage 2 of the assessment, which will provide a detailed assessment of sites and boundaries in the Green Belt to identify defensible long-term boundaries and provide recommendations on detailed boundary changes.

10.13 Thurrock Council is currently preparing a **Landscape Character Assessment**, a **Green and Blue Infrastructure Strategy** and a **Stage 2 Green Belt Assessment**, all of which will be taken into account in the next iteration of the SEA.

Implications of the policy review for the Interim Thurrock Transport Strategy and SEA

In order to align with the international, national, regional and local policies outlined above, the Interim TTS seek to protect and enhance designated and valued landscapes, and to ensure that new transport development is sympathetic to local character and history including the surrounding built environment and landscape setting. The SEA is able to respond to this through the inclusion of SEA objectives relating to the protection of the character and visual amenity of landscapes including rural landscapes, townscapes, and coastal landscapes.

Baseline information

Landscape character

10.14 Thurrock is generally a low-lying area with a ridge running through from Langdon Hills Country Park on the Basildon boundary, through Horndon on the Hill and Grays to Aveley and Kennington Park in the west of the Borough. There are two main rivers: the Thames which flows along the southern side, and the Mardyke which flows through the west of the Borough from north to south, meeting the Thames at Purfleet. Thurrock exhibits a mosaic of markedly contrasting landscapes; from open and relatively tranquil and undeveloped farmland in the rural parts of the Borough to the north, to the densely developed urban areas and industrial development adjacent to windswept grazing marshes along the Thames riverside [\[See reference 277\]](#).

10.15 The Thames forms a distinctive 'riverscape' along the southern edge of the Borough. In the west near Aveley Marshes, the Thames is narrow, widening towards Holehaven Creek in the east. Numerous jetties, wharfs and piers punctuate the northern bank, which is heavily industrialised for most of its length between Aveley Marshes and Tilbury, and again around Holehaven Creek. The presence of industry creates a dramatic riverscape of angular machinery and buildings, dock activity, river traffic and changing light reflected on the constantly moving water of the Thames. This contrasts with adjacent open and low-lying marshes that accentuate the vertical features of the docks. Settlement has sprawled along an east-west band to the north of the river and at South Ockendon. Road and rail infrastructure, pylons and power lines are prominent features within the urban fringe landscapes. In contrast to the densely settled and industrialised areas, northern parts of the Borough are rural in character and the topography more undulating. Large, open prairie fields are a distinctive feature of the large scale and exposed landscape character in this area.

10.16 National Character Area (NCA) profiles created by Natural England are used to define the specific combination of landscape, geodiversity, biodiversity,

history, culture and economic activity in an area. NCAs follow natural lines in the landscape instead of administrative boundaries [\[See reference 278\]](#). The National Character Areas are shown in **Figure 10.1**. Thurrock contains two National Character Areas, namely the Northern Thames Basin (111) and the Greater Thames Estuary (81):

- **The Northern Thames Basin NCA** is a diverse area which extends from Hertfordshire in the west to the Essex coast in the east. It is separated from the North Sea and Thames Estuary by a narrow band of land that makes up the Greater Thames Estuary National Character Area (NCA). Although arable agriculture is a large industry in the area the soil quality ranges from good to poor quality. The London Clay provides poor quality soil that becomes waterlogged in winter and cracks and shrinks in summer. Better quality soil is found in areas that contain alluvial deposits from the Thames and other rivers in the area as they formed and changed position over time. The Northern Thames Basin is an area rich in geodiversity, archaeology and history and diverse landscapes. Urban expansion has historically been a feature in this area which has put increased pressure on the landscape from housing developments, schools and other necessities for expanding populations, with a consequential reduction in tranquillity. Though tranquil areas are still found in many parts of South Essex in areas with a more dispersed settlement pattern. There are a wider variety of semi-natural habitats in this area, which support important species. However, the habitats have become fragmented over time. [\[See reference 279\]](#).
- **The Greater Thames Estuary NCA** is a predominantly remote and tranquil landscape of shallow creeks, drowned estuaries, low-lying islands, mudflats and broad tracts of tidal salt marsh and reclaimed grazing marsh that lies between the North Sea and the rising ground inland. It forms the eastern edge of the London Basin and encompasses the coastlines of South Essex and North Kent, along with a narrow strip of land following the path of the Thames into East London. NCA contains some of the least settled areas of the English coast, with few major settlements and medieval patterns of small villages and hamlets on higher ground and the marsh edges. This provides a stark contrast to the busy urban and industrial areas towards London where population density is high and

development pressures are increasing. Sea defences protect large areas of reclaimed grazing marsh and its associated ancient fleet and ditch systems, and productive arable farmland. Historic military landmarks are characteristic features of the coastal landscape [\[See reference 280\]](#).

10.17 An Integrated Landscape Character Assessment of Thurrock Borough was undertaken in 2018 [\[See reference 281\]](#). The assessment identified seven strategic scale landscape types, 12 local landscape types and 24 local scale character areas. Landscape types identified include:

- **River valley catchment** - River Mardyke valley catchment.
- **Wooded and farmed river terrace gravels** - Aveley and South Ockendon wooded and farmed river terrace gravels.
- **Low chalk ridge** - Grays conurbation low chalk ridge.
- **Marshland** - Thurrock marshland.
- **Undulating farmland** - Orsett to Chadwell undulating farmland.
- **Strategic river corridor** - River Thames strategic river corridor.

Landscape designations

10.18 Thurrock does not fall within or close to a designated Area of Outstanding Natural Beauty (AONB) or National Park; however, the Kent Downs AONB lies approximately 5km to the south of the River Thames.

10.19 With the exception of the principal urban area of Thurrock, and the towns and villages, all of the land within the Borough is designated as Green Belt. The Stage 1a and 1b Green Belt Assessment [\[See reference 282\]](#) identifies that in Thurrock, areas surrounding the urban areas towards the west of the Borough unsurprisingly contribute most to the first purpose of the Green Belt, i.e., to check the unrestricted sprawl of large built-up areas. With regard to the purpose of preventing neighbouring towns from merging, the designated Green Belt north of Purfleet and Grays fulfil this purpose by preventing merger with the

towns of South Ockendon and Aveley. Similarly, parcels between Stanford-le-Hope, Corringham and Basildon serve the same function. In general, throughout the Borough, Green Belt boundaries are defined along weak features rather than clearly defined barriers, demonstrating the need for policies enhancing Green Belt boundaries and strengthening of green infrastructure. The proposed Lower Thames Crossing (LTC) route intersects the Borough and will undoubtedly have significant implications on areas of the Green Belt and its ability to fulfil its key functions. The most significant impacts will be encroachment on the open countryside and the creation of a major enduring boundary within the Green Belt. In some cases, the proposed LTC route will provide a more defined barrier at the boundaries of existing towns. The intervening land may become subject to development pressures as it may be viewed as less important to fulfilling the purposes of the Green Belt.

Landscape sensitivity and capacity

10.20 As outlined in other chapters of this report, many features and areas within the Borough's landscape have been designated for their nature conservation, heritage and other environmental value, and are key assets of Thurrock's landscape [\[See reference 283\]](#). Thurrock's landscape has long been under pressure from development of industry, housing, transport and defensive sites, and there continues to be pressure for development due to Thurrock's prime location for trade and transport connections [\[See reference 284\]](#).

10.21 A Thurrock Landscape Capacity Study was conducted in 2005 [\[See reference 285\]](#) with the purpose of assessing the landscape to accommodate potential development scenarios. The study concluded that, at strategic scale, much of the Borough's landscape is highly sensitive to most scales of urban development in the absence of substantial investment in green infrastructure provision. In more detail, it concludes that there is scope within the urban fringe and selected settlement edges to accommodate varying scales of development without significant adverse effects on important qualities of the landscape. The

study also identifies a range of opportunities for positive enhancement and creation of green infrastructure within these development locations.

10.22 Future changes in Thurrock's landscape are likely to result from the following developments:

- New industrial complexes and major transport links such as the Lower Thames Crossing and Tilbury Energy Centre.
- Housing and employment developments to meet the identified need for new homes and jobs in the emerging Local Plan.
- Major port developments such as London Gateway.
- Development of a logistics 'superhub' at Thames Enterprise Park.
- Major investment in Purfleet, including a new railway station and film studio.
- Grays Town Centre regeneration incorporating new crossings of the railway and opening up of the riverside.

10.23 The programme of urban regeneration has already had an effect on Thurrock's landscape and townscape, with the expansion of retail services through Lakeside Shopping Centre, the creation of a huge container port at London Gateway, the regeneration of Purfleet, the continuation of the High House Production Park Housing, the Royal Opera House development and the expansion of the Port of Tilbury being key drivers for the change.

