

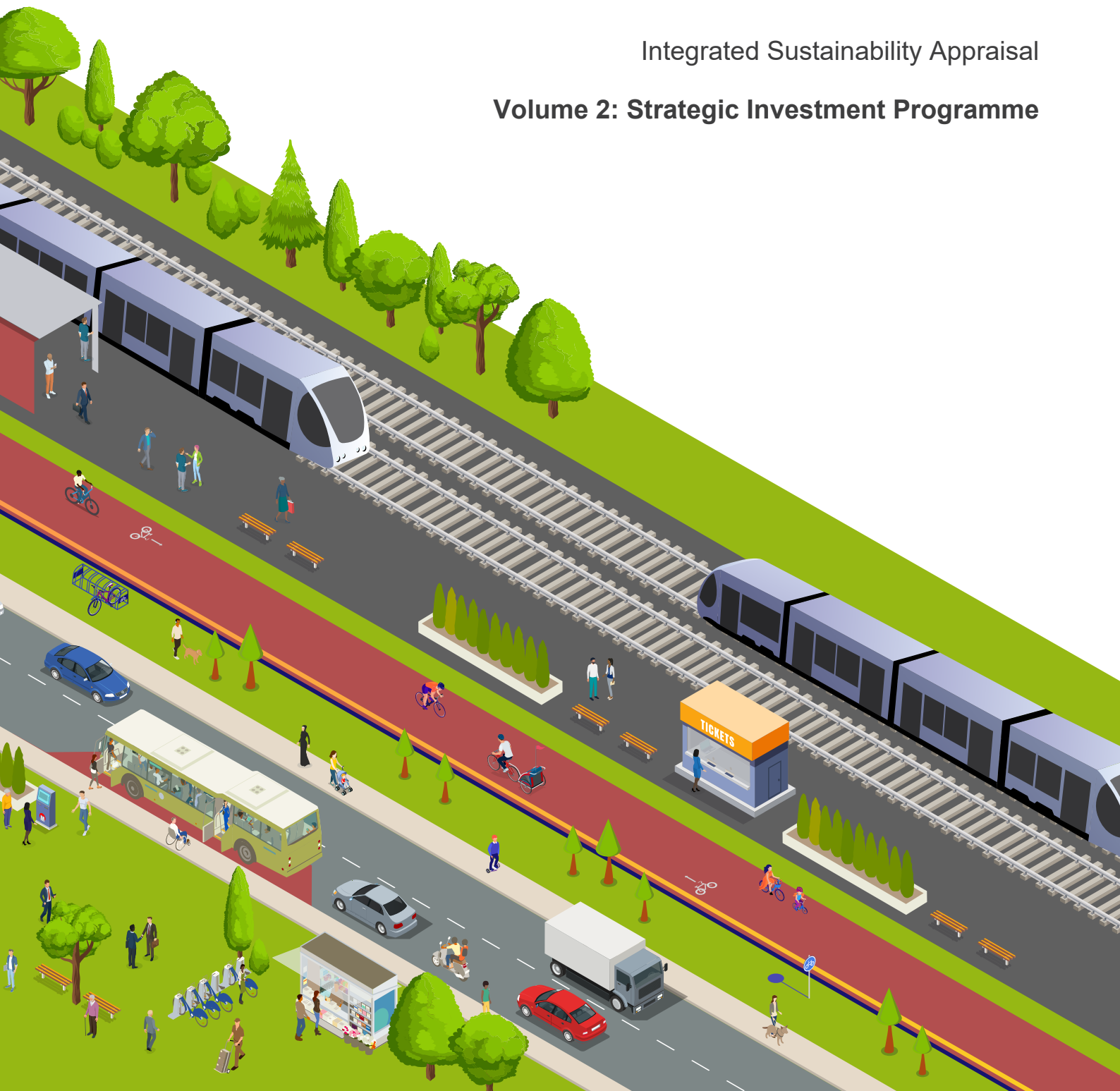
TRANSPORTEAST

Jacobs

Transport East Transport Strategy

Integrated Sustainability Appraisal

Volume 2: Strategic Investment Programme



Transport East

Transport Strategy: Strategic Investment Programme

Integrated Sustainability Appraisal: Volume 2

List of Abbreviations

Acronym	Terminology
ALC	Agricultural Land Use
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
AQO	Air Quality Objective
BA	Broads Authority
CSA	Community Safety Assessment
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
ECC	Essex County Council
EcoW	Ecological Clerk of Works
EPSML	European Protected Species Mitigation License
EqIA	Equality Impact Assessment
EV	Electric Vehicle
GVA	Gross Value Added
HE	Historic England
HIA	Health Impact Assessment
HRA	Habitats Regulation Assessment
IMD	Index of Multiple Deprivation
IROPI	Imperative reasons of overriding public interest

Acronym	Terminology
ISA	Integrated Sustainability Appraisal
JNCC	Joint Nature Conservation Committee
JSNA	Joint Strategic Needs Assessment
LEP	Local Enterprise Partnership
LNR	Local Nature Reserves
LPAs	Local Planning Authority
LSOA	Lower Layer Super Output Areas
NCA	Natural Capital Assessment
NCA	National Character Area
NEA	National Ecosystem Assessment
NERC	Natural Environment and Rural Communities
NIA	Noise Impact Area
NMVOG	Non-methane volatile organic compounds
NNR	National Nature Reserves
NO ₂	Nitrogen Dioxide
NPPF	National Planning Policy Framework
NSIPs	Nationally Significant Infrastructure Projects
NTS	Non-Technical Summary
ONS	Office for National Statistics
PHE	Public Health England
PPS	Plans, Policies and Strategies
PRoW	Public Right of Way
RIGS	Regionally Important Geological Sites
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SIP	Strategic Investment Programme
SFOE	Suffolk Friends of the Earth

Acronym	Terminology
SO ₂	Sulphur Dioxide
SPA	Special Protection Areas
SPZ	Source Protection Zone
SSSI	Sites of Special Scientific Interest
TAN	Transport Action Network
TE	Transport East
WHO	World Health Organisation

Glossary

Term	Definition
Integrated Sustainability Appraisal	Combined environmental social and economic assessments
Accident	An accident involves personal industry occurring on the public highway (including footways) in which at least one road vehicle or a vehicle in collision with a pedestrian is involved and which becomes known to the police within 30 days of its occurrence. (Definition from Department of Transport)
Assessment	An umbrella term for description, analysis, and evaluation.
Air Quality Management Area (AQMA)	A non-permanent designation created if monitoring reveals that statutory air quality thresholds are being exceeded or will be exceeded in the near future.
Baseline	The existing conditions which form the basis of the environmental assessment
Bedrock	Hard rock that lies beneath a superficial cover of soils and sediments.
Biodiversity	Biological diversity, or richness of living organisms present in representative communities and populations.
Catchment	The area contributing flow to a point on a drainage system.
Community	Assemblage of interacting populations that occupy a given area or region.
Conservation	Preservation or restoration of the natural environment and wildlife.
Ecosystem	A biological community of organisms interacting with one another and their physical environment.
Ecosystem Services	The direct and indirect benefits provided by natural capital stocks/ assets.
Effect	The result of change on specific environmental resources or receptors.

Term	Definition
Environmental Net Gain	Refers to taking steps to mitigate the high potential impact of infrastructure projects on natural capital, leaving the environment in a measurably better state compared to the pre-development baseline.
Habitat	Term most accurately meaning the place in which a species lives, but also used to describe plant communities or agglomerations of plant communities
Habitat Regulations Assessment	Under the Habitats Regulations, all competent authorities must consider whether any plan or project will have a 'likely significant effect' on a European site. If so, they must carry out an 'appropriate assessment' (AA). This is known as Habitats Regulations Assessment (HRA).
Landscape	Human perception of the land, conditioned by knowledge and identity with a place or setting.
Lower Layer Super Output Areas	A geographic hierarchy designed to improve the reporting of small area statistics in England and Wales.
Mitigation	Measure to avoid, reduce or offset potential adverse impacts.
Natural Capital	Natural Capital is classified as the world's stock of natural resources, which includes geology, soils, air, water and living organisms.
River Basin District	The area of land and sea, made up of one or more river basins, together with the associated groundwater and coastal waters, identified by the Water Framework Directive as the main unit for the management of river basins.
Scoping Report	The purpose of a scoping stage is to describe the environmental context, by establishing the relevant baseline information, reviewing other relevant PPS and identifying environmental problems and opportunities. Scoping Reports also provide a proposed methodology to be used for assessing potential environmental effects.
Sites of Special Scientific Interest (SSSI)	Designated areas of national importance. The aim of the SSSI network is to maintain an adequate representation of all natural and semi-natural habitats and native species in the UK. The site network is protected under the provisions of Sections 28 and 19 of the Wildlife and Countryside Act 1981 as well as the Amendment Act 1985 and the Environmental Protection Act 1990.
Soft Estate	refers to the environment (inclusive of natural habitats) which line transport infrastructure.
Special Area of Conservation (SAC)	An area designated under the EC Habitats Directive to ensure that rare, endangered or vulnerable habitats or species of community interest are either maintained at or restored to a favourable conservation status.
Special Protection Area (SPA)	An area designated under the Wild Birds Directive (Directive74/409/EEC) to protect important bird habitats.
Source Protection Zone (SPZ)	Protection areas around public water supply sources
Strategic Environmental Assessment	The process by which information about the environmental effects of proposed plans, policies and programmes are evaluated under the SEA regulations.

Term	Definition
Water Quality	The chemical and biological status of various parameters within the water column and their interactions, for example dissolved oxygen, indicator metals such as dissolved copper, or suspended solids

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<https://www.transporteast.org.uk/public-consultation/consultation-documents>

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1 Introduction and Background – ISA process

1.1 Background to the Transport East Transport Strategy

Transport East is the Sub-national Transport Body for Norfolk, Suffolk, Essex, Southend-on-Sea and Thurrock. The partnership provides a single voice for councils, business leaders and partners on the region’s transport strategy and strategic transport investment priorities. The partnership is developing its first Transport Strategy which aims to provide a sustainable strategic approach underpinning the region’s future transport investment and support Transport East’s ambitious and inclusive economic, social and environmental goals for the region to 2050.

Transport East currently has a pre-statutory status and while this also affects the status of the strategy and the legal requirements for environmental assessments, the intention is that preparation of the strategy will follow the same process as for a statutory transport plan. Transport East is therefore undertaking an Integrated Sustainability Appraisal to inform the development of the Strategy as part of ensuring that opportunities for enhancement are included and potential constraints are addressed by the Strategy.

The vision for the Transport East Transport Strategy is to create a thriving economy for the East, with fast, safe, reliable, and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come. Figure 1.1 shows how the Transport Strategy will help deliver the goals for the region.

How will the strategy help achieve our goals?

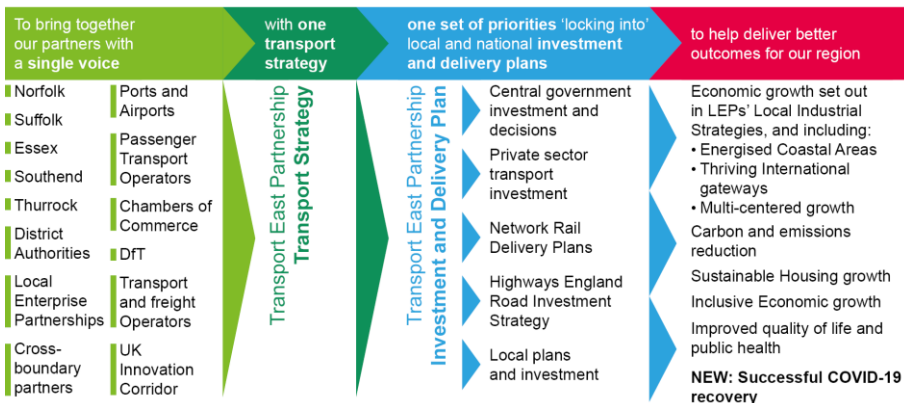


Figure 1.1 The role of the Transport Strategy

The audience for the Transport Strategy is wide-ranging and the aim is that the Strategy will provide:

- Confidence to national decision-makers and delivery bodies to invest in the region: including Government, transport delivery agencies and private sector investors.
- Clarity and co-ordination for local and regional partners: including local authorities, community groups, businesses, transport operators and the general public.

The Transport Strategy was developed following a comprehensive review of existing strategies and policy documents to identify current and future opportunities and the challenges faced by the region. This review was supported through extensive engagement with local authorities, business leaders and other partners. This process identified important wider outcomes that the Strategy should contribute to delivering, four strategic priorities and six core movement corridors.

The review included developing an evidence base comprising a series of “deep dive” studies (<https://www.transporteast.org.uk/consultation-documents>) covering the region’s road and rail network, international gateways, rural and coastal communities, and the specific role of transport in economic growth.

The draft Transport Strategy and draft Strategic Investment Programme (SIP) approach were published for an 8 week consultation between 2nd December 2021 and 30th January 2022 together with the integrates Sustainability Appraisal (ISA) and draft HRA screening report. The consultation was supported by online engagement events.

Following the end of consultation, comments received have been reviewed and the analysis on responses are reported in a Consultation Report available at the following website Web site location. The Transport Strategy and SIP have been revised and updated to take account of comments where appropriate and new information.

The ISA and draft HRA have also been updated to take account of comments received as well as the revisions to the Transport Strategy and SIP and the results of the Phase 1 carbon emissions study undertaken by Energy Systems Catapult (ESC). These documents are all available at following website location www.transporteast.org.uk/strategy/transport-strategy/

Separate volumes of the ISA and HRA are provided for the Transport Strategy (ISA Volume 1 and the SIP (ISA Volume 2 – this document)). This is in response to comments and to facilitate future updating and revision.

1.2 Geographical Scope of Transport East

The Transport East region is bordered by three other sub-national transport bodies; Midlands Connect, England’s Economic Heartland and Transport for the South East (**Error! Reference source not found.**). The Transport Strategy addresses links to the north, west and south, as well as the needs of the Transport East area.

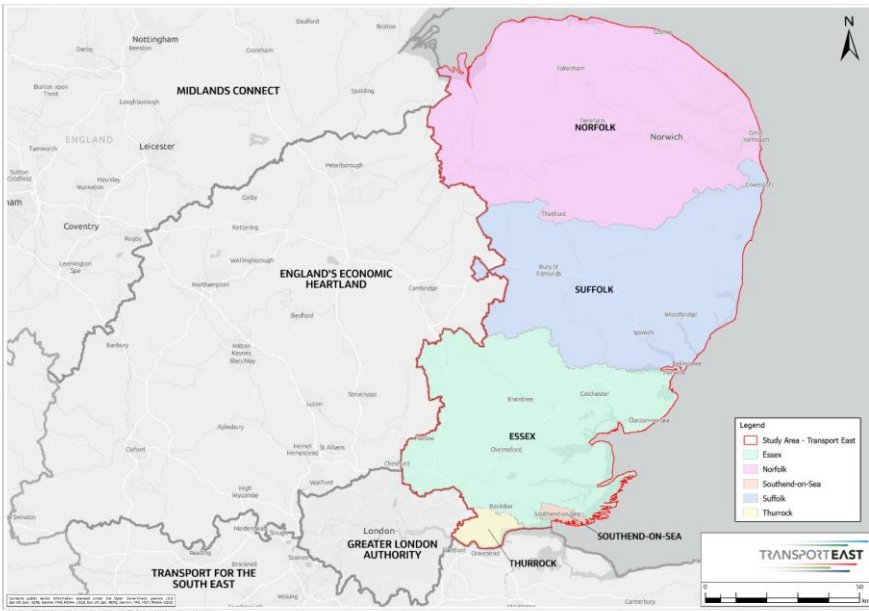


Figure 1.2 Location of Transport East

Transport East comprises of three county councils (Essex, Norfolk and Suffolk) as well as two Unitary Authorities (Southend-on-Sea and Thurrock), these five authorities are also transport authorities. It also comprises of 24 district/borough authorities and two Local Enterprise Partnerships (New Anglia LEP and South East LEP).

The region also has a number of significant designations, including three Areas of Outstanding Natural Beauty (AONBs – Norfolk Coast, Suffolk Coast & Heaths, and Dedham Vale), and The Broads which has status equivalent to a National Park.

1.3 Temporal Scope of Transport East

The Transport East Transport Strategy will be a plan to 2050. The best performing solutions to achieve the strategic actions of each of the four pathways are identified as priority schemes in a draft Strategic Investment Programme (SIP) for the Region, which sets out clear timescales for the creation of a pipeline of solutions to come forward over the strategy’s lifetime. It is currently proposed that this will be updated annually and reviewed every 3 – 5 years to enable the strategy and delivery programme to adapt to the latest government objectives, funding approach and reflect new scheme proposals and progress against identified priorities.

1.4 Integrated Sustainability Appraisal (ISA) Process

Transport East is committed to improving the environmental, social, and economic wellbeing of the Region as indicated in the wider outcomes studies outlined in Section 2. As part of this commitment, Transport East is undertaking an Integrated Sustainability Appraisal (ISA) to inform the development of the Transport Strategy.

An ISA is a process for assessing the social, economic, and environmental impacts of a plan or strategy in a systematic and transparent way with the aim that sustainable development principles will underpin the strategy.

What are sustainable development principles?

According to the Brundtland Commission's report, Our Common Future, (1987), sustainable development means "meeting the needs of the present without compromising the ability of future generations to meet their needs." The concept is often broken into three core concepts or "pillars": economic, environmental, and social.

"economic sustainability" focuses on the portion of natural resources that provide physical inputs for economic production, including renewable and exhaustible resources.

"environmental sustainability" adds greater emphasis on the "life support systems," such as the atmosphere or soil, that must be maintained for economic production or human life to even occur and this includes the need for example to address climate change, avoid loss of biodiversity, prevent pollution and reduce waste.

'social sustainability' focuses on the human effects of economic systems, and the quality of life, well being and health, promoting inclusion and combating inequality.

How is sustainable transport defined?

Transport enables the mobility of people and goods, enhancing economic growth and livelihoods while improving access to quality services, such as health, education and finance. It strengthens connectivity at all levels, helping integrate economies, improving social equity, enhancing rural-urban linkages and building resilience. There is also recognition of negative environmental, social and health impacts.

Sustainable transport seeks to fully realize the benefits while avoiding or alleviating the negative effects and can be defined as:

"the provision of services and infrastructure for the mobility of people and goods—advancing economic and social development to benefit today's and future generations—in a manner that is safe, affordable, accessible, efficient, and resilient, while minimizing carbon and other emissions and environmental impacts" (UN, October 2016)

Sustainable transport also needs to reflect commitments to achieve net zero carbon emissions, support nature recovery, provide biodiversity and environmental net gain and ensure access to transport is inclusive and equitable.

The ISA is based around the Strategic Environmental Assessment (SEA) process and has five key stages (Figure 1.3), including an initial scoping stage providing context and focus for the assessment, and iterative assessment of the developing plan, followed by consultation on the assessment and draft strategy documents. Consultation responses are taken into account in the finalisation of the strategy and a statement is then published identifying how the ISA has been taken into account. The final stage is to monitor the implementation of the strategy and environmental and social impacts.



Figure 1.3 Key Stages in the ISA process

ISA Assessments

The Integrated Sustainability Appraisal (ISA) incorporates:

- Strategic Environmental Assessment (SEA) in accordance with the Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004/ 1633, "2004 Regulations" as amended) (SEA regulations).
- Health Impact Assessment (HIA) using guidelines set out by the Public Health Observatories.

- Equality Impact Assessment (EqIA), as required by section 149 of the Equality Act 2010, as amended.
- Community Safety Assessment (CSA) as required by the Crime and Disorder Act 1998 and the Police and Justice Act 2006, as amended.
- Habitats Regulations Assessment (HRA) as required by the Conservation of Habitats and Species Regulations 2017, as amended.
- Natural Capital assessment to meet requirements in Government's 25 Year Environment Plan and the 2021 Environment Act in relation to biodiversity net gain.

Further detail for each type of assessment is provided below.

Strategic Environmental Assessment

SEA is a means of systematically assessing the likely impact of a public plan, programme or strategy on the environment. SEA aims to offer greater protection to the environment by ensuring public bodies and those organisations preparing plans of a 'public character' (in this case, Transport East) consider and address the likely significant environmental effects.

SEAs are required under the SEA regulations¹, which transpose the SEA Directive (2001/42/EC). An SEA is mandatory for any plans, programmes or strategies which cover the following sectors: agriculture, forestry, fisheries, energy, industry, transport, waste or water management, tourism, town and country planning or land use and which set the framework for future development consent of projects subject to EIA regulations.

Qualifying plans under the SEA regulations as those which are '*subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government and required by legislative, regulatory or administrative provisions*'. Currently Transport East and the Transport Strategy under development does not have this formal status but there is commitment to undertake assessment complying with the regulatory requirements as part of supporting sustainable development objectives.

SEA is an iterative process involving collecting relevant data and establishing evidence of current baseline conditions and future trends, assessing potential environmental effects and proposing mitigation measures and recommendations to address the environmental effects identified at a strategic level.

Key guidance on SEA followed for the assessment approach for the TE Transport Strategy is set out in the *Planning Practice guidance on SEA and Sustainability Appraisal (2015)*² and the *Practical Guide to SEA (2005)*³. In addition, consideration is given to the Department for Transport's *Transport Analysis Guidance (TAG)* including *TAG A3 Environmental Impact Appraisal (2019)*⁴ and *TAG A4.1 Social Impact Appraisal (2020)*⁵ in so far as they address qualitative assessments and define topic area issues and also *TAG Unit 2.1 Strategic Environmental Assessment for Transport Plans and Programmes*⁶.

An assessment framework is developed comprising objectives and assessment criteria relevant to the area and strategy proposals based on an understanding of environmental issues and opportunities from the policy and baseline review. This also forms the framework for integrating the requirements of each of the assessments below.

Natural Capital Assessment

The Government's 25-year Environment Plan and the Environment Act 2021 introduce requirements for the use of natural capital assessment and the concept of infrastructure development providing biodiversity and environmental net gain. These requirements and their implications for schemes will be considered in the ISA and recommendations for the Transport Strategy on how these can be taken forward.

A natural capital approach can be used to understand the interdependencies between the natural environment, society and the economy, so that natural capital is considered holistically and integrated appropriately within decision making.

There are several policy and guidance documents which have identified the potential for transport infrastructure to contribute to the restoration and enhancement of natural capital and ecosystem services (particularly through proactive management of the 'soft estate') and these include:

- A Natural England report in 2014, investigating how land within or adjacent to transport corridors could be used or enhanced for green infrastructure that delivers biodiversity gain, ecological connectivity, and ecosystem services.
- The Environment Agency's Achieving Net Zero document⁷, containing information on grassland management, with a focus on road verges. It identifies management measures that could improve the ecosystem service provision of road verges, including carbon sequestration.
- The National Infrastructure Commissions' Natural Capital and Environmental Net Gain discussion paper, considering the impact of infrastructure development on natural capital assets, identifying current approaches to natural capital and environmental net gain, and setting out next steps to ensure the impact of infrastructure on natural capital is understood and addressed.⁸

Health Impact Assessment

Health Impact Assessment (HIA) is a process in which the likely or potential health effects on populations of a proposed plan or project are identified along with the potential mitigation methods to reduce or avoid any negative impacts. The process will also seek to identify opportunities to maximise benefits.

There is no formal requirement for HIA or specific methodology to be followed but there is good practice and policy guidance which can be applied. The approach taken for this ISA is to include and combine the HIA assessment within the ISA 'Health' topic throughout the assessment. The approach used for the HIA follows guidelines set out by the Public Health Observatories⁹.

Community Safety Assessment

Community Safety Assessments (CSA) are used to identify where possible community safety issues could occur. CSAs can also address potential issues by identifying opportunities to improve design function for future development, such as lighting design considerations to reduce road traffic collisions. In addition, personal security risks are considered such as how to improve personal security through either the reduction of opportunities for crime or through improvements to perceptions of security (where this perception would otherwise prevent potential users from travelling). Community Safety Assessments are required by the Crime and Disorder Act 1998 and the Police and Justice Act 2006, as amended.

Community Safety is included as an ISA topic for the assessment of the Transport Strategy.

Habitats Regulations Assessment

Habitats Regulations Assessments (HRA) are required in respect of any plan or project which, either alone or in combination with other plans or projects would be likely to have a significant effect on a site designated within the Natura 2000 network. An HRA is required by the Conservation of Habitats and Species Regulations 2017, as amended. Guidance on the Habitats Directive¹⁰ sets out four distinct stages for assessment:

- Stage 1: Screening: the process which initially identifies the likely impacts upon a Natura 2000 site of a plan or project, either alone or in combination with other plans or projects, and considers whether these impacts are likely to be significant – this is undertaken without considering mitigation;
- Stage 2: Appropriate Assessment: the detailed consideration of the impact on the integrity of the Natura 2000 sites of the plan or project, either alone or in combination with other plans or projects, with respect to the site's conservation objectives and its structure and function. This is to determine whether there will be adverse effects on the integrity of the site;
- Stage 3: Assessment of alternative solutions: the process which examines alternative ways of achieving the objectives of the plans or projects that avoid adverse impacts on the integrity of the Natura 2000 site; and
- Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain: an assessment of whether the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, of the compensatory measures needed to maintain the overall coherence of Natura 2000 network.

The HRA requirements are incorporated into the ISA objectives and will be considered as part of the development of the strategy. In addition, to meet HRA requirements a Stage 1 assessment will be

undertaken once the range of potential strategy interventions and proposals are identified and this will determine the requirement for a Stage 2 strategic level appropriate assessment to be undertaken for the Transport Strategy.

Equalities Impact Assessment

An Equalities Impact Assessment (EqIA) assesses the likely equalities effects of a policy, project or plan, as required by section 149 of the Equalities Act 2010, as amended. Its primary aim is to ensure that the policy project or plan does not cause disadvantages or discriminate against anyone whilst also considering potential opportunities for improving equality. The following protected characteristics are covered:

- Age
- Disability
- Sex and Gender
- Gender Reassignment
- Marriage and Civil Partnership
- Pregnancy and maternity
- Race
- Religion or belief; and
- Sexual Orientation

Equality and Diversity will be included as an ISA topic throughout the assessment of the Strategy.

1.5 ISA and HRA and development of the Transport Strategy

A summary of how the development of the Transport Strategy and the ISA and HRA processes interact is provided in Figure 1.4.

1.6 Purpose and structure of this Report

The purpose of an ISA is to ensure the sustainability of a strategic plan is considered, by assessing the environmental, social and economic impacts. The ISA considers the policy and legislative context, as well as identifies the current baseline of the Region. Following this the ISA aims to assess interventions and alternatives, as well as both cumulative and synergistic effects. The ISA will also recommend mitigation and monitoring plans.

ISA Volume 2 SIP

This report is volume 2 of the ISA and covers the Strategic Investment Programme (SIP) for the Transport Strategy. As the SIP is expected to be reviewed and updated regularly within shorter periods than the Transport Strategy, common elements for the strategy assessment are also included in this SIP assessment so the baseline information and policy review, assessments, sustainability action plan and monitoring can be revised as needed to support future SIP updates and progress reviews.

This ISA report takes account of the consultation on the draft Transport Strategy and ISA Undertaken between 2nd December 2021 - 30th January 2022 and provides updated assessments based on the finalised Transport Strategy SIP and amendments to respond to consultation feedback.

The Volume 1 and 2 of the ISA will be provided together with an SEA Statement summarising the SEA and consultation process with the Final Adopted Transport Strategy and SIP.

This report sets out:

Chapter 1: Introduction and Background;

Chapter 2: Transport Strategy Proposals

Chapter 3: Review of plans, policies and strategies;

Chapter 4: An overview of Consultation;

Chapter 5: A summary of the baseline, identifying issues and opportunities;

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Transport East: Transport Strategy: Strategic Investment Programme

Integrated Sustainability Appraisal: Volume 2 SIP

Chapter 6: Assessment methodology

Chapter 7: Assessment of the Investment and Delivery Programme Approach

Chapter 8: Sustainability Action and Monitoring Plans

Chapter 9: Summary and Next steps

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Appendix A: Figures

Appendix B: Plans, Policies and Strategies Review

Appendix C: Baseline

Appendix D: Designated Sites of International Importance

Appendix E: Habitats and Ecosystem Services

Appendix F: Summary ISA Long List Options Appraisal Matrix

Appendix G: Transport Strategy ISA Mitigation Measures

Appendix H: Equality Impact Assessment Summary

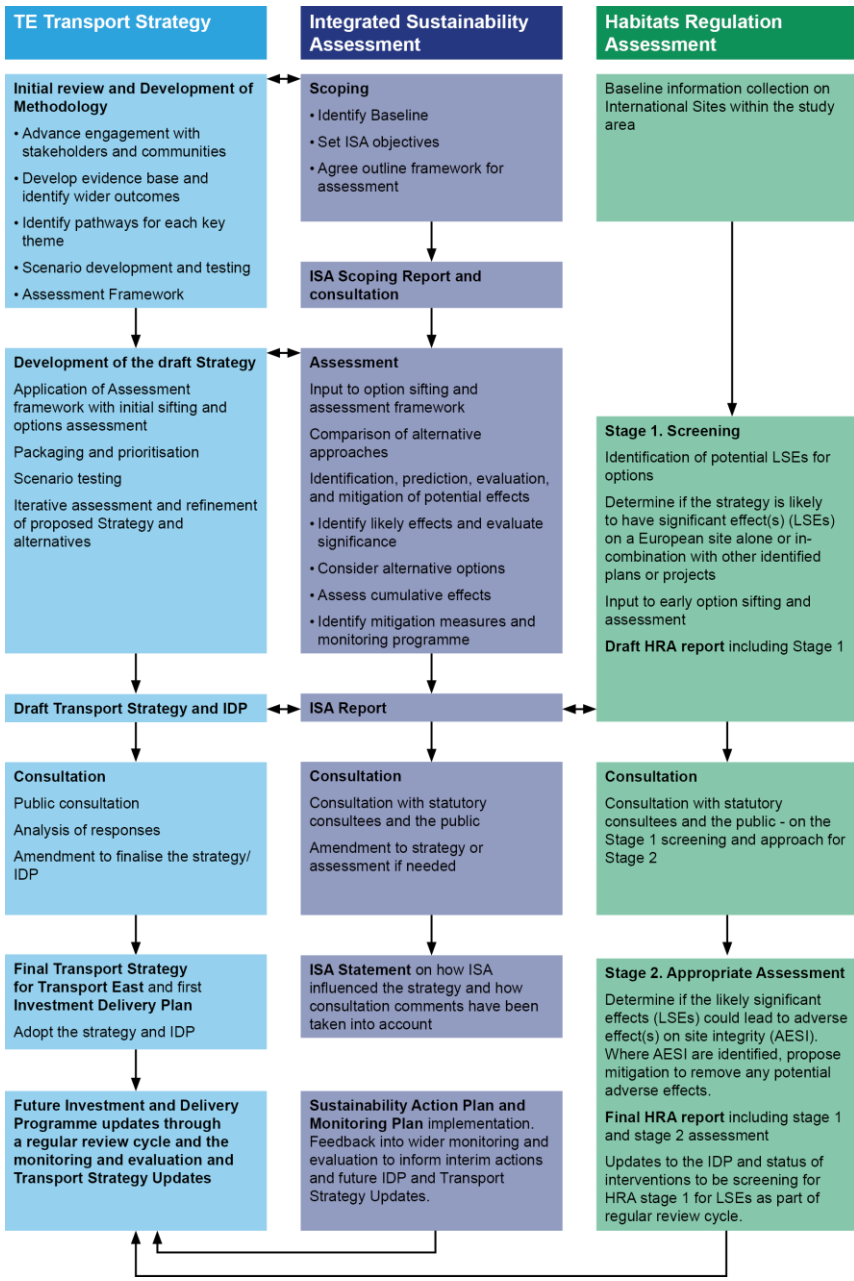


Figure 1.4 Summary of Strategy, ISA and HRA processes

2 Transport Strategy proposals

2.1 Development of the Transport Strategy

Transport East is developing a single regional Transport Strategy and Strategic Investment Programme (SIP), to embed priorities in the delivery plans of government, local authorities, Network Rail, National Highways, the private sector and other transport providers.

The strategy identifies strategic priorities for the region, and the SIP sets out the approach for identifying the individual projects and programmes which are key to implementing the Strategy. The SIP also sets out the investment necessary for the delivery of the strategy (see draft SIP section 2.4).

2.2 Wider Vision and Priorities

The Transport East Transport Strategy has identified wider outcomes that the Strategy should contribute to delivery. These include outcomes such as reducing carbon emissions to Net Zero; promoting active, healthy and safe lives; promoting and supporting a productive and diverse economy; supporting skills attainment, retention and social inclusion with access to education, training and employment opportunities.

Regional wider outcomes the Transport Strategy will help deliver:

- reducing carbon emissions to net zero by 2040
- promoting active, healthy and safe lives for all
- promoting and supporting a productive, sustainable and diverse economy
- supporting access to education, training and employment opportunities for all;
- facilitating the sustainable energy sector;
- helping our growing areas to develop sustainably to create high quality, inclusive, distinctive and resilient places to live, work and visit;
- protecting and enhancing the built and natural environment.

These wider outcomes have been combined to inform the overarching vision for the Transport East Region:

Transport Strategy Vision

A thriving economy for the East, with fast, safe, reliable and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come.

The Strategy sets out a series of pathways to follow to deliver this vision, focused on the following four strategic priorities for transport, unique to the Transport East region:

- **Decarbonisation to net-zero** – Working to achieve net zero carbon emissions from transport by 2040, building on our status as the UK's premier renewable energy region.
- **Connecting growing towns and cities** – Enhanced links between our fastest growing places and business clusters. Improving access for people to jobs, supplies, services, and learning; enabling the area to function as a coherent economy and improving productivity
- **Energising coastal and rural communities** – A reinvented, sustainable coast for the 21st century which powers the UK through energy generation. Supporting our productive rural communities and attracting visitors all year round.
- **Unlocking international gateways** – Better connected ports and airports to help UK businesses thrive, boosting the nation's economy and helping to level up communities through better access to international markets and facilitating foreign direct investment.

2.3 Regional Challenges

The “deep dive” studies, along with the production of the road and rail focused regional evidence base and decarbonisation review, identified challenges which are summarised against each theme in the Table 2.1 below.

Table 2.1 Summary of challenges per key theme

Key Theme	Challenges
Decarbonisation to net-zero	<p>Brexit impact on UK trade, imposing heightened barriers for accessing a range of decarbonisation capabilities and selling products & services to European Union member states.</p> <p>Public funding is currently skewed in favour of electrification compared to other alternative fuels. There is also currently significant public funding invested in fossil fuel related transport.</p> <p>There are concerns about the sustainability of battery manufacturing and whether an effective recycling method can be developed to minimise the environmental impact of lithium/rare metals earth mining but there are also potential replacements for lithium under development such as silicon or sodium-ion batteries. Recycling technologies for lithium batteries are not keeping pace with the rapid rise in EVs.</p> <p>Safety concerns over the reactivity, storage and transportation of hydrogen to be overcome to make it an acceptable and credible fuel source.</p> <p>Technological gap in electric vehicles (EVs) to enable longer distance ranges, and broader applications.</p> <p>Rollout of EV charging infrastructure.</p> <p>Hydrogen fuel cells are currently more expensive to manufacture than their EV counterparts but there are potential areas for future development such as large scale storage of hydrogen produced using renewables such as offshore wind energy.</p> <p>There is potential to consider use of recycled biofuels</p> <p>There are limited initiatives advancing ways to mass-produce biomethane.</p>
Connecting Growing Towns and Cities	<p>The region has poor east-west connectivity as well as some pockets of poor north-south connectivity, a lack of first mile-last mile (beginning and ending of a journey, for example travelling to a bus stop or railway station) options in some areas, and high levels of car dependency.</p> <p>Growth constraints include skill levels in the region being below the UK average and relatively low levels of innovation and entrepreneurialism.</p> <p>High-quality transport infrastructure has a role to play in tackling constraints by attracting skilled workers to the region, and better connecting residents to employment and education opportunities.</p>
Energising Rural and Coastal Communities	<p>Coastal areas are significantly more likely to be below the average for England for many of the Index of Multiple Deprivation indicators, with rural areas tending to perform better in relation to these indicators, with the exception of education.</p> <p>Rural areas’ main issues are around retaining skilled workers, particularly with a lack of real and perceived transport options to gain access to education, training and employment.</p> <p>Strategies to level up coastal and rural communities need to reflect their different challenges and opportunities.</p>
Unlocking International Gateways	<p>Ports and airports are reliant upon the resilience and reliability of the road and rail networks. More resilience and better recovery from disruption is required to support gateway expansion, encourage sustainability and encourage intra-regional connection. Specific issues include:</p>

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Key Theme	Challenges
	<p>Rail network operations are close to or at operational capacity for freight and passenger movement.</p> <p>Rail connectivity is London centric, with a lack of east-west connections, some initiatives are underway to help address this.</p> <p>The Strategic Road Network is essential for major ports, and the local road network is essential for regional ports. Many of the key routes have varying levels of infrastructure provision with unreliable journey times and are lacking resilience.</p> <p>There is a need for integrated logistics and manufacturing in the region to be support by growth at ports and airports, attracting inward investment within the region, and boosting jobs and regional exports.</p> <p>COVID-19 has posed one of the most significant challenges to freight and passenger movements in recent history with long-term consequences potentially for patterns of travel.</p> <p>Support is needed to lower operational, surface access and supply chain emissions in line with the national decarbonisation towards NetZero.</p> <p>Passenger movements are the primary function of airports but a minor function for some ports in the region. Much of passenger movement is London centric, with a need to boost accessibility catchments within the region, and tourism.</p>

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Section 4 of the Transport Strategy identifies twelve goals within each of the four strategic priorities along with the actions proposed to achieve these.

Commented [VR2]: Amended from 15 to 12

The strategy covers a large region and a wide range of areas with differing land uses and characteristics and this is recognised through the place-based approach for the strategy which has tailored proposals to the needs of each area.