Landscape drivers for change

10.24 Within the **Greater Thames Estuary NCA**, there are several drivers for change that will put pressure on the flat estuary landscape. These include:

- New industrial complexes and major transport links such as the Lower Thames Crossing and Tilbury Energy Centre in Thurrock.
- Housing provision urban expansion within the main settlements.

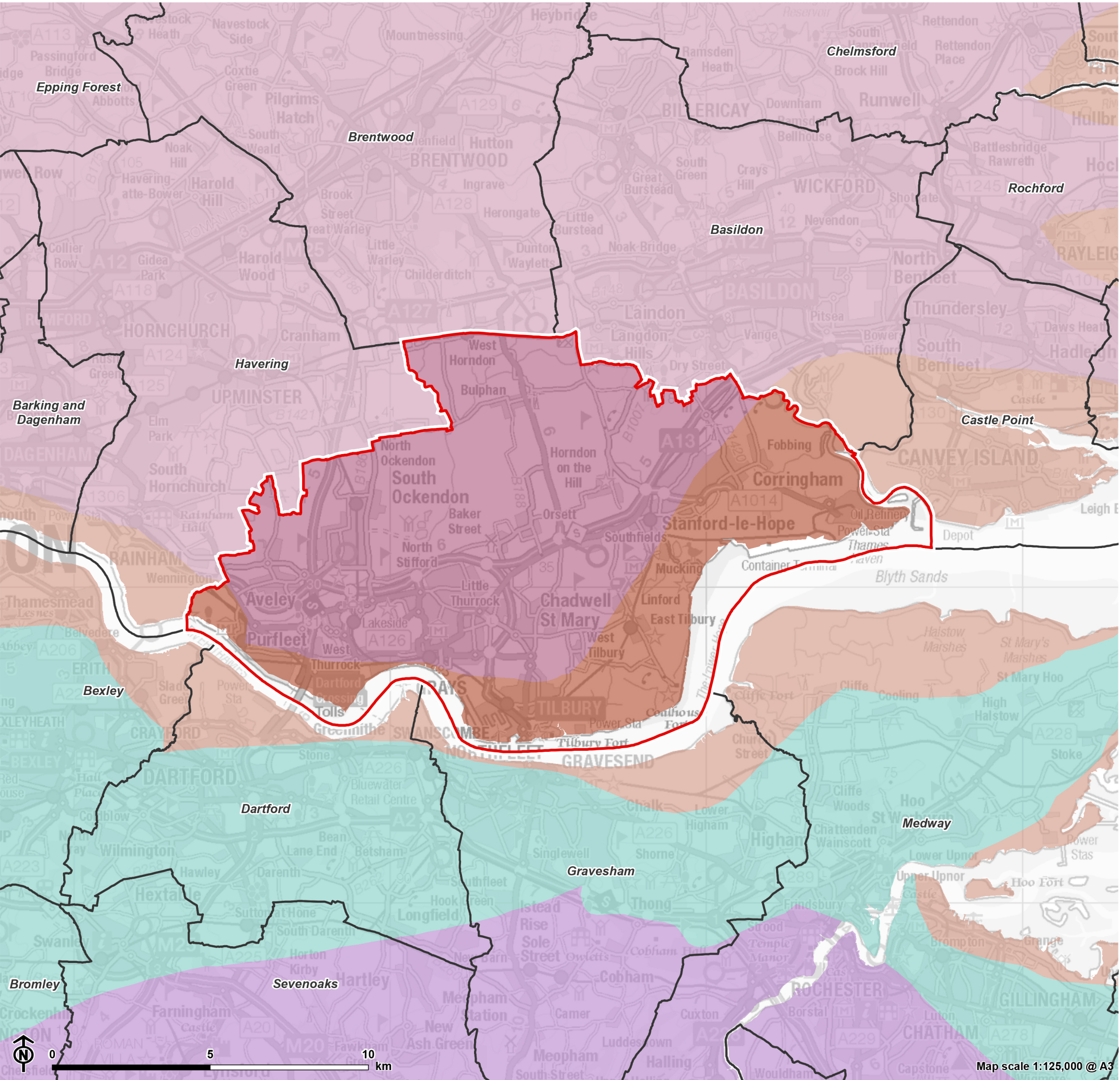
- Major port developments such as London Gateway.
- Increased tourism and recreation-related uses of the Estuary, such as nature parks, boating, water and jet skiing, new marinas, which may increase visitor pressure and reduce the feeling of remoteness and wilderness in some areas.
- Sea level rise is likely to result in significant losses of salt marsh and other habitats (including sand dunes, coastal vegetated shingle and mudflats) through coastal squeeze, with increased pressure on coastal defence structures due to reduced wave attenuation by the salt marsh and pressure on active dynamic coastal processes.
- A substantial alteration of estuary morphology may occur due to changes in sedimentary processes, with extensive mudflats likely to become sandier, affecting composition of bird species, changes in community composition of estuarine habitats due to increased submergence levels and a continuing and potentially accelerating reduction in sediment supply to recharge shingle beach systems.
- Increased sedimentation and barrier breaches would result in the loss of saline lagoons. Increased saline intrusion would potentially result in a significant alteration to, and the loss of, other species and habitats, including a reduction in quality of coastal arable farmland.
- Likely impacts of climate change on grazing marsh habitat include the loss of species due to saline intrusion, drying out in summer, and unpredictable inundation due to wetter winters and more frequent storm events with increased silt loading and loss of breeding habitat for wetland birds.
- A change in the arable landscape may also occur, with the appearance of species and crops adapted to new climatic conditions and a longer growing season potentially leading to double cropping.

10.25 Within the **Northern Thames Basin NCA**, drivers for change include:

- Continued urban expansion of settlements putting pressure on their landscape setting.

- Provision of new open space to improve health and wellbeing, which could lead to habitat fragmentation and an altered landscape character.
- Increased development of infrastructure (transport, logistics and industrial), particularly in proximity to the London area. The Lower Thames Crossing, which will run through the Thurrock area.
- Continued demand for minerals across South Essex.
- Climate change will lead to increased wind erosion in hotter and drier periods and water erosion in the wetter, colder periods.
- Loss of brownfield sites in developed areas putting pressure on invertebrate habitats.
- Decreased water availability with potential loss of specific drought intolerant species and water quality of water bodies.

Figure 10.1: National Character Areas



- Thurrock Council boundary
- Neighbouring authority boundary
- National Character Area**
 - Greater Thames Estuary
 - North Downs
 - North Kent Plain
 - Northern Thames Basin

Key environmental issues and likely evolution of these issues without the Interim Thurrock Transport Strategy

10.26 There continues to be pressure for development of industry, housing, and defensive sites, and major transport developments such as the Lower Thames Crossing, which have the potential to greatly affect the landscape character of the Borough. Furthermore, Thurrock contains national and local landscape character areas that could be harmed by inappropriately sited transport infrastructure which may adversely affect landscape quality, including the character and visual amenity of areas.

10.27 The Interim TTS offers an opportunity to ensure that the variation in landscape character is taken into account in the design and siting of transport infrastructure developments, and that opportunities for the protection and enhancement of the landscape are maximised. The Interim TTS provides an opportunity to improve urban, rural and coastal connectivity, and therefore deliver improved access to valued landscapes, townscapes and viewpoints, including by sustainable and active travel modes to reduce the impact of road traffic. The Interim TTS provides an opportunity to reduce petrol and diesel vehicles on the roads which would help to minimise the adverse effects that busy roads can have on landscape and townscape character, including through noise, air and light pollution. Furthermore, the Interim TTS provides an opportunity to promote the creation and enhancement of active travel corridors which would benefit visual amenity value in the Borough. Without the Interim TTS, the sustainability issues would be less well addressed, and the opportunities may not be fully exploited.

Chapter 11

Material assets

11.1 Material assets and resources are broad terms, taken in this context to mean physical materials that are valued and/or used by people. These can include buildings and infrastructure, transport routes, minerals and land. Assets and resources relating to population and housing, energy, landscape, cultural heritage, biodiversity, and soil and water resources are examined under other headings in this report.

11.2 The material assets and resources that are considered in this section are:

- Transport infrastructure.
- Minerals.
- Waste.

Policy context

International

11.3 The **2030 Agenda for Sustainable Development** (2015) [\[See reference 286\]](#): This initiative, adopted by all United Nations Member States, provides a shared blueprint for peace and prosperity for people and the planet and includes 17 Sustainable Development Goals (SDGs), designed to achieve a better and more sustainable future for all. Relevant to this topic are:

- SDG 9: Industry, Innovation and Infrastructure.
- SDG 11: Sustainable Cities and Communities.
- SDG 13: Climate Action.