In addition to the strategic priorities, Transport East has identified six core strategic corridors (Figure 2.1), linking key destinations within and beyond the Region which require particular focus. These corridors include growing urban areas, ports, airports and the road and rail connections between them and the rest of the UK. These corridors are described in section 5 of the Transport Strategy. Further investment will be needed along these if the region is to reach its potential as a thriving, connected, multi-centred economy, whilst reducing carbon emissions.



Figure 2.1 Strategic Corridors

Section 6 of the Transport Strategy outlines how the delivery of the strategy will be addressed through the 'Approach to strategic investment programme' (draft SIP). This includes the following key stages:

- Development of an investment pipeline for the east
- Adoption of a strategic assessment framework to consider how the pipeline schemes align with the four strategic priorities.
- How Transport East will work with the Local Transport Authorities, and national partners for the delivery of the strategy
- Technical work programme to support implementation of the strategy
- Development of a Monitoring and Evaluation Plan to monitor performance in implementing the strategy through the interventions
- Regular reporting and review - the strategy will be updated periodically to ensure it remains relevant. This approach allows flexibility and will position the region to continue to support the government in achieving wider national aspirations.

The strategy provides examples and case studies and summaries how the different areas are expected to experience the strategy implementation below.

Rural and coastal communities

- A comprehensive electric vehicle charging network.
- A flexible public transport network providing accessible, reliable connections to the nearest urban centres.
- An efficient, safe and well-maintained local road network providing good connections to important local destinations.
- High-quality, inclusive walking and cycling networks to local centres, public transport hubs and for leisure purposes.
- A high-quality public realm in and around villages, town centres and visitor attractions.
- Ultra-fast broadband and 4/5G mobile connections for all.

Larger urban areas

- High quality, accessible, fast and efficient urban public transport networks, e.g. buses, supported by dedicated infrastructure.
- Comprehensive, safe, high-quality, inclusive urban walking and cycling networks
- Seamless interchanges to sustainable modes for 'last mile' trips into and out of urban areas (e.g. Park and Ride/ Park and Pedal).
- Faster, more reliable, road and rail links between towns and cities within the region and with important external destinations.
- Places and streets in towns and cities focused on the needs of people rather than vehicles.
- Sustainable development concentrated around existing and new public transport hubs.

Ports and airports

- High speed, high-capacity strategic road and rail links providing reliable freight journeys between gateways and major distribution centres.
- Faster, accessible and more reliable road and public transport links for passengers between gateways, major urban centres within the region, and important external destinations.
- Efficient and well-maintained local transport networks connecting to nearby urban areas and local tourist attractions, providing access to local labour markets and encouraging visitors to stay in the region.
- Infrastructure to decarbonise the movement of goods.

2.4 Overview of the Strategic Investment Programme (SIP)

The Strategic Investment Programme (SIP) sets out the approach to developing a regional investment project pipeline and the supporting mechanisms that will be put in place to deliver the strategic priorities in the Transport Strategy.

The SIP has also been developed to align with the Government's national programmes to deliver major road and rail investment. It focusses on strategic scale projects and has not considered more localised schemes, as these will be included in the Local Transport Plans.

Role of Transport East

Transport East will not deliver the individual interventions identified in the SIP, but will manage the SIP, advise government on priorities and deliver a programme of technical work and business case development in partnership with local and national partners.

Transport East has engaged hundreds of partners across the region, throughout the entire process, from identification of strategic priorities to the prioritisation of individual schemes. The engagement throughout has maintained support within the region, including all local authorities.

Interventions and Assessment Approach

The approach for the developing the SIP included identifying a long list of potential schemes, programmes and actions. These interventions were categorised based on the stage of development, including idea, development and delivery levels and covered a wide range of types of measures. For the purposes of illustrating the range of schemes to be considered by the ISA, the main types of intervention included in the long list are identified in Table 2.2.

Table 2.2 Types of Interventions for the Transport Strategy

Types of interventions	
Active travel - infrastructure provision and behaviour change support	Roll out and expansion of local authorities' walking and cycling programmes Pedestrian and cycle crossings and on road links River crossings
Bus and passenger transport operations	Bus priority infrastructure supporting immediate operational challenges aligned to COVID-19 Rapid transit schemes
Port and airports	Measures supporting the connectivity, accessibility and operation of International Gateways
Rail related measures	Electrification schemes Line capacity improvement/journey time/enhancement Rail connection improvements Station improvements Freight capacity study Connectivity gap studies for rail timetables
Road related measures	Infrastructure to support electric vehicles and alternative fuels Demand management strategies New links or bypasses Road widening or dualling Junction/interchange new/ upgrades Road improvement strategic packages
Digital technology	Digital infrastructure to optimise transport, incentivising public transport & active modes and substituting trips
Studies and action plans	Supporting the implementation of schemes associated with the Transport Strategy

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The pipeline projects are grouped into the following categories:

- Committed projects – these are projects that have been identified to be in the delivery stage. They are well developed and already have some delivery funding certainty and commitment from national government.
- Projects to be delivered in neighbouring authorities – the transport network extends beyond the Transport East region, this section identifies those projects that are important to and affect transport in the East but will be delivered by others.
- Regional strategic packages – This category contains a mix of projects to be progressed by Transport East, the Local Transport Authorities / Local Government or other delivery bodies. These packages highlight priority areas of work, where Transport East can;
 - support the case for investment, for example for the 5G roll out;
 - make the case for long-term funding certainty to enable ambitious programmes for active travel and urban sustainable programmes; and,
 - add to the technical programme to develop an evidence base to support future Local Government decisions, for example the road user demand management measures.
- Strategic corridors – This category identifies projects that sit along the core strategic corridors (**Error! Reference source not found.**), that will either individually or in combination deliver the strategic priorities. These are a mix of road, rail and sustainable transport measures that are either at the idea or development stage. The progress of these projects to delivery will depend on the business case made for funding, recognising the government's changing emphasis for projects to demonstrate significant contributions to decarbonisation and sustainable transport.

The interventions identified as ideas, in development or delivery but not yet committed projects were assessed against a framework which comprised:

- Potential to deliver Transport East Strategic Priorities
- Performance against Department of Transport (DfT), Critical Success Factors, and.
- Performance against ISA objectives

The SIP Approach also covers how ideas for the delivery of the Transport Strategy can be supported and developed further. New ideas from Transport East, its partners and others will continue to be added to the long list and any additional ideas will be assessed as part of the annual SIP management and review.

Funding

Funding the identified projects is necessary for the implementation of the strategy and is often linked to external decisions for delivery. The local authorities in the region are fully committed to the SIP Approach and already make a substantial contribution, however significant additional support will be required from government.

In addition to government funding, Transport East will work with partners to identify appropriate funding streams and private sector investment to further support the funding and delivery of the SIP. Information on identified funding streams is set out in section 3.8 of the SIP Approach.

Delivery and Performance

The SIP sets out the technical work programme for supporting delivery of the strategy and SIP projects (SIP Appendix G) including:

- Developing strategic analytical capability such as developing a Decarbonisation Analysis Toolkit including work towards developing a carbon budget for the region, and data collection as part of a travel behaviour survey;
- Undertaking connectivity studies for the six strategic corridors;
- Developing detailed plans for future investment such as for rail, electric vehicle infrastructure demand, alternative fuel for freight, active travel and for rural and coastal investment; and
- New policy and innovation through a rural mobility centre of excellence and a Stratify Hub.

Transport East: Transport Strategy: Strategic Investment Programme

Integrated Sustainability Appraisal: Volume 2 SIP

The SIP proposals will be reviewed annually and updated with status of investment priorities in the programme published and regularly updates on the Transport East website. The SIP includes commitment to developing a monitoring schedule to assess performance against Key Performance Indicators.

3 Review of Plans, Policies and Strategies

3.1 Overview

The Transport East Transport Strategy will both affect and be affected by other plans, policies and strategies (PPS), at a national, regional and local level. It is therefore necessary to review these PPS to identify key themes and issues to be considered during the ISA. An initial review of PPS was undertaken as part of the ISA Scoping Report and has been updated to reflect consultation comments and recently published documents. This chapter provides a brief overview highlighting key PPS considered in the assessment of the strategy and where relevant considered for potential interactions and cumulative effects.

The review is primarily focussed on national and regional level (including county and unitary) PPS and has been used to develop SEA objectives and criteria for the assessment. A high-level review of all the PPS considered is documented in Appendix B, and the key themes identified from the PPS review are summarised against each ISA topic area in Table 3.1.

National Level

International treaties and commitments are covered in the PPS review but as these are implemented through national legislation and policy, they are not considered separately. Key national level PPS are listed below:

- Transport Investment Strategy¹¹
- National Planning Policy Framework¹²
- The 25 Year Environment Plan¹³
- Environment Act¹⁴
- Clean Air Strategy¹⁵
- Biodiversity 2020: Strategy for England's wildlife and ecosystem services¹⁶
- Inclusive Transport Strategy¹⁷
- National Networks National Policy Statement¹⁸
- Airports National Policy Statement¹⁹
- Decarbonising Transport – Setting the Challenge²⁰
- Decarbonising Transport – A Better, Greener Britain²¹
- Bus Back Better: National Bus Strategy for England²²
- The Governments statement on the historic environment for England 2010²³
- Gear Change²⁴

Regional Level

Regional plans and policy include those policies or plans set by government at a sub-national level, but above Local Authority level (this would be local policy). For the Transport East region these include (but are not limited to):

- Integrated Transport Strategy for Norfolk and Suffolk (New Anglia Local Enterprise Partnership, 2017)
- Local Industrial Strategy (New Anglia Local Enterprise Partnership)
- Broadland Futures Initiative
- Economic Strategy for Norfolk and Suffolk (New Anglia Local Enterprise Partnership)
- South-East LEP Economic Recovery and Renewal Strategy
- East Inshore and East Offshore marine plans 2014
- Transport for South East Transport Strategy
- England's Economic Heartland Transport Strategy
- Mayors' London Transport Strategy
- Midlands Connect Strategy and Midlands Connect Transport Strategy Refresh

Local Level

Local Transport Plans

Local Transport Plans are developed and implemented by local transport authorities, which in the Transport East region are the three County Councils and two Unitary Authorities.

Local Transport Plans outline the Local Transport Authorities' long-term strategy and objectives for their transport networks. They can also include short-term Implementation Plans to indicate how the authority proposes to deliver the Local Transport Plan proposals, including their priority issues and schemes over the plan period. Strategic Environmental Assessments are undertaken for Local Transport Plans.

The Local Transport Plans in the TE region have been reviewed by both the PPS review (Appendix B), and the Task 1A initial review, listed below:

- The Essex Transport Strategy: The Local Transport Plan for Essex 2011 - 2025
- Norfolk County Council Local Transport Plan 2026
- Suffolk County Council Local Transport Plan 2011 - 2031
- Southend Local Transport Plan 3 2011 - 2026
- Thurrock Transport Strategy 2013 - 2026

Development Plans

The Planning and Compulsory Purchase Act 2004 requires Local Planning Authorities (LPAs) to determine applications for planning permission in accordance with the Development Plan for their area unless material considerations indicate otherwise. The Development Plan for an area will include:

- the relevant Local Plan prepared by the District or Borough Council (including Unitary Authorities);
- the relevant Minerals and Waste Plan/s prepared by the County Council (including Unitary Authority); and
- any adopted Neighbourhood Plans prepared by Parish Councils.

Local Plans set out a vision and strategic priorities for the development of their area, to address housing needs (including to identify a 5-year housing land supply in accordance with the National Planning Policy Framework) and other social, economic and environmental priorities. Local Plan allocations and policies for housing and other economic development will influence the need to travel and for transport infrastructure, and vice versa. All Development Plans are subject to SEA and are prepared in consultation with the community. The current Local Plans and Minerals and Waste Plans for the Transport East Region are listed in Appendix B.

Other local level plans

Other local level plans and strategies have been identified in the Transport East Region, related to the local economy, climate change, flood risk management, landscape, heritage, walking, cycling and rail travel, infrastructure, strategic planning, health, and rural communities. Those prepared by County and Unitary Authorities are listed in Appendix B.

3.2 Key Policy and Themes

From the review of international, national, regional and local PPS, relevant PPS and key themes were identified (See **Error! Reference source not found.**).

Table 3.1 Key PPS and relevant key themes

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ISA Topic	Key PPS	Key Themes
Population and Socioeconomics	Road Investment Strategy 2 (RIS2) National Highways Digital Roads National Planning Policy Framework Clean Growth Strategy Economic Strategy for Norfolk and Suffolk Local Industrial Strategy Economic plan for Essex The organisational strategy (2017 – 2021) and plan (2021) The Essex Transport Strategy: The Local Transport Plan Norfolk Delivery Plan Together for Norfolk Suffolk County Council Local Transport Plan Suffolk Framework for Inclusive Growth Ipswich Strategic Planning Area Report Bus Back Better: National Bus Strategy for England Southend Local Transport Plan Thurrock Transport Strategy Gear Change (and Gear Change: one-year-on)	Housing requirements Improve transport networks and access to employment sites Support local business and economies Prosperity – Support Economic growth Schemes must achieve social benefits Aims to maximise social and economic benefits Sustainable recovery post-covid Connectivity of population to facilities and resources/international gateways
Equality and Diversity	Inclusive Transport Strategy The Future of Essex Essex Joint Health and Wellbeing Strategy Together for Norfolk Suffolk County Council Business Plan Suffolk County Council, Safety, Health and Wellbeing Strategy Suffolk Framework for Inclusive Growth Gear Change (and Gear Change: one-year-on) Vision Zero Strategy	Inclusive growth Promote equality Create inclusive communities Improving access to transport networks to ensure full inclusiveness Access to employment, services and amenities Affordability of transport Reduce road danger for all
Health	National Planning Policy Framework Road Investment Strategy 2 (RIS2) Clean Air Strategy The Future of Essex The organisational strategy (2017 – 2021) and plan (2021)	Planning policies should aim to achieve healthy, inclusive safe places Improving access to health services Reduce health inequalities Promote healthy lifestyles Promote active travel

ISA Topic	Key PPS	Key Themes
	The Essex Transport Strategy: The Local Transport Plan Essex Joint Health and Wellbeing Strategy Norfolk County Council Public Health Strategy Suffolk County Council, Safety, Health and Wellbeing Strategy Suffolk Framework for Inclusive Growth Suffolk Road Safety Strategy Gear Change (and Gear Change: one-year-on)	Promote safety for active travellers
Community Safety	Road Investment Strategy 2 (RIS2) National Highways Home Safe and Well The Future of Essex The organizational strategy (2017 – 2021) and plan (2021) Essex Flood Risk Management Strategy Norfolk Transport Asset Management Plan Suffolk Framework for Inclusive Growth Suffolk Flood Risk Management Strategy Bus Back Better: National Bus Strategy for England – all partner authorities Gear Change (and Gear Change: one-year-on) Vision Zero Strategy	Improve road safety Safe Technology Improve quality and reduce negative impacts of existing strategic networks Create safe communities
Biodiversity	National Planning Policy Framework Environmental Act 2021 25 Year Environmental Plan UK Post-2010 Biodiversity Framework Biodiversity 2020: Strategy for England’s wildlife and ecosystem services Green Essex Strategy Suffolk Nature Strategy Green Infrastructure Essex Strategy Green Infrastructure Plan for Thurrock St Edmundsbury Green Infrastructure Strategy (West Suffolk) Essex Biodiversity Action Plan Suffolk Local Biodiversity Action Plan Southend-on-Sea Local Biodiversity Action Plan Thurrock Biodiversity Study 2006-2011	Conserve and enhance, particularly designated sites and priority habitats Protection of irreplaceable habitats Avoid species decline Restoration of natural habitats - Nature Recovery Networks Biodiversity Net Gain delivery Contribute to local biodiversity action plans

ISA Topic	Key PPS	Key Themes
Water Environment	National Planning Policy Framework Road Investment Strategy 2 (RIS2) National Flood and Coastal Erosion Risk Management Strategy (FCERM) Future Water: Water Strategy for England East Inshore and East Offshore marine plans Anglian Water Plan Essex Flood Risk Management Strategy Norfolk Local Flood Risk Management Strategy Suffolk Flood Risk Management Strategy Broadlands Futures Initiative	Improve and maintain good water quality Minimise the risk and impacts of flooding Adapt plans to account for the impacts of climate change
Air Quality	National Planning Policy Framework (NPPF) The 25 Year Environment Plan Clean Air Strategy	Reduction of polluting emissions Improve Air Quality
Noise and Vibration	National Planning Policy Framework (NPPF) Noise Policy Statement for England Draft Road Investment Strategy	Avoid noise disturbance Promote good health and quality of life through effective management of noise
Climatic Factors	Clean Growth Strategy Net Zero Highways: Our 2030/2040/205 National Planning Policy Framework Decarbonising Transport - Setting the Challenge Transport Decarbonisation Plan 25 Year Environment Plan Norfolk Climate Change Strategy Suffolk County Council Business Plan Suffolk Climate Emergency Plan Suffolk Framework for Inclusive Growth	Reduction in GHG emissions Mitigating and adapting to climate change Utilise renewable energy Net Zero aims and urgency of action to meet targets Decarbonisation of transport Link carbon sequestration opportunities to natural capital and biodiversity enhancement
Landscape/Townscape and Visual	Norfolk Access Improvement Plan 25 Year Environmental Plan National Planning Policy Framework (NPPF) Seascape Character Assessment Local Plan for the Broads Landscape Character Assessment – the Broads Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB) Management Plan 2018 -23 The Norfolk Coast Area of Outstanding Natural Beauty Five Year Strategy	Conserve and enhance landscape and scenic beauty Protect landscape and townscape character Long term management and maintenance of Green Infrastructure elements (and ecological elements)

ISA Topic	Key PPS	Key Themes
	Dedham Vale Area of Outstanding Natural Beauty (AONB) and Stour Valley Management Plan 2016-2021	
Cultural Heritage and Archaeology	National Planning Policy Framework 25 Year Environmental Plan Government's statement on the Historic Environment	Conservation and enhancement of designated and non-designated heritage features Maintain local distinctiveness
Soils, Geology and Contaminated Land	National Planning Policy Framework (NPPF) The 25 Year Environment Plan Norfolk Geodiversity Action Plan Essex Minerals Local Plan (and review)	Protect sites of geological value and soils Sustainable use of minerals Support land remediation and reuse Maintain environmental standards
Material Assets and Resources	Transport Investment Strategy National Planning Policy Framework (NPPF) Airports National Policy Statement National Networks National Policy Statement Economic Strategy for Norfolk and Suffolk Local Industrial Strategy East of England Route Strategy The organisational strategy (2017 – 2021) and plan (2021) Green Essex Strategy Norfolk Transport Asset Management Plan Suffolk Rail Prospectus Decarbonising Transport - Setting the Challenge Decarbonising Transport – A Better, Greener Britain Essex and Southend-on-Sea Waste Local Plan Mineral and Waste local plans National Planning Policy for Waste and Waste Management Plan for England 2021	Sustainable development, Resource and energy efficiency, Waste hierarchy and minimising waste to landfill Decarbonisation and meeting carbon reduction targets
Natural Capital and Ecosystem Services	25 Year Environmental Plan Environment Act 2021 Biodiversity 2020: Strategy for England's wildlife and ecosystem services The Natural Capital Evidence Compendium for Norfolk and Suffolk Green Essex Strategy	Minimise resource footprint and apply hierarchy prioritising avoiding impacts over reducing effects and providing compensatory measures Avoid loss of irreplaceable habitats Work towards sustainable land management Support carbon sequestration initiatives

ISA Topic	Key PPS	Key Themes
		<p>Work to increase species richness, abundance, and ecological resilience and support nature recovery</p> <p>Improve biosecurity</p> <p>Develop plans in preparation for increasing likelihood of extreme climate events</p> <p>Protect and enhance designated sites and priority habitats and improve habitat connectivity</p> <p>Increase use and inclusivity of natural assets across all user groups</p> <p>Provide environmental net gain as well the minimum 10% biodiversity net gain (based on recognised biodiversity metrics) for development projects</p>

4 Consultation

4.1 Scoping Consultation

As part of the process for undertaking the ISA for the draft Transport Strategy, an ISA Scoping Report was provided for consultation setting out the context for the assessment including a plan, policy and strategy review and description of the baseline environment and key trends. The methodology for the assessment was also outlined.

The ISA Scoping Report was subject to a statutory 5-week consultation as required under the SEA regulations. Following this consultation, comments have been collated and taken into consideration during the development of both the ISA and the Transport Strategy.

Comments were received from the following statutory consultees:

- The Broads Authority (BA)
- Historic England (HE)
- Forestry Commission
- Essex County Council (ECC)
- West Suffolk District Council

In addition, comments were received from the following non-statutory bodies:

- Suffolk Friends of the Earth (SFOE)
- Norfolk CPRE
- Transport Action Network (TAN)

No comments were received from the Environment Agency and Natural England for the ISA Scoping Report.

The consultation feedback received has been considered and addressed. A summary of the key comments and responses is set out in Table 4.1 below.

Table 4.1 Key consultation feedback and responses

Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
1. Transport Strategy: Emerging strategic approach	The BA requested additional strategy actions and ideas on public transport and active travel, a modal shift from air to rail, and consideration of water-based transport.	The draft Transport Strategy includes a range of proposed actions supporting modal shift across each of the 4 Pathways. Recommendations from our Active Travel and Passenger Transport Reports have fed into the development of the Transport Strategy and work to explore water-based transport is included in Goal 9 – Improving coastal connections.
2. Transport Strategy: Workplace scenarios	BA and ECC noted that a third workplace scenario could be considered (a higher level of remote working than 2019, but not as much as mid 2020), and queried the baseline travel assumptions.	<p>The purpose of the scenario development and testing procedure was to identify a set of possible futures for the region, to quantify these in a rigorous manner, and then to explore their implications for the ability of the Transport Strategy to deliver both the wider and transport outcomes.</p> <p>In order to do this, relative extremes of potential variables outside of Transport East’s control were considered, including change in level of remote working. The results of this found that if high levels of remote working were achieved, there would be 26% fewer daily trips than in a “back to normal” scenario where people revert to pre COVID-19 commuting patterns.</p> <p>It is acknowledged that potentially neither the “back to normal” or high levels of remote working workplace scenarios may be realised and as such the strategy has been developed to</p>

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Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
		ensure that it focusses on other areas, such as modal shift and alternative fuels, not just reducing the need to travel
3. Transport Strategy	Norfolk CPRE highlighted the importance of improving rural bus services, as explained in the CPRE report "Every village, every hour: a comprehensive bus network for rural England" (March 2021)	Improving accessibility for rural areas is promoted within the strategy through a variety of measure, including the promotion of demand responsive rural passenger transport services.
4. Transport Strategy: Regional challenges - Decarbonisation	SFOE requested decarbonisation be prioritised urgently and a timescale for net zero carbon emissions in the region be defined. SFOE welcomed the promotion of a shift to active travel and public transport, to reduce car travel and reduce carbon emissions, and queried how the strategy would support these. TAN requests greater definition of carbon emissions reduction ambition, pathways and intermediate targets, in light of IPCC report and Government's Transport Decarbonisation Plan.	Decarbonising transport emerged as a priority early in our technical and engagement work to develop the Transport Strategy. To strengthen our understanding Transport East commissioned Energy Systems Catapult to establish an initial baseline of CO2 emissions and modelled a series of net zero targets. See draft Transport Strategy section 2.2 - The decarbonisation challenge. Net zero carbon transport is a core priority within the Strategy and informs the other three Pathways. The draft Transport Strategy aim is to achieve net zero transport by 2040. See draft Transport Strategy section 4.2 - Decarbonisation to Net Zero.
5. Transport Strategy: Regional challenges - Connecting our Growing Towns and Cities	SFOE object to more road building due to impacts on wildlife, landscape, and traffic generation, and to investment in fossil fuels or biofuels. SFOE objects to new roads and encourages reinstatement of railway lines. Queried the sustainability of a 'high growth' trajectory.	The aims of the Transport Strategy are to balance a range of needs, challenges, constraints and opportunities including addressing current issues such as congestion and connectivity to support economic and social and working towards meeting future goals including as a priority decarbonisation to meet net zero carbon targets. As explained in comment 1 above, it is acknowledged that a range of scenarios have been considered and potentially neither the "back to normal" or high levels of remote working workplace scenarios may be realised and as such the strategy has been developed to ensure that it focusses on other areas, such as modal shift and alternative fuels, not just reducing the need to travel Account is taken of potential of impacts through the ISA and the mitigation and monitoring proposed.
6. Transport Strategy: Regional challenges - Unlocking international gateways	SFOE queries sustainability of encouraging globalised trade at ports, requests encouragement of fewer 'food miles' and similar initiatives and agrees with increased use of rail for freight. Requests more emphasis on a circular economy, to reduce waste and resource use through the repair, re-use and recycling of materials.	Although this is outside the scope of the Transport Strategy and Transport East's control, we are proposing to try and influence future placemaking to ensure that people can live and work locally, enabling them to support local businesses and local suppliers reducing movement of both people and goods. The ISA includes recommendations to apply the waste hierarchy and how this also would be supportive towards reducing carbon
7. Transport Strategy: Regional	BA and SFOE raise concern about an over-reliance on electric vehicles. BA requested that	The Transport Strategy sets out a multi-faceted approach to decarbonising transport. The primary focus is on reducing the need to travel along with reducing the distance travelled. If

Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
challenges - Re-energising our Rural and Coastal Communities	'decarbonising of transport' theme on p9 includes a defined aim to reduce miles driven (referring to the balanced pathway in the 6th Carbon Budget) and reduce flights. BA requests clarity on definition of Net-Zero Emissions.	<p>there is still a need to travel, the next focus is on shifting as many trips as possible to sustainable transport. Finally if this cannot be achieved, then the focus is on using alternative fuels.</p> <p>Due to the nature of the region and depending on the location of future growth within the region, providing the required sustainable transport in rural areas to achieve modal shift may not be viable and so there will be a need to include alternative fuels.</p> <p>Transport East commissioned Energy Systems Catapult to establish an initial baseline of CO2 emissions and modelled a series of net zero targets. See draft Transport Strategy section 2.2 - The decarbonisation challenge</p> <p>Net Zero emissions used in the Transport Strategy refers to net zero carbon emissions related to transport specifically.</p>
8.Transport Strategy: Regional challenges - Re-energising our Rural and Coastal Communities	SFOE objects to the term 'energy coast' along the designated Suffolk Coast & Heaths AONB and Heritage Coast, queries how the strategy will support the coast's tourist economy, landscape and wildlife, and how it can make quiet recreation in countryside easier to access, to benefit physical and mental health.	<p>The Transport Strategy recognises the different economic sectors within coastal areas including tourism and the natural heritage of our coast.</p> <p>Within Goal 8 – increasing access for rural and coastal communities, particularly the active travel section, we recognise the role improved active travel networks play in increasing sustainable access to blue and green spaces and the linked health benefits.</p>
9.ISA Approach: ISA Assessments	TAN requests consideration of lifecycle costs of vehicles that use the transport infrastructure, when assessing new infrastructure proposals, inclusion of aviation emissions, and the efficiency of hydrogen production.	<p>The lifecycles costs of vehicles using infrastructure is outside the scope of the Transport Strategy</p> <p>Aviation emissions are also not covered by this strategy but (refer to the NPS for Aviation) although the strategy does set out its strong support for the decarbonisation of the international aviation industry (see goal 14) through the national JetZero approach.</p> <p>Hydrogen is one of the potential fuel sources and production efficiency in terms of carbon would need to be part of future considerations of the benefit for this fuel use going forward to achieve net zero carbon emissions.</p>
10.ISA Approach: Natural Capital	TAN is critical of the discussion of how transport infrastructure can contribute to the restoration of biodiversity and ecosystem services, and refer to impacts of severance, pollution and loss of habitat from road building.	<p>The impact of infrastructure on biodiversity through severance, habitat loss, pollutions and disturbance are part of the ISA assessment. While there is mention of potential opportunities that can be included in infrastructure design these cannot be considered without first taking account of potential losses - see ISA objective on biodiversity.</p>
11.ISA Approach: Health Impact Assessment	TAN highlights the need to scrutinise health assessment for gaps and assertions, including on impacts on non-drivers, including the disabled, children, women and other disadvantaged groups, and impact of road building on public transport, severance and pollution.	<p>These comments have been taken on board to strengthen specific consideration of these groups –in the in baseline and ISA objectives/criteria.</p>

Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
12. Review of Plans, Policies and Strategies	Consultees requested additional plans, policies and strategies be considered, including on the NPPF, NPPG, South East LEP, Broads Authority plans, AONB related plans, local Green Infrastructure strategies, Biodiversity Actions Plans, the Norfolk Geodiversity Audit	Additional PPS noted have been considered and included where available.
13. Review of Plans, Policies and Strategies – Climate change	BA requested the Committee on Climate Change Balanced Pathways be considered. ECC requested Net Zero: Making Essex Carbon Neutral be included. SFOE requested inclusion of the Paris Agreement, the Government’s National Determined Contribution target of 68% reduction in greenhouse gas emissions by 2030 from 1990, the Transport Decarbonisation Plan, and Gear Change.	<p>Additional PPS noted are considered and included.</p> <p>Transport East commissioned Energy Systems Catapult (ESC) to establish an initial baseline of CO2 emissions and modelled a series of net zero targets. See draft Transport Strategy section 2.2 - The decarbonisation challenge</p> <p>Net zero carbon transport is a core priority within the Strategy and informs the other three Pathways. The draft Transport Strategy aim is to achieve net zero transport by 2040. See draft Transport Strategy section 4.2 - Decarbonisation to Net Zero.</p> <p>Carbon emissions analysis has been commissioned by Transport East to understand the baseline trajectory for the region to 2050, and the impact of different scenarios on that trajectory.</p>
14. Health: Active travel	BA requested greater emphasis on the public health benefits of supporting active travel. Essex CC asked for greater acknowledgement on how school travel can contribute towards wider health outcomes and the environment around schools.	The draft Transport Strategy includes strategy goals that are supportive of active travel and the benefits of this. The engagement with schools that was part of the strategy development and actions arising from this.
15. Community Safety: Accidents	BA and TAN query use of the term ‘accidents’ as outdated, TAN state collisions should be used.	The accident term was used as referenced by the Department for Transport, and data provided in the report refers to information from the DfT and STATS19. Transport East recognises that this includes collisions and prevention has due importance within the strategy. The draft Transport Strategy terminology has been updated to reflect emerging practice.
16. Community Safety: Road danger	TAN request mention of the issue of road danger and perception of road danger, which reduces walking and cycling, particularly new and bigger roads which increase traffic levels.	Perceptions of road safety and impacts were noted as an issue and included in the assessment framework but have been strengthened in the baseline information. Community severance and active mode safety considerations are taken into consideration in the assessment. The draft Transport Strategy refers to the Safer Systems approach - see Goal 7- Eliminating road danger.
17. Biodiversity: Local wildlife sites	BA requested consideration of county wildlife sites, and roadside nature reserves.	These are local datasets that Transport East does not have access to. However, the importance of these sites and others is recognised but note that these will need to be part of more detailed project level consideration and discussion with local partners.

Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
18. Biodiversity: Nitrogen deposition	BA – refer to nitrogen deposition as a major biodiversity issue, and also poses a risk to developments impacting on protected areas.	Nitrogen deposition is highlighted as an issue and considered in the ISA and HRA but the assessment is qualitative at this high level and is not based on traffic or air quality modelling.
19. Biodiversity	SFOE opposes biodiversity offsetting due to impacts on site habitats and lack of success for habitat creation, but suggests planting wildflowers on verges which can reduce maintenance.	The hierarchy for avoiding, mitigating and only compensating through off setting following application of the hierarchy is set out in the ISA - recommendations on opportunities such as habitat creation and appropriate maintenance regimes are identified
20. Water Environment: Road runoff	BA requested greater consideration of watercourse pollutants in surface water runoff from roads, including microplastics. TAN highlight impact of microplastic pollution from vehicles in road runoff.	Pollution from road runoff will be is a considered in terms of risk and also a requirement for addressing in design. The types of pollution involved are identified – we note that there are also many other important sources of microplastic pollution.
21. Air Quality	Broads Authority requested consideration of localised air pollution from the brakes and tyres of electric vehicles.	These are noted in the baseline information
22. Landscape/Townscape and visual: Designated areas	BA requested greater emphasis on protected designated landscapes, including the Broads (with a status equivalent to a National Park) and AONBs, and reference to the special qualities and tourism benefit of the Broads.	Greater emphasis and the relevant references have been added. A map of designated landscapes was included in Appendix A to the Scoping Report.
23. Landscape/Townscape and visual: Local landscape character	BA and ECC - consider regional and local landscape character areas and assessments, including for the Broads, to inform the value, quality, and sensitivity of landscapes. Essex CC requested reference to 'valued' landscapes as well as designations in ISA objectives.	Regional and Broads-related assessments will be considered, but the regional scale of the ISA precludes detailed assessment of local character areas at this stage. Reference to valued landscapes is included in the ISA.
24. Landscape/Townscape and visual: Dark skies and light pollution	BA - consider potential for light pollution impacts on dark skies (CPRE's Night Blight assessment) and landscape character, including in the Broads and other protected landscapes.	The potential for light pollution on dark skies has been included in the ISA.
25. Cultural heritage and Archaeology: Heritage at risk	Historic England requested that assets on the Heritage at Risk register are considered.	Potential impacts on Heritage at Risk assets is considered in the ISA although in terms of general risk as location information on proposals at this strategy level is limited.

Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
26. Cultural heritage and Archaeology: Significance and setting of heritage assets	Historic England requested that impacts on the significance of heritage assets, including in relation to their setting, are considered in ISA objectives and criteria, and refers to their good practice advice.	Reference to significance and setting of heritage assets has been strengthened in the ISA criteria.
27. Cultural heritage and Archaeology: Non-designated heritage assets	Historic England and Essex CC requested consideration of data on non-designated heritage assets recorded on the county and unitary councils' Historic Environment Record, and the potential for unknown archaeology, and that the local authorities' conservation and archaeological advisers are closely involved throughout the preparation of the ISA.	Transport East does not have access to the HER records, and the regional scale of the TS and ISA with limited information on individual schemes precludes consideration of these local sites. The ISA will consider the risk to these interests and also highlight that potential impacts of schemes need to be assessed through EIAs for individual schemes in consultation with local authorities.
28. Material Assets and Resources: Minerals	Essex County Council requested the protection of mineral bearing land be included in Key Themes and ISA objectives, and the inclusion of Essex Waste Local Plan and Minerals Plans to PPS review.	Minerals bearing land has been included in ISA objectives. The additional plans are now included in the PPS review.
29. Natural Capital and Ecosystem Services: Mitigation and monitoring plans	ECC requested that recommendations for Mitigation and Monitoring Plan ensure measurable biodiversity net gains and ecosystem services will be achieved from transport scheme proposals, in line with emerging Environment Bill	The expected future requirements on biodiversity net gain natural capital and ecosystems services are included in the ISA recommendations in line with the Environment Bill
30.General	Suffolk Friends of the Earth (SFoE) requested a stronger definition of sustainability.	A definition of sustainable transport has been included (see section 1) and is also reflected in the strategy vision.
31. Proposed ISA Methodology: Draft ISA Objectives	BA queried the wording of the assessment methodology categories of impact, including to address negative impacts and maximise the positives.	The assessment methodology allows the identification of both potential negative impacts and positive impacts and the assessment is against the ISA objectives which are aiming to avoid or minimise impacts and provide enhancements and positive effects.
32. Proposed ISA Methodology: Draft ISA Objectives	<i>Population and Socioeconomics:</i> TAN requests consideration of access to jobs via active travel and public transport for those without access to a car. <i>Equality:</i> TAN requests specific rewording to consider affordability of public transport (and access to e-bikes), and specific reference to women.	Amendments have been added to ISA to incorporate comments provided to objectives, criteria or monitoring plan as appropriate.

Theme	Consultee Comments on the Scoping Report	Responses for the Transport Strategy and the ISA
	<p><i>Health:</i> TAN requests rewording to 'significantly increase' levels of active travel.</p> <p><i>Community Safety:</i> TAN requests rewording to reduce road danger for active travel.</p> <p><i>Climatic factors:</i> TAN requests schemes be assessed on ability to reduce traffic and meet climate targets in short-medium term.</p>	

4.2 Wider stakeholder engagement to develop the Transport Strategy

The development of Transport Strategy has involved significant wider engagement with the aim of ensuring that the strategy aligns with both regional ambition and local priorities, whilst contributing to national goals.

The approach to wider engagement has included the use of presentations, workshops, one-to-one meetings and an online questionnaire. Each method of engagement has proved useful in developing the strategy and has presented significant relevant feedback.

Initial engagement involved the introduction of Transport East and the developing Transport Strategy to 36 district representatives directing the relative importance of the key themes emerged (Table 4.2). One recommendation was to involve younger generations throughout the process, which was consequently actioned through a school engagement campaign.

Table 4.2 Summary of key themes identified in the Engagement Report Summary²⁵

Stage	Key Themes and Messages
Stage 1 A- Developing Non-Transport Objectives	<p>Importance of decarbonisation and focus on electric vehicles</p> <p>New infrastructure must have minimal environmental impact</p> <p>Importance of ports and energy coast to the region's development</p>
Stage 1B – Evidence Building	<p>The role of the Transport Strategy in boosting and supporting the region's economy.</p> <p>Future transport options should be sustainable long term</p> <p>A shift to active travel</p> <p>Importance of reliable, improved public transport services</p> <p>Digital connectivity could compliment the transport sector, maximising assets and services.</p> <p>Opportunity to improve rail, while contributing to wider decarbonisation goals</p> <p>Importance of working with other Sub-national transport bodies and Transport for London to improve key corridors.</p>
Stage 1C – Exploring Future Scenarios	<p>A baseline is crucial</p> <p>Identifying rural and urban areas and the key 13 urban areas within the Region</p>
Online Public Engagement	<p>Changes of transport use and behaviour due to COVID including preference for transport type.</p>

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Stage	Key Themes and Messages
	Reduction in people using private cars and traditional commuting transport post COVID. General consensus included long term predictions of fewer journeys, reduction in public transport and increase in active travel. Importance of reliability, convenience and frequency for public transport.
Stage 2B – Ensuring Effective Delivery	Importance of decarbonisation Engagement of young people in the consultation of the strategy

4.3 ISA Report and Draft Transport Strategy/SIP Consultation

The draft Transport Strategy and ISA report were subject to a full public consultation and stakeholder engagement process over an 8-week period. A wide range of environmental and community organisations, local government and statutory consultees were invited to comment on the ISA Report, draft HRA, draft Transport Strategy and draft Strategic Investment Programme (SIP) Approach and supporting documents as part of the consultation.