National

11.4 The **NPPF** (2021) [\[See reference 287\]](#) states that the planning system supports developments that promote sustainable transport i.e., through limiting the need to travel and providing a choice of public and active transport modes, including the provision of high-quality walking and cycling networks, which will help to reduce congestion and emissions, and to improve air quality and public health. The NPPF also supports the safeguarding of minerals defined by Mineral Safeguarding Areas and their associated infrastructure from sterilisation from inappropriate development.

11.5 The NPPF is supported by planning practice guidance relating to:

- **Transport evidence bases in plan making and decision taking** (2015) [\[See reference 288\]](#): Provides guidance to help local authorities assess and reflect transport needs in Local Plan making.
- **Travel Plans, Transport Assessments and Statements** (2014) [\[See reference 289\]](#): Provides advice on when Transport Assessments and Transport Statements are required, and what they should contain.
- **Minerals** (2014) [\[See reference 290\]](#): Outlines guidance for planning for mineral extraction in the plan-making and application process.
- **Effective use of land** (2019) [\[See reference 291\]](#) - Provides guidance on making effective use of land, including planning for higher density development.

11.6 The **White Paper Levelling Up the United Kingdom** (2022) [\[See reference 292\]](#) sets out how the UK Government will spread opportunity more equally across the UK. It comprises 12 UK-wide missions to achieve by 2030, which includes the following key mission relating to this chapter:

- By 2030, local public transport connectivity across the country will be significantly closer to the standards of London, with improved services, simpler fares and integrated ticketing.

11.7 Decarbonising Transport: A Better, Greener Britain (2021) [See reference 293] The Decarbonisation Transport Plan (DTP) sets out the Government's commitments and the actions needed to decarbonise the entire transport system in the UK. It follows on from the Decarbonising Transport: Setting the Challenge report published in 2020. The DTP commits the UK to phasing out the sale of new diesel and petrol heavy goods vehicles by 2040, subject to consultation, in addition to phasing out the sale of polluting cars and vans by 2035. The DTP also sets out how the government will improve public transport and increase support for active travel, as well as creating a net zero rail network by 2050, ensuring net zero domestic aviation emissions by 2040, and a transition to green shipping.

11.8 Transport Investment Strategy [See reference 294]: Sets out four objectives that the strategy aims to achieve:

- Create a more reliable, less congested, and better connected transport network that works for the users who rely on it;
- Build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities;
- Enhance our global competitiveness by making Britain a more attractive place to trade and invest; and
- Support the creation of new housing.

11.9 Highways England Sustainable Development Strategy and Action Plan (2017) [See reference 295]: This strategy is designed to communicate the company's approach and priorities for sustainable development to its key stakeholders. Highways England aims to ensure its action in the future will further reduce the impact of its activities seeking a long-term and sustainable benefit to the environment and the communities it serves. The action plan describes how Highways England will progress the aspirations of their Sustainable Development and Environment Strategies. It describes actions that will enable the company to deliver sustainable development and to help protect and improve the environment.

11.10 Door to Door: A strategy for improving sustainable transport integration (2013) [\[See reference 296\]](#): Focuses on four core areas which need to be addressed so that people can be confident in choosing greener modes of transport. These are as follows:

- Accurate, accessible and reliable information about different transport options;
- Convenient and affordable tickets;
- Regular and straightforward connections at all stages of the journey and between different modes of transport; and
- Safe and comfortable transport facilities.

11.11 The strategy also includes details on how the Government is using behavioural change methods to reduce or remove barriers to the use of sustainable transport and working closely with stakeholders to deliver a better-connected transport system.

11.12 The Environment Act 2021 [\[See reference 297\]](#) sets statutory targets for the recovery of the natural world in four priority areas: air quality, biodiversity, water, and resource efficiency and waste reduction. It also establishes the Office for Environmental Protection which will act as an impartial and objective body for the protection and improvement of the environment. The Act sets out legislation which covers:

- Resource efficiency, producer responsibility, and the management, enforcement and regulation of waste; and
- Local air quality management frameworks and the recall of motor vehicles etc.

11.13 The Waste (Circular Economy) (Amendment) Regulations [\[See reference 298\]](#) seek to prevent waste generation and to monitor and assess the implementation of measures included in waste prevention programmes. They set out requirements to justify not separating waste streams close to source for re-use, recycling or other recovery operations, prohibit incineration

and landfilling of waste unless such treatment process represent the best environmental outcome in accordance with the waste hierarchy. The Regulations set out when waste management plans and in waste prevention programmes are required. The Regulations focus on the circular economy as a means for businesses to maximise the value of waste and waste treatment.

11.14 Our Waste, Our Resources: A strategy for England (2018) [See reference 299] aims to increase resource productivity and eliminate avoidable waste by 2050. The Strategy sets out key targets which include: a 50% recycling rate for household waste by 2020, a 75% recycling rate for packaging by 2030, 65% recycling rate for municipal solid waste by 2035 and municipal waste to landfill 10% or less by 2035.

11.15 National Planning Policy for Waste (NPPW) (2014) [See reference 300]: Key planning objectives are identified within the NPPW, requiring planning Authorities to:

- Help deliver sustainable development through driving waste management up the waste hierarchy.
- Ensure waste management is considered alongside other spatial planning concerns.
- Provide a framework in which communities take more responsibility for their own waste.
- Help secure the recovery or disposal of waste without endangering human health and without harming the environment.
- Ensure the design and layout of new development supports sustainable waste management.

11.16 Safeguarding our Soils – A Strategy for England (2009) [See reference 301]: Sets out how England's soils will be managed sustainably. It highlights the areas that Defra will prioritise, including better protection for agricultural soils; protecting and enhancing stores of soil carbon; building the resilience of soils to a changing climate; preventing soil pollution; effective soil protection during construction; and dealing with contaminated land.

11.17 Environmental Protection Act 1990 [See reference 302]: makes provision for the improved control of pollution to the air, water and land by regulating the management of waste and the control of emissions. Seeks to ensure that decisions pertaining to the environment are made in an integrated manner, in collaboration with appropriate authorities, non-governmental organisations and other persons.

Regional and local

11.18 Joint Municipal Waste Management Strategy for Essex (2007 to 2032) [See reference 303]: This Joint Municipal Waste Management Strategy (JMWMS) has been developed by the thirteen waste authorities of Essex, comprising Essex County Council, as the Waste Disposal Authority (WDA), and the twelve District and Borough Councils, as the Waste Collection Authorities (WCAs), in Essex. The strategy sets out key targets and objectives for the Essex Waste Partnership, including to reduce the amount of waste produced and to achieve high levels of recycling.

11.19 Essex Transport Strategy [See reference 304]: The Essex Transport Strategy outlines the County Council's priorities and strategic objectives for improving the transport network across Essex, including by encouraging a modal shift towards public transport, walking and cycling over single occupancy car journeys. The Plan supports the use of cleaner, lower carbon transport technologies, and car share schemes.

11.20 Sustainable Modes of Travel Strategy [See reference 305]: The Sustainable Modes of Travel Strategy aims to reduce the number of private vehicles using the highway network and increase the use of more active and sustainable modes available to businesses, residents and schools within Essex. A key objective is to manage congestion during peak times and improve the environment by reducing the need to travel by car and potentially reducing CO₂ and other emissions.

11.21 Transport East Active Travel Strategy [See reference 306]: The vision for the region is that half of all journeys within towns and cities (up to three miles from the urban centre) will be made by walking and cycling. By 2050, half of all trips in the Transport East region will be made by walking or cycling. In Thurrock, a “Go Dutch” scenario (which applies Dutch rates for cycle commuting in England adjusting for distance and hilliness) would result in almost a twelve-fold increase of the population who could commute to work by cycle, to 24.9%.

11.22 Transport East Draft Transport Strategy [See reference 307]: The Draft Transport Strategy aims to outline a collective vision for the future of transport in the region and set out key investment priorities needed to deliver it. The overarching vision is underpinned by four strategic priorities: decarbonisation to net-zero, connecting growing towns and cities, energising coastal and rural communities, and unlocking international gateways. The four strategic priorities overlap and together form an integrated strategy for the region. The Draft Transport Strategy sets out the pathways and key goals needed for the delivery of their Vision, which include goals focused around improving sustainable and active travel options, reducing demand for travel via digital connectivity, encouraging behaviour change, increasing access for coastal and rural communities, improving efficiency of freight transport, and creating better connected ports and airports to unlock international gateways.

11.23 Section 5 of the Draft Transport Strategy highlights place-based strategic corridors which link key destinations with the region. For Thurrock, this includes improved links with South Essex, London, Basildon and Southend. The Strategy identifies the area as a major location for economic growth, particularly in relation to the major international ports at London Gateway, Purfleet and Tilbury (now Thames Freeport). At present, the area is heavily congested which acts as a major barrier to growth. The Strategy identifies the need for improved road, freight capacity, passenger rail and bus networks to support economic and population growth in the region.