A consultation brochure and online questionnaire were produced and made available online for the duration of the consultation period. Stakeholder were also able to request hard paper copies and alternative formats through a Freepost address or from Transport East.

The ISA Report was also made available to the public to comment on through access to the following website <https://www.transporeast.org.uk>.

A total of 590 comments were received in response to the consultation covering the Strategy, SIP and ISA (514 responses to the questionnaire and a further 76 responses received by email). More specifically a total of 129 responses were received in response to the questionnaire question 'Do you have any comments about the Integrated Sustainability Appraisal'.

No comments were received from Environment Agency or Natural England.

The consultation feedback received has been considered and addressed. A summary of the key comments and responses is set out in Table 4.3 below.

A Consultation Report has been published including a full analysis of the consultation responses <https://www.transporeast.org.uk>.

Table 4.3 Consultee feedback and responses

Theme	Consultee Comments	Response
ISA Chapter 3. Plans, Policies and Strategies	East Suffolk Council recommended reviewing their Cycling and Walking Strategy	East Suffolk Cycling and Walking Strategy (Draft) added to Appendix B.
	National Highways have a number of schemes not included in the plans, policies and strategies review, including Net Zero Highways: Our 2030/2040/2050 Plan, National Highways Digital Roads and National Highways Home Safe and Well.	All schemes have been added to Chapter 5 and Appendix B.
	Basildon Borough Council referred to a new Essex Bus Service Improvement Plan (BSIP)	New Essex Bus Service Improvement Plan (BSIP) has now been reviewed in Appendix B.
ISA Chapter 5. Baseline	Historic England suggest identifying non-designated heritage assets.	Historic England previously commented on including non-designated assets but as included in the response table, Transport East

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		do not have access to County HER records. Historic Environment baseline acknowledges non designated assets.
	Heritage England advised that appropriate priority should be given during the pre-application period to the identification, assessment and evaluation of non-designated assets	Text has been added to acknowledge this in the issues and opportunities section of the Heritage baseline (section 5.13)
	Light Rail Transit Association raised concerns that health problems are not considered, particularly relating to non-exhaust emissions and air quality.	The Air Quality baseline already stated 'increasing the use of electric and other low emission vehicles (as electric vehicles have zero exhaust emissions at street level; however even electric vehicles emit particulate matter from road, tyre and break wear' however text has been strengthened as an issue/opportunity in the same section.
	National Highways noted that the ISA has identified staycations to increase during COVID and will likely return to normal following this, however medium- and long-term trends should be considered.	Tourism is covered in socio-economics baseline section 5.3 Text has been added to this section to acknowledge other factors which may influence staycation trends affecting region.
	Transport Action Network suggested referring to more stringent WHO guidelines for the Air Quality baseline	Reference to the WHO guidelines has been added to the Air Quality Baseline
	Transport Action Network suggested referring to the issues of road kill and habitat severance.	References have been added to road kill to the biodiversity baseline. Habitat fragmentation is already included but further reference has been added.
	Norfolk Wildlife Trust identified existing impacts of the transport networks on wildlife and highlighted the need for the Strategy to actively contribute to goals of the Environmental Act 2021.	References relating to the existing impacts of the transport networks on wildlife are added to the biodiversity baseline section. The ISA includes specific recommendations in the Sustainability Action Plan for developing a coordinated approach to support nature recovery and Environment Act 2021 goals. The strategy includes as a regional wider outcome the aim to protect and enhance the built and natural environment. Also proposals for contributing to the Environment Act 2021 biodiversity goals have been added as Transport Strategy section 6.6 and opportunities to link biodiversity and environmental net gain and carbon sequestration are highlighted and to take this approach forward in the proposed Corridor studies.
ISA Chapter 6. Assessment Methodology	The Broads Authority raised there is no mention of net gain in the biodiversity ISA objectives.	Reference to biodiversity net gain opportunities were already included under the Natural Capital objective but opportunity for biodiversity has also been added to the biodiversity objective together with signposting to the Natural Capital and Ecosystem services row.

	Transport Action Network suggested amendments to the ISA objectives for population and socio-economics, equality and diversity, health, community safety and carbon	Objective wording has been amended to clarify and address comments.
	Transport Action Network stated there is no consideration as to whether proposals (such as new roads) might undermine the economic viability of public transport, existing or planned.	For the ISA, proposals are assessed independently of funding availability. Economic viability of proposals will be addressed as part of the scheme business cases and may also be dependent on different funding streams.
ISA Chapter 7. Assessment of the Transport Strategy	The Broads Authority stated that the ISA includes and assesses lots of specific schemes, but these specific schemes are not in the Transport Strategy.	The Transport Strategy provides overarching approach and the SIP includes potential schemes to deliver the strategy. We have now separated the ISA into two documents to assess the strategy and SIP separately, to ensure this is clearer.
	Norwich, Broadland and Norfolk Green Party Groups stated the ISA fails to consider a fourth approach that involves combining alternative fuels and modal shift to sustainable modes, with managing demand for road travel, with the overall aim of reducing absolute levels of vehicle miles.	In response to the comments, five approaches and a no plan scenario have been further defined and assessed as part of the ISA update for the finalised transport strategy. This includes an additional approach taking account of the need to manage demand from connectivity improvement and prevent induced traffic increases.
	The Transport Action Network made numerous suggestions relating to the scoring and assessments within Chapter 7.	All scoring and assessments have been reviewed and amended where necessary
ISA Chapter 8. Assessment of the SIP	The Broads Authority and Transport Action Network queried what 'pre' and 'post' refer to.	Pre and Post refers to pre and post mitigation or enhancement, as stated in the column heading of each table. Text has been added to the start of the section to clarify this further.
	Chelmsford City Council corrected the Beaulieu Station name in the SIP	Scheme name has been corrected.
	The Thames Crossing Action Group raised concerns relating to the cumulative effects identified for the Lower Thames Crossing SIP scheme (CP4)	The cumulative effects related to the Lower Thames Crossing, a scheme identified in the SIP as a committed scheme, have been further reviewed and a standalone table (ISA Volume 2 Table 7.14) summarising the review has been included. Cumulative effects are assessed where two or more SIP schemes are likely to interact or have combined effects on the same receptors or where SIP schemes potentially interact with committed schemes or other planned schemes, as stipulated in the text.
	Transport Action Network stated it is unclear why only the A47 North Tuddenham to Easton is considered to have an interaction identified and A47-A11 Thickthorn Junction and A47 Blofield to North Burlingham are not.	Cumulative effects relating to the Norwich Western Link (SIP scheme B2) and NSIP projects have been reviewed. Section 7.3 has been updated to include potential interactions through traffic flow, however as the A47-A11 Thickthorn Junction and A47 Blofield to North Burlingham projects are not in close proximity, no interactions with the Norwich Western Link

		have been identified for construction related impacts.
ISA Chapter 9. Monitoring and Evaluation	South East LEP raised concerns over the limited information around the format of the monitoring process.	Chapter 9 Sustainability Action Plan refers to working with partners to set up templates/proformas for collecting data and information on scheme proposals on a consistent basis so this can support regional analysis, reporting and monitoring in the future. There will be dependency on information provided for individual schemes and detailed monitoring plans would be expected to be developed as part of the consenting process for each scheme but would be the responsibility of the relevant scheme promoter.
	Transport Action Network commented on the monitoring plan and suggested changes to indicators for inclusivity, safety, air quality and climate.	The monitoring plan indicators have been reviewed and updated to incorporate suggestions where these are considered feasible to measure.
	Transport Action Network commented on the need for consideration of lifecycle analysis to cover resources and carbon from vehicle manufacture.	We recognise that currently electric vehicle manufacture has a higher carbon footprint than equivalent Internal combustion engine (ICE) vehicles and this is primarily due to the carbon emissions associated with battery production. Given plans for future carbon analysis including developing a carbon budget for the region, we therefore suggest TE review consideration of lifecycle analysis as part of the scope of future carbon analysis work and comments from the consultees are responded to through this review.
	The Transport Action Network believe that 3 - 5 year monitoring is not often enough and suggest annual reporting to keep the region within its carbon budget.	The SIP is intended to be a rolling plan, updated on a regular basis – commitment to developing a carbon budget is included in the strategy and the programme for updating and reporting will be reviewed and a monitoring schedule will be developed. There is recognition through the initial ESC Phase 1 carbon baseline and scenario analysis that the sooner actions are taken towards decarbonisation the more these will contribute to meeting 2040 net zero targets.
Other	Collaborative Mobility UK (CoMoUK) highlighted there is currently limited reference to shared transport in any form, either collectively or individually.	The strategy has been strengthened to specifically to include support for shared transport
	Climate Emergency Policy and Planning and Transport Action Network have raised there is currently no carbon budget and that the road building proposed has not been quantified and assessed for carbon impact.	The Transport Strategy included commitment to developing a carbon budget. Currently quantification of construction and operation related carbon emissions is not available for assessment – this information would be expected to be part of the carbon cost analysis undertaken for the business

		<p>case and for consenting, following relevant guidelines and standards.</p> <p>For the ISA, all short term schemes proposed within the SIP been assessed qualitatively for construction and operational impacts reported separately rather than combined. By presenting both construction and operational impacts the ISA more clearly identifies where there may be significant negative impacts relating to construction phase carbon and other topics.</p>
	<p>The Transport Action Network also raised concerns relating to the wider impacts of road building, particularly relating to carbon and emissions.</p>	<p>As above. By presenting both potential construction and operational impacts, the ISA more clearly identifies where there may be significant negative impacts relating to carbon and other topics.</p>
	<p>Norwich, Broadland and Norfolk Green Party Groups suggested the Transport Strategy must adopt a Regional Transport Carbon Cap for 2040 and set five yearly regional carbon budgets and annual regional targets for cutting carbon emissions and an action plan for meeting this framework.</p>	<p>The Transport Strategy and SIP include commitment to developing a carbon budget and this also referred to in the ISA Sustainability Action Plan and Monitoring Plan.</p>

5 ISA baseline, issues and trends

5.1 Introduction

This chapter sets out the key issues and opportunities identified in the study area baseline against which changes due to the Transport Strategy proposals can be assessed. An extensive baseline review has been conducted as part of the ISA Scoping stage and updated for the ISA, this can be found in Appendix C. It considers current conditions, existing pressures and future trends and how the baseline is likely to develop without the influence of the proposals in the Transport Strategy. Potential issues and opportunities relevant to the assessment of the Strategy are also identified and summarised in Table 5.1 below.

The study area for the baseline includes the Transport East region and bordering and connected areas where there are potential pathways for impacts such as, for example, within river catchment areas and the key transport corridors between neighbouring regions.

Information used to establish the baseline is based on publicly available data sources.

The following topics have been addressed:

- Population
- Socioeconomics
- Equality and Diversity
- Health
- Community Safety
- Biodiversity
- Water Environment
- Air Quality
- Noise and Vibration
- Climatic Factors
- Landscape/Townscape and Visual
- Cultural Heritage and Archaeology
- Soil, Geology and Contaminated Land
- Material Assets and Resources
- Natural Capital and Ecosystem Services

5.2 Key baseline issues and opportunities

Key issues and opportunities have been identified in the table below.

Table 5.1 ISA baseline key issues and opportunities

ISA Topic	Key Issues and opportunities
Population and Socioeconomics	<p>Population growth across all age groups will place pressure on the transport network, housing availability, amenities, education and health facilities.</p> <p>There are opportunities to improve access to rural areas through transport services, digital services and bring services to people and support access to employment.</p> <p>COVID-19 has changed work habits as the need to access workplaces is reduced. This may place different demands on transport services for example changes to commuting are long term and more people travel into urban centres for leisure and social interaction.</p> <p>COVID-19 is envisaged to increase staycations in the short-term but medium and long-term trends need to be considered.</p>

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ISA Topic	Key Issues and opportunities
<p>Equality and Diversity</p>	<p>Assessments of the Index of Multiple Deprivation highlight economic disparities between rural area, conurbations and coastal communities and also within urban areas.</p> <p>There is a need to support and improve access to services and facilities for vulnerable groups including the elderly population, disabled, women, families with young children, and single parent families.</p> <p>Sustainable transport interventions can support inclusive growth for communities which further helps social cohesion, access to employment and access to vital services.</p>
<p>Health</p>	<p>Modal shift towards public transport and active travel can support safer travel and traffic calming measures such as speed limits and addressing new challenges such as from e scooters.</p> <p>Interventions reducing air and noise pollution would contribute to addressing inequalities in exposure to poor air quality such as within the existing Air Quality Management Areas (AQMAs) in Essex, Thurrock and Southend-on-Sea and Noise Important Area (NIAs).</p> <p>Consideration of age friendly design, including design for dementia, and potential for increasing access to health services in development of transport proposals to better an older population.</p> <p>Interventions to encourage a shift towards public transport, walking and cycling which will provide benefits including air pollution and physical activity levels. These would include measures to improve the public realm within urban areas and increase public transport connectivity within rural and coastal areas, as well as provision of good pedestrian and cycling infrastructure.</p> <p>Support for access to recreational facilities and nature is an important aspect of health improvement.</p>
<p>Community Safety</p>	<p>Need to reduce road danger including collisions and casualties due to traffic. Improve road safety and reduce road fatalities on rural roads (which in comparison carry lower traffic).</p> <p>Improve safety for active travel and leisure.</p> <p>Address increasing crime levels on public transport particularly towards women, disabled and those from ethnic minority groups.</p>
<p>Biodiversity</p>	<p>Biodiversity has already been significantly affected by the development of the existing transport network through land loss, fragmentation and severance, disturbance and pollution as well as impacts on certain species populations and from road kill. There is potential for direct loss, additional fragmentation and severance and disturbance of habitats and associated species due to new infrastructure proposed in the SIP. Requirements for 10% biodiversity net gain for consented projects will be in place, however this cannot address loss of irreplaceable habitats and does not cover all aspects of biodiversity.</p> <p>Designated sites (which may already be under pressure from recreational access and disturbance, pollution, agriculture and climate changes) can be affected by proposals for improved accessibility and connectivity.</p> <p>There will be some opportunities for enhancement of biodiversity, through design including habitat provision, connectivity improvement and management to improve condition and reduced pollution.</p>
<p>Water Environment</p>	<p>Additional infrastructure has the potential to affect drainage or require river crossings and affect waterbodies. New infrastructure may increase water pollution and affect flood risk while also offering an opportunity to potentially increase the resilience to flooding.</p>

ISA Topic	Key Issues and opportunities
	There will be opportunity to incorporate SuDS and wetlands in scheme design to reduce pollution from road runoff and manage flood risk.
Air Quality	Transport is a significant contributor to poor air quality with resultant adverse effects on human and ecosystem health. Potential for improvement to air quality from changes to traffic levels, type of fuel, modal shift and technology change
Noise and Vibration	Increased traffic and new infrastructure generally leads to increased noise with adverse health and amenity effects. There is potential for reduced noise from urban traffic with use of EVs
Climatic Factors	Climate change suggests more extreme weather with the potential to adversely affect transport infrastructure, human health, agriculture and biodiversity . A key opportunity for the Transport Strategy is to reduce overall carbon emissions from transport with the region through: Reducing the need to travel by diesel and petrol vehicles; Accelerating a shift from the private car to active transport (walking and cycling) and to improved low-carbon public transport (electric buses and trains) Decarbonising road vehicles, including increasing the uptake of electric vehicles; Tackling emissions from ports and airports; Understanding what works where - place based solutions; Supporting research and development for green transport technology and innovation; and Delivering resilience to climate change.
Landscape/Townscape and Visual	Improved accessibility can negatively affect landscape value through new infrastructure development and additional pressures on the landscape. There is the potential for nationally designated landscape and recreation areas such as AONBs; National Trails; National Parks; coastal heritage and local landscape and townscape character to be affected by transport proposals. Active travel provides opportunities for increase access to and enjoyment of valued landscapes and townscapes.
Cultural Heritage and Archaeology	Cultural heritage, historic landscapes and archaeological and paleo-archaeological interests may be affected through direct effects such as loss or setting changes or changes to access or hydrology changes. There may be opportunities for improving access to cultural heritage linked to active travel initiatives.
Soils, Geology and Contaminated Land	Geological SSSIs peat and fenland soils and high value agricultural land could be affected by infrastructure proposals involving direct land take. Soils such as peat and fenland soils are important for carbon and measures to mitigate climate change impacts so potential to support for carbon sequestration
Material Assets and Resources	Potential issues include loss of sterilisation of material assets from infrastructure development or conflict with other land uses, materials needed for construction and waste being generated by new schemes. Opportunities for reuse of existing infrastructure and recycling of materials to minimise waste and embodied carbon emissions.
Natural Capital and Ecosystems Services	Potential impacts on natural capital and ecosystem services from direct land take or land use change or impacts on condition. Opportunities though including natural capital assessment and ecosystem valuation as part of early scheme development with objectives to provide biodiversity and environmental net gain.

ISA Topic	Key Issues and opportunities
	This will be supportive in providing quantified information on impacts and requirements for delivering enhancements that can be linked to wider initiatives.

6 Assessment Methodology

6.1 Scope of the assessment

The ISA is a high level and objective based assessment. The ISA objectives were developed to cover the ISA topics (as set out in Table 6.1) following a review of relevant Plans, Policies and Strategies, an appreciation of the baseline context and feedback from consultations at the Scoping Stage. These reviews are also reflected in the criteria used as the framework for the development and assessment of the Transport Strategy and SIP.

Table 6.1 ISA objectives

ISA Topic	ISA Objectives	Questions to consider in assessing performance against the ISA objectives
Population and Socioeconomics	Support local economic development and accessibility to economic opportunities, employment and community facilities	Is there potential to: <ul style="list-style-type: none"> ▪ Affect quality of life in terms of improved access to transport to jobs, schools, shops and other community facilities including for those without access to a car? ▪ Reduce and avoid creation of real or perceived severance from linear infrastructure? ▪ Reduce journey times for commuting? ▪ Improve reliability of journey times? ▪ Improve quality of travel and access to information? ▪ Support local economic development for employment and community facilities? ▪ Support employment and training opportunities? ▪ Support access for tourism and recreation ▪ Support changes resulting from effects of COVID/Brexit on the economy and transport
Equality and Diversity	Support and promote improved access for all	Is there potential to: <ul style="list-style-type: none"> ▪ Improve access for rural populations and towns outside main growth areas dependent on public transport? ▪ Support improved services for transport deserts? ▪ Improve physical access and opportunities for active travel for all groups with protected characteristics, including for example, the elderly and young, women, physically and cognitively disabled and mobility impaired people? ▪ Improve accessibility to services, facilities and amenities for all? ▪ Improved affordability of transport and access to electric vehicle transport (including e-bikes for example)?
Health	Protect and enhance health and well being	Is there potential to: <ul style="list-style-type: none"> ▪ Improve opportunities and access for active travel and raise public awareness of active travel? ▪ Recognise and address challenges for rural populations with poor public transport access ▪ Improve shared transport and co mobility opportunities ▪ Make active travel, safer, more convenient and more attractive? ▪ Reduce congestion, noise and air quality impacts from transport? ▪ Reduce dependency on private cars and increase active lifestyles ▪ Improve access to greenspace (such as parks and countryside) blue space (water related amenity areas) rivers, wetlands, lakes, and coast) and opportunities for physical activity?

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ISA Topic	ISA Objectives	Questions to consider in assessing performance against the ISA objectives
Community Safety	Support and promote community safety	<ul style="list-style-type: none"> ▪ Improve road user safety and reduce risk of collisions and road danger especially for active travel, including cyclists and pedestrians, as well as other vulnerable road users such as e-scooter users, horse riders and motor cyclists. ▪ Potential for adopting Vision Zero approach to improve safety ▪ Improve actual and perceived safety and security for users of public transport for all groups?
Biodiversity	Protect and enhance biodiversity Protect and enhance International and European sites	<p>Are there potential adverse effects on or improvements to:</p> <ul style="list-style-type: none"> ▪ European; (Natura 2000) or species protected in Annex II and IV of Habitats Directive and Annex I of Birds Directive? ▪ Nationally designated sites NNR/SSSI or protected species? ▪ Local, county biodiversity including Biodiversity Strategy objectives? ▪ Wildlife corridors or connectivity? ▪ Biodiversity enhancement? <p>Further questions relating to natural capital below.</p>
Water Environment	Protect and enhance water resources and water quality and contribute to reduction in flood risk and disruption from flood events	<p>Is there potential for:</p> <ul style="list-style-type: none"> ▪ Conflict with River Basin Management Plan proposed measures /or Water Framework Directive objectives? ▪ Is there potential to affect water quality through pollution ▪ Are there opportunities to contribute to improvements (such as removal of barriers as part of schemes)? ▪ Is there a potential to increase flood risk? ▪ Is there potential to increase surface water run off or ground water flood risk? ▪ Is there potential to reduce existing flood risk vulnerability?
Air Quality	Contribute to the mitigation of air pollution issues from transport and optimize potential for reduction in air pollution	<p>Is there potential to:</p> <ul style="list-style-type: none"> ▪ contribute to improvements to air quality or to increase air pollution? ▪ Is there potential to contribute to air pollution reduction affecting sensitive habitats
Noise and Vibration	Contribute to mitigation of noise pollution as a result of transport and optimize potential for reducing noise/vibration	<p>Is there potential to:</p> <ul style="list-style-type: none"> ▪ reduce or increase the number of people exposed to high levels of transport related noise? ▪ Will areas of high tranquility be affected by increased disturbance or is there potential to increase tranquil areas?
Climatic Factors	Climate change mitigation: Contribute to achieving 2040 net zero carbon targets by reducing greenhouse gas emissions. Climate change adaptation: improve resilience to climate change for the transport network and promote	<p>Is there potential for:</p> <ul style="list-style-type: none"> ▪ Proposals to support modal shift, active travel, reduce traffic and contribute to reducing carbon emissions? ▪ Increase vulnerability or improve resilience of the environment and transport network and other strategic infrastructure to climate change? (Note flood risk increase addressed under water environment topic)

ISA Topic	ISA Objectives	Questions to consider in assessing performance against the ISA objectives
	improved environmental resilience to climate change.	
Landscape/ Townscape and Visual	Protect and enhance the character and diversity of the landscape/ townscape and avoid or minimise adverse visual effects on sensitive, valued and designated landscapes and public views	<p>Is there potential to</p> <ul style="list-style-type: none"> ▪ Impact or contribute to improvement to designated or sensitive and valued landscapes including the Broads, Areas of Outstanding Natural Beauty, rural landscapes, townscapes and coastal views or affect visual amenity ▪ Potential to cause light pollution in dark skies (as defined in the CPRE’s interactive map England’s Light Pollution and Dark Skies)? ▪ Impact protected landscapes and their settings?
Cultural Heritage and Archaeology	Protect cultural heritage and archaeological assets and contribute to improved access to cultural heritage sites	<p>Is there potential to:</p> <ul style="list-style-type: none"> ▪ Impact on, or to conserve and enhance, the significance of designated and non-designated heritage assets, including any contribution made to that significance by setting, and any Heritage at Risk historic landscapes or to archaeological interest (including coastal / marine based archaeology, old bridges and railway corridors and undiscovered archaeology)? ▪ Potential to improve access to cultural heritage sites?
Soils, Geology and Contaminated Land	Avoid conflicts with geological sites of value. Minimise loss of soil resources and contribute towards the appropriate management of soil resources and quality.	<p>Would there be any effects on:</p> <ul style="list-style-type: none"> ▪ Designated geological sites, valuable soils or potential for pollution from contaminated land sites? ▪ Would peat and wetland soils be at risk?
Material Assets and Resources	Promote the sustainable use of natural resources including land and mineral bearing land, encourage reuse, recycling and waste minimization and effective use of existing infrastructure.	<p>Is there potential for:</p> <ul style="list-style-type: none"> ▪ Conflicts with critical infrastructure or with existing and planned land use or valuable agricultural land? <p>Does the strategy encourage:</p> <ul style="list-style-type: none"> ▪ Reuse of existing transport infrastructure and/or brownfield sites? ▪ Change to renewable energy for transport
Natural Capital and Ecosystems Services	Protect natural capital and associated ecosystem services, whilst seeking to provide opportunities for enhancement	<ul style="list-style-type: none"> ▪ Is the strategy likely to result in change to natural capital and associated ecosystem services and is there scope for contributing to future requirements for biodiversity and environmental net gain to be accommodated with in strategy implementation? ▪ Will there be severance or loss of connectivity or opportunity to improve connectivity?

Interaction between topics

The potential interaction, in particular to consider potential cumulative and in combination effects, across ISA topics is recognised and summarised in Table 6.2.

Table 6.2 Interactions between topics

	Population and Socioeconomics	Equality and Diversity	Health	Community Safety	Biodiversity	Water Environment	Air Quality	Noise and Vibration	Climatic Factors	Landscape/ Townscape and Visual	Cultural Heritage and Archaeology	Soils, Geology and Contaminated Land	Material Assets and Resources	Natural Capital and Ecosystem Services
Population and Socioeconomics														
Equality and Diversity														
Health														
Community Safety														
Biodiversity														
Water Environment														
Air Quality														
Noise and Vibration														
Climatic Factors														
Landscape/Townscape and Visual														
Cultural Heritage and Archaeology														
Soils, Geology and Contaminated Land														
Material Assets and Resources														
Natural Capital and Ecosystem Services														

Field Code Changed

6.2 Influencing the Transport Strategy and SIP through the ISA

Development of the Transport Strategy and draft SIP and their finalisation and completion of the ISA has been an integrated and iterative process, with ISA mitigation recommendations contributing to the evolution of the Transport Strategy.

A Sustainability Action Plan and ISA Monitoring Plan have been developed as draft for consultation based on the ISA assessment of the draft Transport Strategy and SIP. Both Plans provide a framework and mechanism for monitoring the beneficial and adverse effects (including cumulative effects) of the Transport Strategy and SIP. The results of monitoring then provide an evidence base to inform future revisions of the Transport Strategy and SIP.

6.3 Assessment approach

The assessment provided within this ISA Report considers both the Transport Strategy itself and interventions included within the accompanying draft Strategic Investment Programme (SIP)

The assessment regulations require consideration of alternative approaches or options; a description of how a proposed approach was selected; as well as assessment of potential significant adverse effects. These are described for the Transport Strategy and SIP separately below.

Assessment of the Transport Strategy

The Transport Strategy has been developed with consideration of a range of economic and population growth and post Covid return to workplace scenarios. These represented a range of future conditions that the Transport Strategy would need to respond to and be delivered within. The assessment considers the viable alternative approaches that the Transport Strategy could adopt before detailing the proposed approach and how this is proposed to be taken forward as described in the Transport Strategy.

Alternatives

Five potential transport approaches have been considered during development of goals included under the Transport Strategy strategic pathways in addition to a do minimum or without strategy scenario. These are:

- **Approach 1:** Focus primarily on promotion and facilitation of the use of alternative fuels.
- **Approach 2:** Focus primarily on promotion and facilitation of modal shift towards passenger transport and active travel modes.
- **Approach 3:** Focus primarily on improving connectivity
- **Approach 4:** Combined approach to delivery including both promotion and facilitation of the use of alternative fuels and also modal shift towards passenger transport and active travel modes.
- **Approach 5:** Combined approach to delivery including both promotion and facilitation of the use of alternative fuels and also modal shift towards passenger transport and active travel modes with additional demand management to address potential induced demand from improvements to connectivity

A high-level assessment of these approaches has been undertaken using the criteria set out in **Error! Reference source not found.** to identify which would be the most supportive for the ISA objectives and help facilitate identification of goals under the strategic priorities and associated pathways. The assessment is also informed by baseline analysis and key trends set out in section 5.

Table 6.3 Significance criteria for assessment of the Transport Strategy and compatibility with ISA objectives

Field Code Changed

Description of Effect/Risk	Assessment against objectives
The transport strategy objective or goal has potential for contribute significant positive effect on the ISA receptors associated with this or contribute to achieving the objective.	+
The transport strategy objective or goal has potential for neutral or significant positive effects on the environmental receptors associated with this objective depending on how the policy or objective is delivered.	0/+
The transport strategy objective or goal has potential for mixed significant positive & negative effects on the environmental receptors associated with this objective.	+/-
The transport strategy objective or goal has potential for neutral effect on the environmental receptors associated with this objective.	0
The transport strategy objective or goal has potential for neutral or significant negative effects on the environmental receptors or conflicts with the ISA objective depending on how the policy or objective is delivered.	0/-
The transport strategy objective or goal has potential for significant negative effect on the environmental receptors or conflicts with the ISA objective.	-
The transport strategy objective or goal effects are uncertain/there is insufficient information on which to determine effect on potential environmental receptors associated with this objective at this stage.	?

Proposed Transport Strategy

The assessment of the Transport Strategy has been undertaken in two stages as set out below. At each stage, the assessment criteria established in Table 6.4 have been used to identify where objectives or goals are supportive of the ISA objectives or where there is potential for conflict.

- Assessment of the transport strategy against the ISA objectives, including recommendations regarding the nature of the objectives have been made where opportunities to improve alignment with the ISA objectives have been identified.
- Assessment of goals and measures included under each of the four strategic priority pathways for the Transport Strategy against the ISA objectives, including recommendations regarding the content and delivery of goals and measures in order to better align with the ISA objectives and guide the identification of interventions to be included in the SIP.

Cumulative effects

The assessment of cumulative effects for the Transport Strategy considers where positive or negative impacts on the ISA objectives would occur either as a result of:

- Additive or synergistic effects between goals and measures included under each of the four strategic priority pathways (i.e., intra-plan cumulative effects).
- Additive or synergistic effects between the Transport Strategy and other national or regional level plans or policies (i.e., inter-plan cumulative effects).

Assessment of the SIP

Interventions included within the 'Approach to the SIP' and identified for delivery within a 0-5 year timescale, termed priority interventions, have been assessed in accordance with the process described below under 'Assessment of the SIP'.

Interventions planned for delivery within a 5-10 year timescale have not been assessed further at this stage as the Transport Strategy and SIP will be regularly updated to ensure that they remain relevant to the evolving transport challenges that the region faces and continue to support the Government in achieving national aspirations for new homes and jobs, levelling up, boosting international trade, and achieving net zero as we recover from the COVID-19 pandemic. As such, there is some uncertainty regarding the nature and delivery of schemes currently included in the SIP for the 5-10 year timescale.

Alternatives

All potential interventions included within the draft SIP have been subject to a high-level risk-based assessment for compatibility with the ISA objectives in accordance with the criteria set out in **Error! Reference source not found.** This was undertaken to identify options considered at higher risk of conflict with the ISA objectives and contribute towards the planned delivery timescales for interventions. The higher risk options are where possible scheduled towards the end of the delivery period to allow time for re-evaluation of need/alternatives and further study to inform mitigation recommendations.

Proposed SIP Approach

Each intervention included within the draft SIP with a delivery timescale of 0-5 years has been assessed against the ISA objectives in accordance with the nine-point significance set out in **Error! Reference source not found.** ISA mitigation is identified and recorded against each option and ISA objective combination (where required).

Table 6.4 Significance criteria for assessment of SIP interventions against ISA objectives

Description of Effects/Risks	Scale of Effect
Major benefits / contribution to meeting ISA objectives (widespread/large scale)	+++
Moderate benefits /contribution to meeting ISA objectives	++
Minor benefits /contribution to meeting ISA objectives (local and small scale)	0/+
Neutral or not applicable	0
Minor adverse effects or potential conflicts with ISA objectives (local and small scale)	0/-
Moderate adverse effects or potential conflicts with ISA objectives	--
Major adverse effects or potential conflicts with ISA objectives (widespread / large scale)	---
Mixed positive and negative	-/+
Uncertain	?

Field Code Changed

Cumulative effects

The assessment of cumulative effects considers:

- Additive or synergistic effects on ISA objectives and individual receptors arising from one or more of the options included within the SIP for delivery within 0-5 years (i.e., intra-plan cumulative effects)
- Additive or synergistic effects on individual ISA objectives and individual receptors arising from one or more of the options included within the SIP for delivery within 0-5 years and (a) sub-regional, county or local level plan and policies or (b) planned development within the study area (i.e., inter-plan cumulative effects).

For the purposes of the assessment of inter-plan cumulative effects, the following are defined as planned development:

- Nationally Significant Infrastructure Projects (NSIPs) listed on the Planning Inspectorate's register of projects (Planning Act 2008)
- Development of transport systems authorised by Transport and Works Act Order (Transport and Works Act 1992)
- Hybrid bills currently before Parliament
- Committed transport schemes identified in the draft SIP as schemes in the region that are either under construction, have planning consent or committed funding to take forward.

6.4 Assumptions and limitations

Assumptions

The assessment for the Transport Strategy and SIP is based on technical judgement, knowledge of similar measures and consideration of how the proposed measures are likely to be carried out and contribute or conflict with each ISA.

The assessment takes the procedures or legislative protection identified below into account and the standard good practice measures that are expected to be applied. These include:

Studies and Surveys

- Feasibility and scheme option studies aimed at avoiding adverse effects on designated sites and protected structures following Design Manual for Roads and Bridges (DMRB) and TAG requirements current at the time of scheme assessment.
- Studies, surveys and consultation on environmental and social effects of development proposed under the strategy and associated SIP.

Standard good practice approaches are applied to design and construction

- Alignment/siting of new or improved infrastructure applying hierarchy of avoid, minimize, mitigate and compensate to keep adverse impacts to a minimum
- Identification of relevant mitigation expected to support consenting and licensing requirements
- Application of good practice approaches to construction and pollution management including appropriate supervision and control.

Operational management

- Measures to meet legal obligations during operational management of transport infrastructure or supporting measures, such as precautions for pollution prevention, safety during maintenance activities or meeting licensing requirements for protected species.

Limitations

The assessment of the Transport Strategy proposals is high-level and focused on how they support strategic objectives with the identification of appropriate mitigation measures aim to reduce uncertainty and risk so that intended outcomes are achieved.

The level of availability of public information on design and environmental impacts of priority interventions included in the draft SIP is variable. Locally designated areas were not consistently available for mapping across the region for example. Interventions range from ideas to well-developed schemes under preparation for funding. In many, cases however spatial extents, defined routes and sites are not known, or proposed measures are not fully defined.

The level of uncertainty associated with the interventions is recorded for each intervention assessment. Mitigation measures are also identified to minimise uncertainty and risk for the interventions taken forward and are expected to be developed and assessed further at the project level. For schemes within the six strategic corridors further studies will be undertaken to inform SIP proposals and there will be an opportunity for this work to include additional information and indicative routes to reduce uncertainty in the assessments and identify relevant opportunities.

There are specific uncertainties over transport behaviour post pandemic and extent of return to work places that will potentially affect carbon emission modelling however, proposals for future work will be

able collect relevant data to this will be addressed and considered in strategy and SIP progress monitoring.

7 Assessment of the SIP Approach

The SIP sets out the proposed approach to an Strategic Investment Programme to enable delivery of the Transport Strategy and will be regularly reviewed to ensure there is a pipeline of identified investment to delivering the pathways, goals and actions within the Strategy.

The SIP identifies proposed regional schemes, strategic corridors and committed projects. These schemes are shown on Figure 7.1 along with relevant schemes outside of the Transport East Region.

7.1 Option level alternatives

A long list of interventions was identified through research and engagement with partners and includes strategic scale projects or packages of smaller interventions which collectively become strategic scale rather than local projects that would typically be funded by Local Transport Authorities. Interventions were classified into three pools:

- **'Idea's pool'** – projects that could deliver identified strategic priorities. These will include concepts, early feasibility studies and pre-Strategic Outline Business Cases. Although these will have considered options and alternatives, they will not have been subject to any in-depth assessment.
- **'Development pool'** – projects that are in development and have already been subject to a feasibility study or are currently developing or have completed a Strategic Outline Business Case that compares a short-list of alternative options for delivering the project.
- **'Delivery pool'** – projects where the development of a business case has achieved programme entry for delivery funding; acknowledging that planning consent may still be required. For these projects a proposed option has already been identified.

Based upon 62 interventions included within the long list for the SIP an initial risk-based assessment was undertaken using the methodology described in section 6.3 alongside the options appraisal process outlined in section 3.3 of the SIP.

A summary matrix of the ISA option level long list risk-based assessment is provided in Appendix E. Sixteen higher-risk options were identified through this process related to potential for impacts related to land take or operational impacts in some cases this also reflects a level of uncertainty over proposals:

- **A7 Develop an ambitious programme of traffic demand management measures across the region – given potential impacts on access although scope to address through design and mitigation**
- **A8, A9 and A11 regional packages which could include infrastructure development**
- B1 A47 Tilney to East Winch dualling
- **B2 Norwich Western Link**
- B3 Acle Straight Dualling
- **C3 Army and Navy Sustainable Transport Package**
- C5 A12 northern section (A1152 to Lowestoft) improvements
- D1 East-West (Eastern section) rail package (enhanced Norwich and Ipswich connectivity and capacity to Cambridge as Eastern section of national East-West Rail project)
- D7 A11 Fiveways
- E5 A127 Outer Relief Road - Southend and Essex
- E6 A127 Northern Relief Road - Southend and Rochford
- **E15 A13 / A126 East facing slips**
- **G1 Dualling the A120 between Braintree and the A12**
- G2 North Essex Rapid Transit – phase 2

Each of the above options scored a potential moderate or major adverse risk level against more than one ISA objective in the initial assessment. Eight of these higher risk options have not been taken forward as priority interventions for delivery within the next five years. This provides an opportunity for further investigation of the impacts to inform the next revision of the Transport Strategy and SIP. Tables 7.3 to 7.9 of this report summarise the assessment of 0-5 year priority interventions included

within SIP and mitigation and enhancement measures identified, including dualling the A120 between Braintree and the A12.