11.24 Thurrock Active Place Strategy [See reference 308]: An Active Place strategy has been developed by Thurrock Council to inform the development of

the Thurrock Local Plan. The strategy outlines three studies that present a planning related evidence base relating to the Borough's open spaces, indoor sports facilities and playing pitches. It also outlines an Active Travel Strategy for Thurrock which reviews the existing cycle network in the Borough. The strategy presents a number of detailed key objectives and recommendations for open spaces, indoor facilities, playing pitches, as well seven geographical priority areas where physical improvements to active travel routes should be made. Recommendations to address mental barriers to active travel in the Borough are also included in the strategy.

11.25 Draft Thurrock Transport Strategy (internal draft, currently unpublished): The Interim Draft Transport Strategy builds on the existing Transport Strategy (2013 – 2026), taking into account much of the rapid change Thurrock is undergoing, including major regeneration projects and proposed development which will fundamentally alter the way people and goods move around Thurrock and the wider region. Key projects include Grays Town Centre regeneration, the port expansion of Tilbury and London Gateway, proposed development of a logistics 'superhub' at Thames Enterprise Park, the Thames Freeport, Purfleet regeneration, and the proposed construction of the Lower Thames Crossing (LTC). The Draft Transport Strategy outlines key challenges and opportunities for Thurrock which include supporting sustainable economic growth, supporting the health and wellbeing of Thurrock's residents and addressing the Climate Emergency. These factors inform the Transport Vision Statement ('Connecting Thurrock'), as well as 10 interconnected overarching goals and nine strategic focus areas specified in the Draft Transport Strategy. The Draft Transport Strategy will be supported by a series of shorter-term delivery documents, setting out more specific actions that aim to achieve the overarching vision and goals.

11.26 Thurrock Transport Strategy 2013-2026 [\[See reference 309\]](#): The strategy sets out the aims, objectives and policies for delivering transport improvements in Thurrock, including (but not limited to) to respond to large scale growth at Lakeside, Tilbury Port and London Gateway. The strategy focusses on the need to address the following key areas: Delivering Accessibility, Tackling Congestion, Improving Air Quality and Addressing

Climate Change, Safer Roads and Facilitating Regeneration. This strategy also sets out the long-term approach to walking and cycling in the Borough.

11.27 Thurrock Highways Asset Management Strategy [\[See reference 310\]](#): The purpose of this strategy is to set out strategies for investment in key highways asset groups, define affordable service standards, improve how the highway asset is managed, enable more effective and efficient value for money highways services, and align asset management practices to the corporate plan and vision for Thurrock Council.

11.28 Municipal Waste Strategy for Thurrock 2021-2031 [\[See reference 311\]](#): The Municipal Waste Strategy is a 'living document' and acts as the tool to improve and increase the Borough's recycling performance. The strategy outlines the current local picture of waste in the Borough, provides analysis of public consultation, and identifies the Council's strategic objectives. Key actions that will be undertaken to succeed include effective engagement and communications with local residents providing information and education to households; ensuring a reliable carbon-efficient collection service; and engagement with front-line staff to deliver the changes needed.

11.29 Thurrock Council is currently preparing a **Green and Blue Infrastructure Strategy**, a **Mineral and Waste Local Plan** and an **Infrastructure Delivery Plan** which will be taken into account in the next iteration of the SEA.

Implications of the policy review for the Interim Thurrock Transport Strategy SEA

In order to align with the international, national, regional and local policies outlined above, the Interim TTS should seek to develop an integrated transport network; to prevent loss or sterilisation of minerals from transport infrastructure development; and to ensure the effective management of waste and the efficient use of minerals during the construction of transport

infrastructure. The SEA is able to respond to this through the inclusion of SEA objectives relating to avoiding the sterilisation of mineral resources; waste management; and the efficient use of land and natural resources.

Baseline information

Transport infrastructure

Public transport network

11.30 The transport network in Thurrock Borough is shown in **Figure 11.1**.

11.31 Public transport in the Borough offers a range of connections provided by bus and train services. In general, there are good levels of accessibility by public transport to key services in Thurrock compared to the East of England region, but journey times are greater than the national average (see **Chapter 4** for further details).

11.32 There are seven train stations in Thurrock located at Purfleet, Ockendon, Chafford Hundred, Grays, Tilbury Town, East Tilbury, and Stanford-le-Hope, providing services between Southend-on-Sea and London. The rail line forms part of Network Rail's Anglia region. The Essex Thameside route runs from London Fenchurch Street to Shoeburyness, carrying a mixture of commuter and leisure traffic, along with container traffic to and from the ports at Tilbury and London Gateway. However, overall capacity of the rail network is nearing capacity, including potential issues on freight services from Tilbury Port and London Gateway in future. Plans are underway for the redevelopment of Stanford-le-Hope railway station, which will comprise improved access for connecting buses and other travel links to and from the station. The redevelopment scheme will enhance access to new jobs at London Gateway

and the proposed Thames Enterprise Park development, as well as local residential need [\[See reference 312\]](#).

11.33 Commuting patterns between the Borough and surrounding areas have been considered in **Chapter 5**. However, it is also worth considering the flow of commuters by train in and out of the Borough. More people commute out of Thurrock than commute in. The inflows and outflows of commuters are outlined in **Table 11.1** (from the 2011 Census). The top three outflow destinations generally are Basildon, Westminster and Havering. However, the top destinations by train are Westminster (-4,226 net change) and Tower Hamlets (-1,327 net change) [\[See reference 313\]](#).

Table 11.1: Commuting inflows and outflows in Thurrock

	Inflow	Outflow	Net Change
Total (all modes)	21,813	35,032	-13,219
By Train	1,262	9,648	-8,386

11.34 Bus networks in the Borough are focused around the densely populated areas and routes between them. This translates to a high frequency network in the south and west of Thurrock, and across the centre to Stanford-le-Hope. On average, at least 5% of travel to work trips are made by bus in these areas. The less densely populated areas in the north and southeast of the Borough have limited access to both bus services and rail, resulting in generally poor public transport accessibility in these areas [\[See reference 314\]](#)

11.35 There is a regular foot passenger ferry service on the River Thames that operates Monday to Saturday, connecting the town and port of Tilbury with Gravesend, Kent [\[See reference 315\]](#).

Public transport projects

11.36 There are several notable public transport projects, that are either planned, programmed or underway in Thurrock:

- Stanford-le-Hope Station redevelopment, including better access for connecting buses and other travel links to the station. Works are expected to begin in 2022.
- The Thurrock Bus Service Improvement Plan (BSIP) 2021 [\[See reference 316\]](#) follows the UK Government's National Bus Strategy [\[See reference 317\]](#), setting out improved collaboration between Thurrock Council and bus operators through Enhanced Partnership, improvements in bus routes, frequencies and fares.
- Thurrock Council has also been exploring opportunities for a Mass Rapid Transit (MRT) service linking key residential and employment hubs in the Borough with fast bus links [\[See reference 318\]](#).

Walking and cycling

11.37 In Thurrock, 67% of employed people travel to work via car (including passengers) [\[See reference 319\]](#). In Thurrock, walking levels are significantly below the average for neighbouring local authorities and the national average for England. 2011 Census data revealed that people in Thurrock were only half as likely to travel to work by foot or bike (7.6%) in comparison to the East of England average (14.5%), even though 27.4% of Thurrock residents live less than 5km from their workplace. Additionally, just over 50% of pupils living within the walking and cycling threshold currently walk, and over 1,500 of those living within the walking threshold are driven to school by car [\[See reference 320\]](#).

11.38 Thurrock has a fragmented walking and cycling network. Two significant 'gap' areas are Purfleet/West Thurrock and South Ockendon. Gaps are also noted at Stanford-le-Hope, Aveley, East Tilbury and Chadwell St Mary. Priorities for the improvement of networks include reducing physical barriers and

reducing mental barriers to active travel. Based off analysis of desire lines include, physical priorities include:

- West/east connections across the Borough, particularly in the Purfleet/West Thurrock area;
- South Ockendon and the surrounding area;
- North/south connections between Purfleet and Aveley (with connection able to further link South Ockendon);
- Between Stanford-le-Hope and Corringham;
- Between Chadwell St Mary and Tilbury;
- Between Blackshots and the surrounding area; and
- Along sections of the coastal network. [\[See reference 321\]](#).

11.39 Route analysis identified that Thurrock has 156km of public footpaths and 17km of bridleway, as well as 293km of cycle ways (categorised as advisory (158km), bridleway (11km), cycle lanes (11km), official (26km) and traffic-free (87km)) [\[See reference 322\]](#).

11.40 Progress has been made to invest in more sustainable transport options in the Borough. In particular, the Council has implemented a range of cycle improvement schemes through the £5 million Cycle Infrastructure Delivery Plan between 2014-19, and more recently the £3.3 million South Essex Active Travel Programme. A £900,000 Emergency Active Travel Fund (Tranche 1) provided some traffic calming measures in the Borough to promote safer travel for all during the pandemic, however some of these measures have since been removed.

Road network

11.41 Thurrock's location at the edge of Greater London means that it is a key location in terms of the strategic highway network, with the M25 and A13 acting as a crossroads of national importance.

11.42 The key components of the road network in Thurrock are:

- The M25 (London Orbital Motorway) passes through the west of Thurrock, connecting the Borough with the major road network encircling most of Greater London.
- The A13 is an important route that links Central London with south Essex, passing through Thurrock
- The M25 and A13 intersect in the west of the Borough, forming a crossroads of both national and regional importance (the Mar Dyke Interchange).
- The A282 creates a link between the M25 (north of the River Thames) and M25 (south of the River Thames). It connects at the M25/A13 crossroads and connects Thurrock with Dartford and areas south of the River via the Dartford Crossing.
- The A1090, A126, A1012, A1013 and A1306 connect the urban areas of Purfleet and Grays with the surrounding major road network.
- The A1089 connects the town of Tilbury and Tilbury port with the A13.
- The A128 connects the village of Bulphan with the A13 to the south and the A127 to the north.
- The A1014 connects areas of Stanford-le-Hope, Corringham and London Gateway with the A13, in the east of the Borough.
- The remainder of the road network in Thurrock comprise primarily B roads and rural roads.

11.43 Thurrock suffers from congestion on its strategic road network in certain areas, particularly along the A13. This is largely because a high proportion of the workplace and resident population travel by car. In addition, there is a high proportion of HGVs on the network. The M25 and A13 are routes of national and regional importance. Adverse traffic conditions on these routes often have knock-on effects on local roads, leading to localised gridlock on occasion and impacting negatively on economic productivity. The Lakeside Basin and its surrounding road network (A126, A1206, B126) suffers significantly with traffic

during peak hours, weekends and holidays. It creates a pinch-point which has an impact on the wider West Thurrock strategic road network. The Dartford Crossing adds an additional element of traffic risk, as the bridge and tunnels are more sensitive to accidents and congestion, which also leads to widespread effects on Thurrock's local road network [\[See reference 323\]](#).

Traffic growth and road projects

11.44 Thurrock and South Essex have seen major investment in recent years, including the opening of the DP World London Gateway port and Logistics facility. There are a number of major schemes proposed that will influence the development of transport networks in Thurrock.

11.45 There are several notable transport projects, that are either planned, programmed or underway in Thurrock, including:

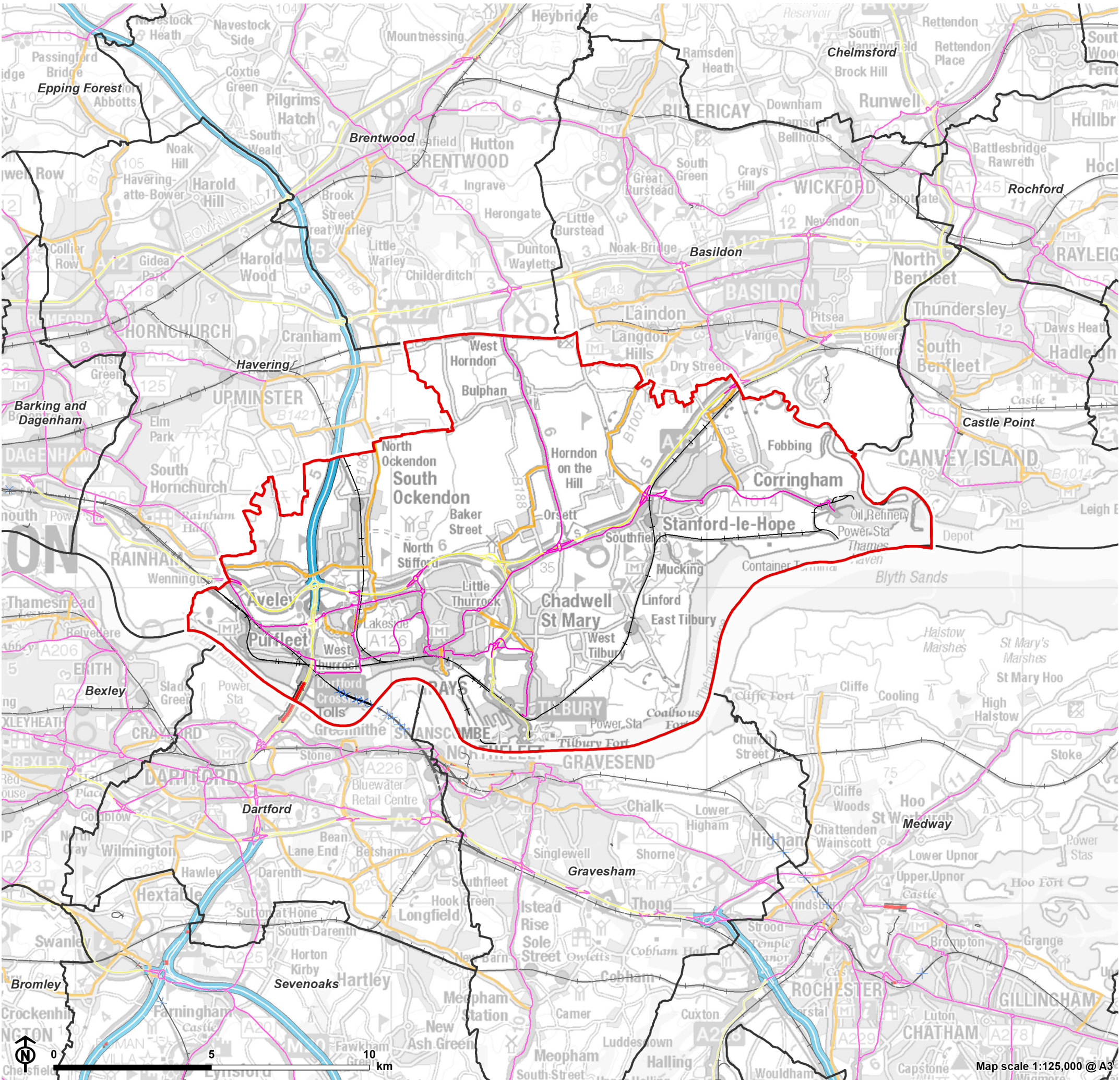
- Lower Thames Crossing led by National Highways as a NSIP, expected in 2029/30.
 - Section A: south of the Thames in Kent, to include works along the M2/A2 corridor, the proposed junction with the M2/ A2, and all other carriageway works as far as (and including) the proposed Thong Lane North Bridge over the new road.
 - Section B: to the north of Thong Lane North Bridge, as far as the proposed Tilbury Viaduct. This includes the works to build the tunnel and its approaches south and north of the Thames.
 - Section C: from (and including) the proposed Tilbury Viaduct, as far as (and including) Green Lane, north of the proposed A13/A1089 junction with the new road.
 - Section D: north of Green Lane, to include works through the Mardyke Valley, along the M25 corridor and around junction 29 of the M25.

The scheme will potential introduce new challenges but aims to relieve congestion west of the Borough by reducing demand at the existing Dartford Crossing.

- A13 Widening (A128 to A1014) led by Thurrock Highways, recently completed.
- London Gateway Port led by DP World, via a Local Development Order, expected in 2023 or beyond.
- Tilbury Link Road – Led by National Highways (no longer part of the LTC NSIP, now a standalone project), the Council is exploring opportunities for a Tilbury Link Road, which would improve access to the Tilbury Growth Area. The scheme would provide connection between port activities in Tilbury and the proposed LTC route.
- A13 East Facing Slip Road – Installation of the East Facing Access Road on the A13 will provide access improvements between Lakeside and A13 East and will enhance capacity at J30 of the M25, reducing congestion issues in the area. The project is a long-held ambition for the Council and will improve operation of the local road network.

11.46 Thurrock's location 20 miles east of central London means there are competing pressures for land in the Borough, including housing, employment and transport infrastructure. Further to this, the predicated growth of Thurrock's population will increase pressure on the Borough's transport systems, increasing congestion and road maintenance requirements [\[See reference 324\]](#).