7.2 Proposed options

The priority interventions identified within the SIP for delivery within the next 5 years are shown in Table 7.1.

Table 7.1 Interventions for delivery (Priority interventions in 0-5 years in bold)

Corridor A: Regional Strategic Packages	
<p>A1: Re-open rail lines in rural/coastal areas A2: Widespread roll-out of EV charging infrastructure to increase EV take up (including HGVs) A3: Implement SMART ticketing across the region A4: Urban Active Travel Package A5: Inter-urban Active Travel Package A6: Rural Active Travel Package A7: Develop an ambitious programme of traffic demand management measures across the region A8: Ports Access Package A9: Coastal Access Package A10: Urban Sustainable Transport Package A11: Rural/coastal – Inter urban sustainable package A12: Infill electrification of rail associated with Felixstowe and Thameside A13: Widespread roll out of fibre broadband and 5G</p>	
Corridor B: Connecting our Energised Coastal Communities (Midlands – Kings Lynn – Norwich – Great Yarmouth)	Corridor C: Connecting the Heart of East Anglia (London – Chelmsford – Colchester – Ipswich – Norwich and Suffolk Coast)
<p>B1: A47 Tilney to East Winch dualling B2: Norwich Western Link B3: Acle Straight Dualling B4: A47/A17 Pullover Junction, Kings Lynn</p>	<p>C1: GEML strategic rail package (Improvements in London, Essex, Suffolk and Norfolk) C2: A12 strategic package South: J19 - J25 (Chelmsford to Marks Tey) and M25 to the A14 including a bypass of Chelmsford C3: Army and Navy Sustainable Transport Package C4: A12 strategic package North (A14 to A1152) C5: A12 Northern section (A1152 to Lowestoft) improvements C6: A140/A1120 MRN C7: A146 Active Travel link Beccles to Lowestoft</p>
Corridor D: Cross-country connectivity (Norfolk and Suffolk to Cambridge – Midlands – South-West)	Corridor E: South Essex Corridor (Stansted – Braintree – Colchester – Harwich and Clacton)

<p>D1: East – West (Eastern section) Rail package (enhanced Norwich and Ipswich connectivity and capacity to Cambridge as Eastern section of national East-West Rail project)</p> <p>D2: Felixstowe Port to the Midlands and North rail freight improvements</p> <p>D3: Haughley Rail Junction - double track (freight capacity)</p> <p>D4: Other Rail level crossing improvements not covered by the Ely / Felixstowe scheme</p> <p>D5: Trowse Rail Bridge and Trowse lower junction double tracking</p> <p>D6: Felixstowe rail branch line - doubling</p> <p>D7: A11 Fiveways</p> <p>D8: A14 Package – junctions 37 A14/A412 (Newmarket), 43 and 44 (Bury St Edmunds), A14 to Expressway standard</p> <p>D9: Rail improvements across Suffolk</p> <p>D10: A14/A12 Copdock interchange</p> <p>D11: A11 Thetford</p>	<p>E1: A1306 improvements and bus priority</p> <p>E2: M25 J30 capacity enhancement</p> <p>E3: Essex Thameside rail improvements (identified in Essex Thameside study)</p> <p>E4: A127 Strategic Package</p> <p>E5: A127 Outer Relief Road - Southend and Essex</p> <p>E6: A127 Northern Relief Road - Southend and Rochford</p> <p>E7: Southend Congestion Relief Package</p> <p>E8: South Essex Bus Metro – rapid transit</p> <p>E9: Upgrade Wickford to Southminster rail line</p> <p>E10: GEML Rail Link to London Gateway</p> <p>E11: Southend Airport Access Package</p> <p>E12: Harp House roundabout improvements</p> <p>E13: Improved access to Canvey</p> <p>E14: Southend Rapid Transit</p> <p>E15: A13 / A126 East facing slips</p>
<p>Corridor F: UK Innovation (Kings Lynn – Cambridge – Harlow – London)</p>	<p>Corridor G: East-West Growth (South Essex – London – Thurrock – Basildon – Southend)</p>
<p>F1: West Anglia main rail line package</p> <p>F2: A10 West Winch housing access road</p> <p>F3: Rapid Transit - Cambridge to Uttlesford</p> <p>F4: M11 J8 Long Term Scheme</p> <p>F5: Stansted Airport Sustainable Access Package</p>	<p>G1: Dualling the A120 between Braintree and the A12</p> <p>G2: North Essex Rapid Transit – phase 2</p> <p>G3: Braintree Rail Branch Line improvements</p> <p>G4: Clacton Town Centre Action Plan</p> <p>G5: A133 Frating to Clacton Enhancements</p> <p>G6: Tilbury Link Road</p>

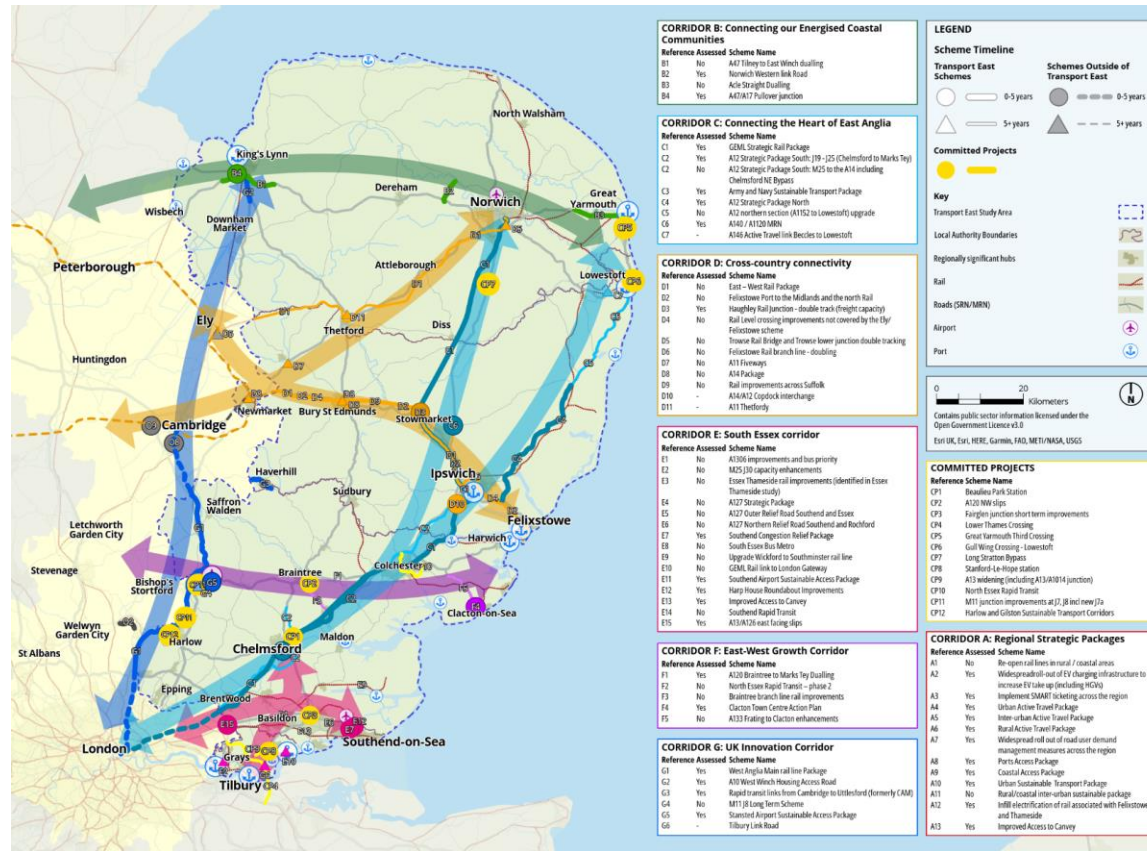


Figure 7.1 Regional schemes

Table 7.3 through to Table 7.9 provide a summary of the assessment against the ISA objectives for the priority interventions associated with each transport corridor. Table 7.2 shows the scoring guidance used. Each table includes scoring for 'pre' and 'post' mitigation or enhancement as per the proposed mitigation in Chapter 8. Schemes which require construction have been assessed for both construction and operational effects. Key effects (those assessed as either moderate or major adverse or beneficial) are outlined below.

Table 7.2 Scoring guidance

Scoring	Impact
+++	Major benefits / contribution to meeting ISA objectives (widespread/large scale)
++	Moderate benefits /contribution to meeting ISA objectives
0/+	Minor benefits /contribution to meeting ISA objectives (local and small scale)
0	Neutral or not applicable
0/-	Minor adverse effects or potential conflicts with ISA objectives (local and small scale)
--	Moderate adverse effects or potential conflicts with ISA objectives
---	Major adverse effects or potential conflicts with ISA objectives (widespread / large scale)
+/-	Mixed positive and negative

Field Code Changed

Table 7.3 Corridor A: Regional Strategic Packages - summary of assessment of SIP interventions

Field Code Changed

Option	ISA objective															
	Construction (C) or Operation (O)	Pre & Post Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
A2 Widespread roll-out of EV charging infrastructure (including HGVs)	C	Pre	0	0	0	0	0/-	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0	0	0	0/-	0	0	0	0	0/-	0	0	0/-	0
	O	Pre	++	0	0/-	0	++	0	0	0/+	0/+	0	0	0	0/+	0
		Post	++	0	0/+	0	++	0/+	0	0/+	0/+	0	0	0	0/+	0/+
A3 Implement SMART ticketing across the region Integrating fares, ticketing, customer service and service planning	C	Pre	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Post	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	O	Pre	0/+	0/+	0/-	0	0/+	0/+	0	0/+	0	0	0	0	++	0
		Post	0/+	0/+	0/+	0	0/+	0/+	0	0/+	0	0	0	0	++	0
A4 Urban Active Travel Package	C	Pre	0	0/-	0	0	0	0	0	0	0	0	0	0	0	0
		Post	0	0/-	0	0	0	0	0	0	0	0	0	0	0	0
	O	Pre	+++	0/+	0/-	0/+	++	0	0	++	++	0	0	0	0/+	0
		Post	+++	0/+	0/+	0/+	++	0/+	0	++	++	0/+	0/+	0	0/+	0/+
A5 Inter-urban Active Travel Package	C	Pre	0	0/-	0	0	0/-	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0/-	0	0	0/-	-/+	0	0	0	0/-	0	0	0/-	-/+
		Pre	++	0/+	0/+	0/+	++	0/+	0	0/+	0/+	0	0	0	0/+	0/+

Option	ISA objective															
	Construction (C) or Operation (O)	Pre & Post Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
A6 Rural Active Travel Package	O	Post	++	0/+	0/+	0/+	++	++	0	0/+	0/+	++	0	0	0/+	++
	C	Pre	0	0/-	0	0	0/-	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0/-	0	0	0/-	-/+	0	0	0	0/-	0	0	0/-	-/+
	O	Pre	++	++	++	0/+	0/+	0/+	0	0/+	0/+	0	0	0	0/+	0/+
		Post	++	++	++	0/+	0/+	0/+	0	0/+	0/+	0	0	0	0/+	0/+
A7 Develop an ambitious programme of traffic demand management measures across the region.	C	Pre	0	0	0	0	0	0	0	0	0/-	0/-	0/-	0	0/-	0
		Post	0	0	0	0	0	0	0	0	0	0/-	0	0	0/-	0
	O	Pre	0	0/-	0/-	0/+	0/+	0/+	0	0/+	0/+	0	0	0	0/+	0/+
		Post	0	0	0	0/+	++	0/+	0	++	++	0/+	0	0	0/+	0/+
A8 Ports Access Package	C	Pre	0	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0/-	0	0	0/-	-/+	0	0	0/-	0/-	0/-	0/-	0/-	-/+
	O	Pre	0/+	0/+	0/+	0/+	++	0	0	0/+	0/+	0	0	0/-	++	0
		Post	++	0/+	0/+	0/+	++	0	0	0/+	0/+	0	0	0	++	0
A9 Coastal Access Package	C	Pre	0	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0/-	0	0	0/-	-/+	0	0	0/-	0/-	0/-	0/-	0/-	-/+
		Pre	++	++	++	0/+	++	0	0/+	0/+	0/+	0	0	0	0	0

Option	ISA objective																
	Construction (C) or Operation (O)	Pre & Post Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital	
A10 Urban Sustainable Transport Package Across 75 towns in the region	O	Post	++	++	++	++	++	0	0/+	0/+	0/+	0	0	0	0	0	
	C	Pre	0	0/-	0	0	0/-	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0	0	0	0/-	0	0	0	0	0/-	0	0	0/-	0	0
	O	Pre	++	0/+	0/+	0/+	++	0	0	0/+	0/+	0	0	0	0/+		
Post		++	++	++	++	++	0/+	0	+++	0/+	++	0/+	0	0/+	0/+	0/+	
A11 Rural/coastal – Inter urban sustainable package	C	Pre	0	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0/-	0	0	0/-	-/+	0	0	0/-	0/-	0/-	0/-	0/-	0/-	-/+
	O	Pre	++	++	++	0/+	++	0	0/+	0/+	0/+	0	0	0	0/+	0	
		Post	++	++	++	++	++	0/+	0/+	0/+	0/+	0	0	0	0/+	0/+	
A13 Widespread roll out of fibre broadband and 5G	C	Pre	0	0	0	0	0/-	0/-	0	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0	0	0	0/-	0	0	0	0	0	0	0	0	0/-	0
	O	Pre	0/+	++	0	0	0	0	0	0	0	0	0	0	0	0	0
		Post	0/+	++	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 7.4 Corridor B: Connecting our energised coastal communities - summary of assessment of SIP interventions

Field Code Changed

Option	Construction (C) or Operation (O)	ISA objective														
		Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
B2 Norwich Western Link	C	Pre	0/-	-	0	-	-	---	0/-	0/-	-	-	-	-	0/-	-
		Post	0	0/-	0	0/-	-	---	0	0/-	0/-	-	0/-	0/-	0/-	-
	O	Pre	++	-/+	0/+	0/+	-/+	0/-	0/-	-/+	0/+	-	0/-	0	0/+	0/-
		Post	++	0/+	0/+	0/+	-/+	0/-	0	-/+	0/+	0/-	0	0	0/+	0/-
B4 A47/A17 Pullover Junction, Kings Lynn	C	Pre	-	0/-	0/-	0/-	-	-	0/-	0/-	0/-	-	0/-	0/-	-	0/-
		Post	0/-	0/-	0	0	-	0/-	0	0	0	0/-	0	0/-	0/-	0/-
	O	Pre	-/+	-/+	0/-	0/+	0/-	0	0/-	0/-	0/-	0/-	0	0	0	0
		Post	0/+	0/+	0	++	0	0/+	0	0/+	0	0	0	0	0	0/+

Table 7.5 Corridor C: Connecting the heart of East Anglia - summary of assessment of SIP interventions

Field Code Changed

Option	ISA objective															
	Construction (C) or Operation (O)	Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
C1 GEML strategic package (Improvements in London, Essex, Suffolk and Norfolk)	C	Pre	0/-	0/-	0/-	0	-	-	0/-	0/-	0/-	-	0/-	0/-	-	0/-
		Post	0/-	0	0/-	0	-	0/-	0	0	0	0/-	0	0/-	0/-	0/-
	O	Pre	++	-/+	0	0/+	++	0	0	0/+	0/+	0	0/-	0/-	0/+	--
		Post	++	0/+	0	0/+	++	0	0	0/+	0/+	0	0	0/-	0/+	0/-
C2 A12 strategic package South: J19 - J25 (Chelmsford to Marks Tey)	C	Pre	0/-	--	0/-	--	-	--	0/-	0/-	--	--	0/-	--	--	--
		Post	0	0/-	0	0/-	--	0/-	0	0/-	0/-	0/-	0	0/-	0/-	0/-
	O	Pre	-/+	++	0/+	0/+	--	0/-	0/-	0/-	0	0/-	0	0	0/+	0/-
		Post	-/+	++	0/+	0/+	0/-	0/-	0	0/-	0	0	0	0	0/+	0
C3 Army and Navy Sustainable Transport Package	C	Pre	0/-	0/-	0	--	--	0/-	0/-	0/-	0/-	0/-	0	0	0/-	0
		Post	0/-	0/-	0	0/-	0/-	0	0	0	0/-	0/-	0	0/-	0/-	0
	O	Pre	++	++	0	++	++	0/-	0/-	0	-/+	0/-	0	0	0/+	0/+
		Post	++	++	0	++	++	0/-	0/-	0	-/+	0/-	0	0	0/+	0/+
C4 A12 strategic package North (A14 to A1152)	C	Pre	0/-	0/-	0/-	--	--	--	0/-	0/-	--	0/-	0/-	0/-	-/+	--
		Post	0/-	0/-	0	0/-	0/-	0/-	0/-	0	0/-	0/-	0	0/-	-/+	-/+
		Pre	++	0/+	0/+	0/+	-/+	0/-	0/-	0/+	0/+	0/-	0	0/-	0/+	0

Option	Construction (C) or Operation (O)	ISA objective														
		Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
C6 A140/A1120 MRN	O	Post	++	0/+	0/+	0/+	0/+	0/-	0/-	0/+	0/+	0	0	0	0/+	0
	C	Pre	0/-	0/-	0/-	0/-	-	0/-	0/-	0/-	0/-	-	0/-	0/-	-	0/-
		Post	0/-	0/-	0	0	0/-	0	0	0	0	0	0	0	0/-	0/-
	O	Pre	0/+	-/+	0	0/+	-/+	0	0/-	-/+	-/+	0/-	0/-	0	-	0
		Post	0/+	0	0	0/+	-/+	0/+	0	-/+	-/+	0	0	0	-	0

Table 7.6 Corridor D: Cross-county connectivity - summary of assessment of SIP interventions

Option	Construction (C) or Operation (O)	ISA objective														
		Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
D3 Haughley Rail Junction - double track (freight capacity)	C	Pre	0/-	0	0	0	-	0/-	0/-	0/-	0/-	0	0	0	0/-	0/-
		Post	0/-	0	0	0	0/-	0/-	0/-	0/-	0	0	0	0	0/-	0/-
	O	Pre	0/+	++	0/+	0/+	0/+	0	0	0/+	0/-	0/-	0	0	0/+	0

Field Code Changed

Option	Construction (C) or Operation (O)	ISA objective														
		Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
		Post	0/+	++	0/+	0/+	++	0	0	0/+	0/-	0	0	0	0/+	0
D10 A14/A12 Copdock interchange	C	Pre	0/-	0/-	0	0/-	-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0/-	0/-	0	0/-	-	0/-	0	0	0/-	0/-	0	0	0	0/-
	O	Pre	0/+	++	0	-/+	0/-	0/-	0	0/+	0	0	0	0	0	0
		Post	0/+	++	0	-/+	0	0/-	0	0/+	0	0	0	0	0	0

Table 7.7 Corridor E: South Essex Corridor - summary of assessment of priority SIP interventions