Figure 11.1: Thurrock transport network



Minerals

11.47 The Borough contains safeguarded mineral resources including two operational sand and gravel quarries in Thurrock at Dansand Quarry and Orsett Quarry. Mill House Farm ceased operation in 2020. There are two non-operational sand and gravel quarries at Medina Farm and East Tilbury Quarry [See reference 325]. The River Thames has been a major route for transshipment and distribution of aggregates. Hard rock and marine dredged aggregates are landed in Thurrock with the material distributed within the Borough, the wider region and London. There are a total of 11 transshipment facilities in Thurrock at Port of Tilbury, Tilbury 2, Tilbury Docks, Purfleet Wharf, Thurrock Marine Terminal, DP World Berth [See reference 326].

11.48 There are several notable major development/construction projects, that are either planned, programmed or underway in Thurrock, which will require significant amounts of mineral resources:

- Lower Thames Crossing led by National Highways as a NSIP, expected in 2029/30.
- A13 Widening (A128 to A1014) led by Thurrock Highways, work underway, near completion.
- London Gateway Port led by DP World, via a Local Development Order, expected in 2023 or beyond.
- Tilbury Link Road – Led by National Highways (no longer part of the LTC NSIP, now a standalone project).
- A13 East Facing Slip Road – The project is a long-held ambition for the Council and will improve operation of the local road network.

11.49 There are currently four mineral sites in Thurrock with permitted extraction of sand and gravel although not all are operational:

- Dansand Quarry, Orsett – This site is operational and continues with limited mineral extraction of sand and gravel as well as recycling of

aggregates. Permission includes the restoration of the quarry site after extraction of minerals by 2025.

- Orsett Quarry – This site is currently a mothballed sand and gravel quarry. Current activity includes the restoration of the south western part of the site as a wildlife area. An outstanding application submitted to the Council seeks extension southwards and for further mineral extraction of sand and gravel.
- Mill House Farm, West Tilbury – Permission granted for mineral extraction of sand and gravel as part of the provision of an agricultural reservoir. This application is being implemented.
- Medina Farm, South Ockendon - Permission granted by Thurrock Council for limited mineral extraction prior to restoration of land. The permission has not yet been implemented. Part of the proposed site falls within London Borough of Havering, which has yet to grant permission for a separate application.

11.50 In association with the extraction of minerals, there are also four marine wharfs (at London Gateway Berth 7 DP World; Thurrock Marine Terminal, Tilbury Docks and Port of Tilbury); three rail terminals (at Purfleet Rail Depot; Tilbury Bulk Rail Terminal; Tilbury 2 Rail Terminal); and 10 aggregate recycling sites.

Waste

11.51 The Municipal Waste Strategy for Thurrock 2021-2031 [\[See reference 327\]](#) sets out the current status of waste management in Thurrock. The Council currently provides a weekly collection of refuse, recycling and garden and food waste from around 69,000 households in the Borough with 77,524 tonnes of household waste produced in 2019/20. Thurrock also have a successful commercial/trade waste collection from which the waste-tonnages collected contribute to the Council's overall targets.

11.52 The Strategy states that Thurrock's recycling performance has not improved over the past six years and has seen a steady decline to stagnation since 2014/15. Recycling rates were approximately 35% in 2020, which is lower than both the 2020 national target of 50% and the average recycling rate in England, at 45%. Recycling waste from Thurrock is disposed of in East London, restricting the capacity and frequency of collections in the Borough. The Strategy states that renewal of disposal contracts offers the opportunity to redress this issue. The Council's core objective is to increase Thurrock's recycling to 45% by 2025 and 50% by 2030.

Key environmental issues and likely evolution of these issues without the Interim Thurrock Transport Strategy

Transport infrastructure

11.53 Thurrock suffers from congestion on its strategic road network, mainly in the west of the Borough, particularly along the A13 and M25. Adverse traffic conditions on these routes often have knock-on effects on local roads, leading to localised gridlock on occasion and impacting negatively on economic productivity.

11.54 In the absence of the Interim TTS, the policies in the NPPF and the Local Plan would apply. These support measures to improve traffic and travel management; to develop and enhance green infrastructure; and to direct new development to sustainable locations which limits the need to travel and offer a choice of transport modes. However, without targeted action at the Borough-level, it is anticipated that traffic congestion will continue to increase with the rising population and car dependency will continue to be high. The Interim TTS provides an opportunity to reduce the demand on the transport network by creating an integrated transport network that:

- encourages and facilitates more active forms of travel (walking and cycling);
- encourages and facilitates a shift to public transport; and,
- encourages and facilitates a shift of passenger and freight traffic from road to rail.

Minerals

11.55 The Borough contains safeguarded mineral resources which, where possible, should not be lost or compromised as new development occurs. The level of development proposed in the Interim TTS will require significant amounts of mineral resources. With the closure of many of the Borough's mineral extraction sites and their subsequent conversion to other uses such as nature sites and green space, minerals required for construction are likely to be increasingly imported to the Borough from elsewhere.

11.56 Without the Interim TTS, it is possible that transport infrastructure development could result in unnecessary sterilisation of mineral resources thereby preventing their use for future generations. The Interim TTS provides an opportunity to:

- safeguard mineral resources and mineral transportation infrastructure, such as wharfs and railheads, by locating transport development in appropriate locations;
- support the sustainable transport of minerals via rail to avoid traffic congestion and air pollution; and,
- promote the sustainable use of minerals during construction of new transport infrastructure.

Waste

11.57 New transport infrastructure projects will generate additional waste which should be managed according to the waste hierarchy. In the absence of the Interim TTS, the National Planning Policy for Waste [\[See reference 328\]](#) would apply which supports driving waste management up the waste hierarchy. However, the Interim TTS provides an opportunity to guide the sustainable use of resources and minimise waste impacts by:

- promoting the use of locally sourced, reclaimed, recycled or low environmental impact materials in construction; and,
- encouraging the re-use/enhancement (to high standards of sustainable resource-efficient design) of existing transport infrastructure.

Chapter 12

Proposed framework for assessing significant environmental effects

12.1 A key purpose of scoping is to set out sufficient details about the proposed methodological framework for the assessment of environmental effects to allow the consultees to form a view on this matter. It is proposed to use an objectives-led assessment which will involve assessing proposals within the Interim TTS and reasonable alternatives to these against defined SEA objectives for each of the environmental topic areas identified in this report as being within the proposed scope of the SEA. The assessment will be supported by other tools such as GIS-based spatial analysis and other quantitative data, as available and appropriate.

12.2 The preceding chapters have identified the baseline environmental characteristics and key environmental issues relevant to the Interim TTS and the policy context from external plans and programmes. This chapter brings together that information to inform a series of proposed SEA environmental objectives. These will be used in the Environmental Report to provide a framework against which to assess the likely environmental effects of the Interim TTS and, subsequently, monitor implementation of the Interim TTS.

12.3 The SEA objectives and appraisal guidance (which provide a guide to the factors that should be considered when carrying out assessments) set out in the SEA framework are subject to change as new information comes to light during the SEA process. The SEA framework has been amended following consultation with statutory consultation bodies to reflect their recommendations.

12.4 The SEA framework is set out overleaf; each primary bullet point constitutes an SEA objective and the sub-bullet points set out further guidance to help guide the appraisal of each objective. The framework is structured to encompass each SEA topic. **Table 12.1** highlights the most relevant SEA topics

Chapter 12 Proposed framework for assessing significant environmental effects

for each SEA objective. This demonstrates that all SEA topics have been addressed through the SEA framework.

Table 12.1: Scoped-in SEA topics and corresponding SEA objectives

SEA topic	SEA objective
Biodiversity, flora and fauna	SEA objective 1: Biodiversity, flora and fauna SEA objective 2: Population and human health
Population and human health	SEA objective 2: Population and human health SEA objective 3: Air quality and climate change mitigation SEA objective 4: Flood risk and climate change adaptation SEA objective 5: Soil SEA objective 6: Water
Climatic factors	SEA objective 3: Air quality and climate change mitigation SEA objective 4: Flood risk and climate change adaptation
Air	SEA objective 3: Air quality and climate change mitigation
Soil	SEA objective 5: Soil
Water	SEA objective 6: Water
Cultural heritage, including architectural and archaeological heritage	SEA objective 7: Cultural heritage, including architectural and archaeological heritage
Landscape	SEA objective 8: Landscape
Material assets	SEA objective 9: Material assets SEA objective 2: Population and human health

SEA framework

SEA objective 1: Biodiversity, flora and fauna

- SEA objective 1 - Conserve and enhance Thurrock's biodiversity, including all statutory and non-statutory designated sites, priority habitats, and protected species.
 - Does the TTS conserve and enhance designated and undesignated ecological assets, including promoting habitat connectivity; avoiding fragmentation; and adverse impacts on habitats and species from transport-related changes to air quality, water quality and quantity, noise levels and light levels?
 - Does the TTS maintain and enhance the Nature Recovery Network of ecological assets and green/blue spaces, taking into account the impacts of climate change?
 - Does the TTS require that development delivers net gains in biodiversity?

SEA objective 2: Population and human health

- SEA objective 2 - Create a healthy living environment, encourage healthy lifestyles and improve safety.
 - Does the TTS protect physical and mental health and wellbeing by preventing, avoiding and mitigating adverse health effects associated with air, noise, vibration, and light pollution from transport infrastructure?
 - Does the TTS promote healthy lifestyles by encouraging and facilitating active travel, such as walking and cycling?
 - Does the TTS improve road user safety and reduce the risk of accidents, such as through traffic calming measures or improved rail crossings?

Chapter 12 Proposed framework for assessing significant environmental effects

- Does the TTS improve actual and perceived safety and security for users of public transport?
- Does the TTS facilitate access to key services, facilities and employment areas for all, including ensuring easily accessible and affordable public transport, particularly in rural areas or more deprived areas?
- Does the TTS avoid the creation of barriers between people and services, facilities and employment?
- Does the TTS minimise journey times for commuting?
- Does the TTS improve access to open spaces and recreational facilities to improve physical and mental health?
- Does the TTS improve access to nature?

SEA objective 3: Air quality and climate change mitigation

- SEA objective 3 - Improve air quality and minimise greenhouse gas emissions by reducing concentrations of harmful atmospheric pollutants and avoiding their emission.
 - Does the TTS reduce the need to travel by petrol or diesel vehicles?
 - Does the TTS improve air quality by minimising pollutant emissions from the transport sector, particularly within the AQMAs?
 - Does the TTS help to address road congestion and its impact on air quality?
 - Does the TTS support the provision and maintenance of facilities for electric vehicle charging and car-sharing?
 - Does the TTS support the use of renewable energy for electricity in electric vehicles?

Chapter 12 Proposed framework for assessing significant environmental effects

- Does the TTS encourage a modal shift to sustainable modes of transport by supporting maintenance and expansion of public and active transport networks?
- Does the TTS facilitate a shift of passenger and freight traffic from road to rail?
- Does the TTS designate Clean Air / Low Emission zones in the Borough?
- Does the TTS seek to minimise emissions from ports / port related activities?
- Does the TTS encourage the use of sustainable construction methods and materials in the development of transport infrastructure, with a focus on reducing the embodied carbon in new transport infrastructure?
- Does the TTS avoid adverse air quality effects on protected biodiversity sites (whether within or beyond the Authority area)?

SEA objective 4: Flood risk and climate change adaptation

- SEA objective 4 - Reduce the risk and effects of flooding, both now and in the future.
 - Does the TTS direct transport away from areas at highest risk of flooding and avoid inappropriate transport-related development in areas at risk of surface, groundwater, fluvial and tidal flooding, taking into account the effects of climate change and mitigate residual risks without increasing flood risk elsewhere?
 - Does the TTS increase the resilience of transport systems to the effects of climate change, via flood resilient design?
 - Does the TTS promote the use of SuDS, where appropriate?

- Does the TTS encourage the creation, management and enhancement of a coherent green and blue infrastructure (GBI) network?

SEA objective 5: Soil

- SEA objective 5 - Conserve and enhance Thurrock's soil resources and geological sites.
 - Does the TTS avoid the loss of best and most versatile agricultural land?
 - Does the TTS conserve and enhance, where appropriate, designated and undesignated geological assets?
 - Does the TTS direct new transport development to brownfield / previously developed land in preference to greenfield land, where appropriate?
 - Does the TTS facilitate the remediation of contaminated land, avoiding environmental pollution or exposure of occupiers or neighbouring land uses to unacceptable health risk?

SEA objective 6: Water

- SEA objective 6 - Preserve and enhance the quality and quantity of waterbodies and groundwater.
 - Does the TTS maintain or improve the quality of waterbodies and groundwater by avoiding adverse impacts from pollution / changes to drainage?
 - Does the TTS minimise and mitigate runoff from new transport infrastructure?
 - Does the TTS minimise inappropriate development in groundwater source protection zones (SPZs)?
 - Does the TTS minimise water pollution from river freight transport?

- Does the TTS safeguard the quantity and quality of water at water-dependent protected biodiversity sites (whether within or beyond the Authority area)?

SEA objective 7: Cultural heritage, including architectural and archaeological heritage

- SEA objective 7 - Conserve and enhance the significant qualities, fabric, setting and accessibility of the historic environment.
 - Does the TTS conserve designated and undesignated heritage assets, including their setting and their contribution to wider local character and distinctiveness, avoiding adverse effects on their significance from direct loss, damage, or detracting from their setting?
 - Does the TTS improve access to heritage assets and areas of historical and cultural interest?

SEA objective 8: Landscape

- SEA objective 8 - Conserve and enhance Thurrock's landscape, seascape and townscape, ensuring transport and related development does not detract from the quality of views and local distinctiveness.
 - Does the TTS adversely impact, protect or enhance landscapes, including rural landscapes, townscapes, seascapes, coastal landscapes, and visual amenity of the Borough?
 - Does the TTS improve access to valued landscapes, seascapes, townscapes and viewpoints, including by sustainable and active travel modes to reduce the impact of road traffic?
 - Does the TTS encourage high-quality design principles to respect local character and visual amenity?
 - Does the TTS protect tranquil areas and limit the impact of noise and light pollution on nature conservation?

SEA objective 9: Material assets

- SEA objective 9 - Use resources intelligently, optimising reuse and recovery to keep waste to a minimum.
 - Does the TTS avoid the sterilisation of mineral resources?
 - Does the TTS safeguard mineral transportation infrastructure, such as wharfs and railheads?
 - Does the TTS minimise the consumption of natural resources through the development of an integrated transport network?
 - Does the TTS encourage the re-use/enhancement (to high standards of sustainable resource-efficient design) of existing transport infrastructure and promote the use of low carbon, recycled and secondary materials in construction?

Use of the SEA framework

12.5 The SEA will be undertaken in close collaboration with Thurrock Council and Mott MacDonald (commissioned on behalf of the Council to prepare the Interim TTS) in order to fully integrate the SEA process with the production of the Interim TTS.

12.6 The findings of the SEA will be presented as a colour coded symbol showing the effect of each option (including reasonable alternatives) against each of the SEA objectives, along with a concise justification for the score given.

12.7 The use of colour coding in the matrices will allow for likely significant effects (both positive and negative) to be easily identified, as shown in **Table 12.2**.

Table 12.2: SEA scoring of effects

SEA effect	Description of effect
++	Significant positive effect likely
++/-	Mixed significant positive and minor negative effects likely
+	Minor positive effect likely
+/	Mixed minor effects likely
++/--	Mixed significant effects likely
-	Minor negative effect likely
--/+	Mixed significant negative and minor positive effects likely
	Significant negative effect likely
0	No or negligible effect likely
?	Likely effect uncertain
N/A	Assessment criterion not applicable

12.8 The dividing line between environmental scores is often quite small. Where significant effects are distinguished from more minor effects this is because, using the appraisal questions and criteria and applying professional judgement, the effect of the option in relation to achievement of the SEA objective will be of such magnitude that it will have a noticeable and measurable effect compared with other factors that may influence the achievement of that objective.

Assessment of impacts and mitigation

12.9 In undertaking the assessment of likely significant effects on the environment of the Interim TTS, the range of effects will include secondary,

Chapter 12 Proposed framework for assessing significant environmental effects

cumulative, synergistic, short, medium and long term, permanent and temporary, positive and negative effects as well as the interrelationships between the environmental topics. Table 12.3 identifies the potential inter-related topics that will be subject to consideration during the assessment stage (green = inter-related topics; white = no relationship between topics; grey = not applicable).

Table 12.3: Interaction between topics

	Biodiversity	Population and human health	Climatic factors	Air	Soil	Water	Historic and cultural heritage	Landscape	Material assets
Biodiversity									
Population and human health									
Climatic factors									
Air									
Soil									
Water									
Historic and cultural heritage									
Landscape									
Material assets									

12.10 Where lack of data or technical issues arise in relation to the assessment of effects these will be acknowledged. Where significant adverse effects are identified during the SEA process, relevant and appropriate mitigation measures will be recommended in the Environmental Report. Consideration will be given to residual impacts, where relevant.

Consideration of reasonable alternatives

12.11 One of the requirements of the SEA process is to provide an evaluation of the likely environmental consequences of reasonable alternatives to the proposals made by the Interim TTS. The reason for assessing alternatives is to determine if the significant adverse effects of the Interim TTS can be reduced or avoided. Therefore, the SEA must appraise not only the proposed transport vision / goals / strategic focus areas / policies for inclusion in the Interim TTS but also 'reasonable alternatives' to these. This implies that alternatives that are not reasonable do not need to be subject to appraisal. Part (b) of Regulation 12(2) notes that reasonable alternatives will take into account the objectives of the strategy, as well as its geographical scope. Therefore, alternatives that do not meet the objectives of national policy or are outside the strategy area are unlikely to be reasonable.

12.12 In order to be considered reasonable, the alternatives appraised by the SEA should meet the following criteria:

- Take into account the geographical scope, hierarchy and objectives of the Interim TTS – **be realistic**
- Be based on socio-economic and environmental evidence – **be justified**
- Be capable of being delivered within the Interim TTS's timeframe and resources – **be implementable**
- Be technically and institutionally feasible – **be viable**

12.13 The consideration and assessment of alternatives will be fully developed and explored in the Environmental Report, however, we would welcome feedback from the consultation bodies on potential reasonable alternatives. The Council's reasons for selecting the alternatives to be included in the Interim TTS will be reported in the Environmental Report.

Monitoring

12.14 A monitoring programme will be developed to facilitate monitoring of environmental effects during implementation of the Interim TTS. This will be focussed on key impact issues identified during the assessment phase. The monitoring programme will be presented in the Environmental Report and will be informed by the monitoring programme proposed in the Interim TTS.

Chapter 13

Conclusion and next steps

13.1 In order to meet the requirements of the SEA Regulations, the views of the three consultation bodies (Environment Agency, Historic England and Natural England) will be sought in relation to the scope and level of detail to be included in the SEA. Consultation was undertaken on the SEA Scoping Report between 13th June 2022 and 15th July 2022.

13.2 The consultees were, in particular, requested to consider:

- Whether the defined geographic, temporal and environmental scope is appropriate for the SEA (**Chapter 2**);
- Whether there are any additional plans, policies or programmes that should be outlined in the SEA because they form a key part of the policy context that should inform the SEA objectives (covered in **Chapters 3-11**);
- Whether the Scoping Report adequately describes the current state of the environment and the environmental characteristics of the areas likely to be affected by the Interim TTS and therefore provides a suitable baseline for the SEA of the Interim TTS (covered in **Chapters 3-11**);
- Whether there are any additional environmental issues relevant to the Interim TTS that should be included (covered in **Chapters 3-11**); and
- Whether the SEA Framework is appropriate and includes a suitable set of SEA objectives for assessing the effects of the options included within the Interim TTS and reasonable alternatives (**Chapter 12**).

13.3 Responses from consultees have been reviewed and appropriate amendments made to the detail contained in the Scoping Report, including the baseline, policy context and SEA framework where necessary. A summary of the response received on the Scoping Report from Natural England and LUC's response to this submission is provided in Appendix A.

Chapter 13 Conclusion and next steps

13.4 As the Interim TTS is drafted, it will be subject to SEA using the SEA Framework. A full Environmental Report (incorporating the later stages of the SEA process) will then be produced and made available to other stakeholders and the general public for wider consultation alongside the Interim TTS.

LUC

July 2022

Appendix A

Consultation comments received in relation to the SEA Scoping Report

A.1 The three consultation bodies for SEA in England, namely Historic England, Natural England and the Environment Agency, were consulted on a draft of the SEA Scoping Report from 13th June to the 15th July 2022. A summary of the comments and LUC's responses to these is provided below.

Natural England

Natural England response

Is the defined geographic, temporal and environmental scope appropriate for the SEA?

- The geographical scope of the SEA is not defined explicitly in the Scoping report. Reference is made to the consideration of “effects...in the South Essex and Thames Estuary area”. The full nature and extent of plans for the transport network is not apparent from the scoping report so it is difficult to reach a conclusion on whether the geographical scope is appropriate. The same comment applies to the temporal and environmental scope.

LUC response

The environmental, temporal and geographic scope are outlined in Chapter 2: Scoping the SEA.

Are there any additional plans, policies or programmes that should be outlined in the SEA because they form a key part of the policy context that should inform the SEA objectives?

- The referenced list of plans, policies and programmes is extensive, and I have not been able to consider the details fully. However, I could not find references to the adopted Local Plans for neighbouring Local Planning Authorities and plans for development in these Authorities could affect or be affected by the Transport Strategy for Thurrock.

LUC response

The policy context section for each topic chapter includes review of relevant sub-regional plans, policies and programmes, including for South Essex, Essex and the wider East region. The baseline information section for each chapter also draws on wider than district information, such as regional transport strategies and Local Plans for neighbouring local planning authorities. Should the SEA identify the potential for significant environmental effects at particular locations beyond the administrative boundary then appropriate consideration will be given at that time to the current state of the environment and its likely future evolution (including as a result of local planning policies) in those neighbouring areas.

Does the Scoping Report adequately describe the current state of the environment and the environmental characteristics of the areas likely to be affected by the Interim TTS and therefore provides a suitable baseline for the SEA of the Interim TTS?

- In relation to baseline information on air quality, the Air Pollution Information System (APIS) should be interrogated for information on pollutants and their impacts for habitats and species at protected sites.
- In relation to Soils, the baseline information (shown at Figure 7.2) classifies agricultural land within grades 1 – 5. The classification will need to distinguish between areas within Grade 3a and 3b in order to establish the extent of agricultural land classed as Best and Most Versatile (Grades 1,2 and 3a).

LUC response

In relation to information on air quality, a description has been added to the baseline section of Chapter 6 'Air' of the types of effect that relevant air pollutants may have on the natural environment, drawing on information in APIS.

In relation to soils, information is not available for the plan area to sub-divide Grade 3 agricultural land into Grades 3a and 3b.

Are there any additional environmental issues relevant to the Interim TTS that should be included?

- The scope of consideration of the “air quality” chapter should be expanded to encompass the potential impacts for the natural environment. The current focus of the air quality chapter is on the human health impacts but transport-related changes to air quality could have (positive or negative) impacts for habitats and species at protected sites and more widely. The “water” chapter references the impact of transport-related development on water quality but could be more explicit about the potential impacts for the natural environment (for example the consequences of changes in water quantity or quality at water-dependent protected sites).
- The issue of “noise” is covered in the “population and human health” chapter but the scope of consideration should be widened to encompass the potential impacts for the natural environment. The Transport Strategy could result in development that affects the noise environment for habitats/species that are sensitive to such impacts, as is highlighted in paragraph 185 of the National Planning Policy Framework. The issue could be included as an addition to the “Biodiversity, flora and fauna” chapter.

LUC response

Amendments have been made to the air, water and biodiversity, flora and fauna chapters to ensure risks to the natural environment are clearly identified.

Is the SEA Framework appropriate and include a suitable set out SEA objectives for assessing

the effects of the options included within the Interim TTS and reasonable alternatives?

Natural England recommend the following amendments/additions to the SEA objectives:

Objective 1: Biodiversity, flora and fauna

- Recommend the deletion of “where appropriate” in the first assessment question.
- The assessment questions could be more explicit about the aspects of the ecological assets that the TTS should conserve and enhance. This could include references to the potential for adverse impacts to air quality, water quality and quantity, noise levels and light levels.
- The last assessment question might sit more appropriately in the “population and human health” chapter. Given the potential for increased recreational disturbance at certain protected sites, the question could be adjusted to: “Does the TTS improve access to nature?”

Objective 3: Air quality and climate change mitigation

- The wording of the Objective is clear but the assessment questions do not include any specific reference to the impact of changes in air quality upon the natural environment. It could be argued that the issue is addressed generically in Objective 1, but an additional assessment question would add clarity. For example, “Does the TTS affect air quality at protected sites?”.

Objective 6: Water

- As for Objective 3, an additional question would add clarity. For example, “Does the TTS affect water quantity or quality at water-dependent protected sites?”

Objective 8: Landscape

- It is a requirement of the National Planning Policy Framework (paragraph 185) that planning policies and decisions protect “tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and...limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation. As the TTS could affect both noise and light levels in a locality, there could be an additional assessment question to address the issues. For example, “Does the TTS protect tranquil areas and limit the impact of noise and light pollution on nature conservation?”

LUC response

The recommended changes to SEA objectives 1, 2, 3, 6 and 8 have been made to the SEA framework. The suggested appraisal question relating to improving access to nature in SEA objective 1: Biodiversity, Flora and Fauna has not been added to avoid repetition in the SEA framework as this is already assessed in SEA objective 2: Population, Human Health.

- On a point of detail, the content of Table 12.3 requires further explanation. It may simply require the addition of a key to explain the significance of the different colours used in the table.

LUC response

Key added to clarify the significance of the colours used in the table.

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- 3 Explanatory Memorandum to the Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018 No. 1232.
- 4 Under EU Directives 85/337/EEC and 97/11/EC concerning EIA.
- 5 Biodiversity, Flora and Fauna; Population and Human Health; Climatic Factors; Air; Soil; Water; Cultural Heritage including Architectural and Archaeological Heritage; Landscape; Material Assets
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