Field Code Changed

Option	Construction (C) or Operation (O)	ISA objective														
		Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
E1 A1306 improvements and bus priority	C	Pre	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0	0	0/-	0/-
		Post	0	0	0	0	0	0/-	0	0	0	0	0	0	0/-	0
	O	Pre	++	0/+	0/+	0/+	++	0/-	0/-	++	0/+	0	0	0	0/+	0
		Post	++	0/+	0/+	0/+	++	0	0	++	0/+	0	0	0	0/+	0
E7 Southend Congestion Relief Package	C	Pre	0/-	0/-	0	0/-	0/-	0/-	0	0	0	0/-	0/-	0	0/-	0/-
		Post	0	0	0	0	0/-	0	0	0	0	0	0	0	0/-	0
	O	Pre	++	++	0	0/+	-/+	0	0	0/+	0/+	0	0	0	0/+	0
		Post	++	++	0	0/+	0/+	0	0	0/+	0/+	0	0	0	0/+	0
E11 Southend Airport Access Package	C	Pre	0/-	0/-	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0	0	0	0/-	0	0	0	0	0	0	0	0	0
	O	Pre	++	0/+	0/+	0/+	++	0	0	0/+	0/+	0	0	0	0/+	0/+
		Post	++	0/+	0/+	0/+	++	0	0	0/+	0/+	0	0	0	0/+	++
E12 Harp House roundabout improvements	C	Pre	0/-	0/-	0	0/-	0/-	0	0	0/-	0/-	0	0	0	0/-	0
		Post	0	0	0	0	0/-	0	0	0	0	0	0	0	0	0
		Pre	0/+	0/+	0/+	0/+	0/+	0	0	-/+	0/-	0/-	0	0	++	0

Option	ISA objective															
	Construction (C) or Operation (O)	Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
E13 Improved access to Canvey	O	Post	0/+	0/+	0/+	0/+	0/+	0	0	-/+	0/-	0	0	0	++	0
	C	Pre	0/-	0/-	0	0/-	--	0/-	0/-	0/-	0/-	0/-	0	0/-	--	0/-
		Post	0	0	0	0	--	0/-	0	0	0	0	0	0	0/-	0
	O	Pre	0/+	++	++	0/+	-/+	0/-	0	-/+	0/-	0	0/-	0/-	0/+	0/+
Post		++	++	++	0/+	0/+	0	0	-/+	0/-	0	0	0	0/+	0/+	
E15 A13/A126 East Facing Slips	C	Pre	0/-	0/-	0	0/-	--	0	0/-	0/-	0/-	0/-	0	0/-	--	0/-
		Post	0	0	0	0	--	0	0	0	0	0	0	0	--	0
	O	Pre	0/+	++	0	0/+	-/+	0/-	0/-	-/+	-/+	0/-	0/-	0	-/+	0/-
		Post	0/+	++	0	0/+	0/+	0/-	0/-	-/+	-/+	0/-	0/-	0	-/+	0/-

Table 7.8 Corridor F: UK Innovation Corridor - summary of assessment of SIP interventions

Field Code Changed

Option	Construction (C) or Operation (O)	ISA objective														
		Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
F1 West Anglia mainline rail package	C	Pre	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0	0	0/-	0/-
		Post	0	0	0	0	0	0/-	0	0	0	0	0	0	0/-	0
	O	Pre	0/+	0/+	0/+	0/+	++	0	0	++	0/+	0	0	0	0/+	0
		Post	0/+	0/+	0/+	0/+	++	0	0	++	0/+	0	0	0	0/+	0
F2 A10 West Winch housing access road	C	Pre	0/-	0/-	0	0/-	--	--	0/-	0/-	0/-	0/-	0	0/-	--	0/-
		Post	0	0	0	0	0/-	0/-	0	0	0/-	0	0	0	--	0/-
	O	Pre	0	0/+	0/+	0/-	--	--	0/-	0/-	0/-	0	0/-	0/-	-/+	0/+
		Post	0/+	0/+	0/+	0	0/-	0/-	0	0/-	0/-	0	0	0	-/+	0/+
F3 Rapid Transit - Cambridge to Uttlesford	C	Pre	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0	0	0/-	0/-
		Post	0	0	0	0	0	0/-	0	0	0	0	0	0	0/-	0
	O	Pre	++	-/+	++	++	++	0	0	0/+	0/+	0	0	0	0/+	0
		Post	++	++	++	++	++	0	0	++	++	0	0	0	0/+	0
F5 Stansted Airport Sustainable Access Package	C	Pre	0/-	0/-	0	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-	0/-
		Post	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	O	Pre	0/+	0/+	0	0/+	0/+	0	0	0/+	0/+	0	0	0	0/+	0

Option	ISA objective															
	Construction (C) or Operation (O)	Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
O	Post	0/+	0/+	0	0/+	0/+	0	0	0	0/+	0/+	0	0	0	0/+	0

Table 7.9 Corridor G: East-West Growth Corridor - summary of assessment of SIP interventions

Option	ISA objective															
	Construction (C) or Operation (O)	Mitigation or Enhancement	Health	Population	Equality	Safety	Climate	Biodiversity	Water	Air	Noise	Landscape	Heritage	Soils/Geology	Material Assets	Natural Capital
G1 Dualling the A120 between Braintree and the A12	C	Pre	0/-	0/-	0	0/-	-	-	-	0/-	0/-	0/-	0/-	-	-	0/-
		Post	0/-	0/-	0	0	-	-	-	0	0	0/-	0/-	-	-	0/-
	O	Pre	-/+	-/+	0/+	0/+	-/+	0/-	0	-/+	0/+	0/-	0/-	0	0	0/-
		Post	0/+	-/+	0/+	0/+	-/+	0	0	-/+	0/+	0/-	0	0	0	0/-
G4 Clacton Town Centre Action Plan	C	Pre	0/-	0/-	0	0/-	0/-	0	0	0/-	0/-	0/-	0	0/-	0/-	0
		Post	0	0	0	0	0/-	0	0	0/-	0/-	0/-	0	0	0	0
	O	Pre	++	++	0/+	0/+	-/+	0	0	0	0	0/+	0/+	0	0	0
		Post	++	++	0/+	0/+	0/+	0	0	0	0	0/+	0/+	0	0	0

Field Code Changed

Corridor A: Regional Strategic Packages (see Table 7.3)

- Residual moderate beneficial effects against the **population** objective (Rural Active Travel Package, Coastal Access Package, Widespread roll out of fibre broadband and 5G) and **equalities** objective (Rural Active Travel Package, Coastal Access Package) associated with improved walking and cycling access to economic opportunities, facilities and services for residents of rural and coastal areas.
- Residual moderate beneficial effects against the **health** objective (Urban Active Travel Package, Inter-urban Active Travel Package, Rural Active Travel Package, Ports Access Package, Coastal Access Package, Urban Sustainable Transport Package) associated with improved opportunities for active travel supporting increased physical activity levels and reductions in air and noise pollutant emissions as a result of modal shift.
- Residual moderate beneficial effects against the **climate** objective for all interventions due to support for modal shift away from private vehicles towards passenger transport and active travel modes or facilitating web-based alternatives to travel (except the Implement SMART ticketing across the region and Rural Active Travel Package interventions which are assessed as minor beneficial).
- Residual positive and negative impacts are identified for **biodiversity and natural capital** for Inter-Urban Active Travel, Rural Active Travel, Ports Access and Coastal Access packages reflecting potential for infrastructure development as part of these and with potential for impacts and opportunities for enhancement.
- Residual moderate beneficial effects against the **air** and **noise** objectives for the Urban Active Travel Package intervention associated with support for modal shift towards active travel modes and reduced transport related air and noise pollutant emissions.
- Residual moderate beneficial effects against the **material assets** objective for the Implement SMART ticketing across the region interventions and Ports Access Package as these options make significant use of existing rail and highway infrastructure.

Corridor B: Connecting our Energised Coastal Communities (see Table 7.4)

Midlands – Kings Lynn – Norwich – Great Yarmouth

- The Norwich Western Link is assessed as having residual major adverse effect on the **biodiversity** objective associated with the proposed viaduct over the River Wensum SAC, due to potential loss and severance of habitats that will not be replaceable. Further assessment (EIA and HRA) will be required down the line to identify suitable measures to mitigate for the likely loss of bat habitats and woodland. Loss of woodland associated with the viaduct construction would also have an adverse effect on the **landscape** objective (moderate adverse in the absence of mitigation, and minor adverse with mitigation including screening during construction and landscape planting in place).
- The A47/17 Pullover Junction, Kings Lynn has been assessed as moderate adverse for **health** due to the potential for increase in noise and air emissions and increase in local traffic disruption. It has also been assessed as moderate adverse for **Climatic Factors** given embodied carbon in materials used for during construction, and induced demand once operational. During construction there is potential for loss of habitats and disturbance of wildlife and protected species, particularly where land take is required, resulting in the scheme assessed as moderate adverse for **biodiversity**. A HRA would be required to be undertaken at a project level for more information on impacts.

Corridor C: Connecting the heart of East Anglia (see Table 7.5)

London – Chelmsford – Colchester – Ipswich – Norwich and Suffolk Coast

- Residual moderate beneficial effects against the population objective once operational (C2 strategic package South: J19 - J25 (Chelmsford to Marks Tey) and Army and Navy Sustainable Transport Package) as a result of improved connectivity between Suffolk/Norfolk and London and reduced congestion on the local highway network improving access (journey times) respectively.

- However, all schemes within corridor C have the potential to result in either minor negative or moderate negative effects during construction against ISA objectives, including climate (through embodied carbon in construction materials as well as from construction activities), and other receptors such as biodiversity, landscape, noise and soil through construction impacts. There is potential to mitigate this through construction best practice, consideration of extreme weather in scheme design and also project management.
- Potential for minor negative effects against health and community safety for all schemes in corridor C during construction due to increase in noise and air pollutants, increase safety risk through traffic disturbance. Residual moderate beneficial effects against the health objective (GEML strategic package (Improvements in London, Essex, Suffolk and Norfolk), Army and Navy Sustainable Transport Package and A12 strategic package North (A14 to A1152)) due to modal shift towards passenger transport and reduced congestion on the highway network leading to reductions in air and noise pollutant emissions, and physical activity levels either indirectly through encouraging modal shift towards last-mile active travel or directly through new provision incorporated in highway schemes.
- A140/A1120 MRN would have residual moderate adverse effects against the Climate and Material assets objectives as this intervention requires significant new infrastructure construction (new bypass).

Corridor D: Cross-county connectivity (see Table 7.6)

Norfolk and Suffolk to Cambridge – Midlands – South-West

- The Haughley Rail Junction - double track (freight capacity) intervention would have operational residual moderate beneficial effect against the population and climate objectives associated with improved connectivity and access to economic opportunities, facilities and services for settlements on the Felixstowe to Nuneaton corridor and reduced transport related air, noise and carbon emissions resulting from support for modal shift towards passenger transport modes and from road freight to rail freight. However the scheme has the potential to require land take when increasing the track capacity to double track, which has the potential for negative impacts on receptors during construction stage, including climate, landscape, biodiversity, noise and air. As the scheme involves increasing existing track capacity it is likely the land is not protected or designated. It is also assumed the surrounding area will not be vulnerable to noise or air pollutants and therefore assessed as neutral/minor negative.

Corridor E: South Essex Corridor (see Table 7.7)

Stansted – Braintree – Colchester – Harwich and Clacton

- Residual moderate positive effects against the **health** objective (A1306 improvements and bus priority, Improved access to Canvey, Southend Congestion Relief Package and Southend Airport Access Package) associated with improved access to health facilities (specifically Southend Hospital) and reduced congestion on the highway network which would help reduce transport related air and noise pollutant emissions. There would also be opportunities to incorporate active travel provision within the A1306 improvements and bus priority and Improved access to Canvey interventions, with which would support increased physical activity levels.
- The A1306 improvements and bus priority intervention and Southend Airport Access Package would have residual moderate positive effects against the **climate** objective through support for modal shift towards low or zero carbon transport modes (passenger transport and active travel) and because the proposed improvements provide an opportunity to upgrade the existing infrastructure to be resilient against future worst case climate projections.
- The Harp House roundabout improvements would have residual moderate beneficial effects against the **material assets** objective as this intervention predominantly makes use of existing infrastructure.

Corridor F: UK Innovation Corridor (see Table 7.8)

Kings Lynn – Cambridge – Harlow - London

- The Rapid Transit - Cambridge to Uttlesford CAM intervention would have residual moderate beneficial effects against the population, health, equalities, safety, climate, air and noise objectives as it would support modal shift towards low or zero carbon and safe forms of passenger transport, reducing air and noise pollutant emissions and encouraging last mile active travel journeys which would increase physical activity levels. There would be the opportunity to ensure that the new provision is fully accessible and designed to maximise perceived safety.
- The West Anglia main line package would also have residual moderate beneficial effects against the air and climate objectives as a result of support for modal shift away from private vehicles.

Corridor G: East West Growth Corridor (see Table 7.9)

South Essex – London – Thurrock – Basildon - Southend

- Residual moderate positive effects against the population and health objectives for Clacton Town Centre Action Plan associated with improvements to the public realm, active travel opportunities and parking availability, which would support the tourism industry and improve access to services and facilities for local residents.
- Residual moderate negative effects against the biodiversity, water, soils/geology and material assets objectives for the Dualling the A120 between Braintree and Marks Tey intervention associated with potential for severance of ecological connectivity, capital carbon costs and loss of agricultural land and partial sterilisation of a minerals resource (Bradwell Quarry).

Alternative Strategy Approaches and the SIP Schemes

The proposed SIP schemes including 0-5 year and 5+ schemes have been categorised in terms of how they would contribute to the five alternative approaches and the do minimum or 'without strategy' alternative identified in the Transport Strategy ISA. These are summarised in Table 7.10 below. This shows

Committed schemes are expected to be taken forward in the without strategy alternative

Table 7.10 Alternative Strategy Approaches and the SIP schemes

Area		Alternative Strategy Approaches					
Ref	Description	Do minimum	Approach 1 Only Alternative Fuels schemes	Approach 2 Modal Shift only	Approach 3 Improved connectivity only schemes	Approach 4 Alt Fuel + Modal shift + Improved connectivity multiple benefit schemes	Approach 5 Approach 4 plus additional region wide Demand Management
Committed Schemes		all					
A	Regional Strategic schemes	0	3	9	7	20	22
Strategic corridor schemes							
B	Midlands - King's Lynne - Norwich - Gt Yarmouth & Lowestoft	0	0	0	4	4	4
C	London- Chelmsford - Colcehster - Ipswich - Norwich & Suffolk Coast	0	0	3	5	8	8

D	Norfolk and Suffolk to Cambridge - Midlands - South West	0	2	1	11	13	13
E	Standsted - Braintree - Colchester - Harwich and Clacton	0	0	5	15	20	20
F	Kings Lynn - Cambridge - Harlow - London	0	0	3	5	8	8
G	South Essex - London - Thurrock - Basildon - southend	0	0	1	6	7	7
Total No. of Schemes							
Whole regional - Proposed schemes regional wide and corridor schemes		Total No proposed schemes	5	22	53	80	82

Mitigation recommendations

Table 7.11 identifies ISA mitigation measures identified against each of the ISA objectives for the priority interventions identified within the SIP for delivery over the next five years where these have not already been identified as being general Transport Strategy ISA mitigation measure within Appendix G: Table 1.

Table 7.11 SIP mitigation recommendations

ISA objective	ISA mitigation recommendations
Population	<ul style="list-style-type: none"> Public consultation should be undertaken where the construction of new highway schemes has potential to disrupt current access, in order to inform measures to minimise disruption in access for users. Dualling the A120 between Braintree and the A12 – scheme design should avoid new severance of PRoW and include new active travel provision linking smaller settlements of Cressing and Silver Cross with Braintree and Chelmsford
Equalities	<ul style="list-style-type: none"> Urban Active Travel Package should include safe routes for schools Ports Access Package should consider how intervention can benefit coastal areas more widely, as well as the primary target of ports
Health	<ul style="list-style-type: none"> All interventions involving new or reconfigured highway infrastructure, and also the Ports Access Package, should aim to include segregated provision for active travel as well as motorised vehicle travel.
Safety	<ul style="list-style-type: none"> Urban Active Travel Package Traffic free routes, safe routes to school and cycle routes should consider safety in design Shared use footway/cycleways should be segregated (all relevant interventions) New or upgraded public transport interchanges and other infrastructure should include measures to improve passenger safety and perceptions of safety through good lighting, staffing levels and provision of designated waiting areas.
Biodiversity	<ul style="list-style-type: none"> Seek to incorporate wildlife connectivity improvements alongside creation of new footways/cycleways (all relevant interventions) Army and Navy Sustainable Transport Package – biodiversity net gain to be delivered through scheme design using on site and off site compensation as necessary. Mitigation as identified through HRA process for potential adverse impacts River Wensum SAC as a result of the Norwich Western Link intervention. A1306 improvements and bus priority – scheme design to avoid land take from adjacent priority habitats and Ancient Woodland A10 West Winch housing access road – construction should be completed outside the lapwing breeding season Apply maintenance regimes such as late verge cutting to enhance biodiversity

Field Code Changed

ISA objective	ISA mitigation recommendations
Water	<ul style="list-style-type: none"> Use of standard good practice mitigation to minimise risk of surface and groundwater pollution Use of SUDS and other approaches such as permeable materials, swales and link to biodiversity and landscape mitigation Design of new infrastructure to minimise land take from flood plan as far as practicable - flood risk assessment will be required.
Air	<ul style="list-style-type: none"> Rail, rapid transit and other forms of passenger transport interventions (including ferry transport) should be fuelled by low or zero emission energy sources
Noise/vibration	<ul style="list-style-type: none"> Undertaken assessment of noise impact of ferry transport proposed under the Coastal Access Package
Climate	<ul style="list-style-type: none"> Use of renewable energy sources to power construction activities Use of low carbon materials in design of new infrastructure New infrastructure design to be resilient to current worst case climate projections for design life of infrastructure Rail, rapid transit and other forms of passenger transport interventions (including ferry transport) should be fuelled by sustainable energy sources.
Landscape	<ul style="list-style-type: none"> Use of appropriate screening to avoid or reduce visual impacts during construction and operation Identify potential for advance planting for mitigating impacts and link to biodiversity enhancement where possible Norwich Western Link Road intervention - the viaduct design should include tree planting and elements similar to previous setting (material choice etc) Army and Navy Sustainable Transport Package – replanting required along Essex Yeomanry Way
Heritage	<ul style="list-style-type: none"> Clacton Town Centre Action Plan – consider how delivery of intervention can help improve setting of built heritage assets within the town centre Identify area specific risks in discussion the county archaeologist and Heritage England
Soil/geology	<ul style="list-style-type: none"> No additional measures identified over and above those detailed in Error! Reference source not found.
Material assets	<ul style="list-style-type: none"> Urban Active Travel Package should reuse existing transport infrastructure as far as possible Consideration of Waste Hierarchy in design of all interventions
Natural capital	<ul style="list-style-type: none"> No additional measures identified over and above those detailed in Error! Reference source not found.

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7.3 Cumulative effects

Intra-plan cumulative effects

Table 7.12 sets out the intra-plan cumulative effects identified for the schemes included within the SIP against each ISA objective. Only priority interventions (those schemes proposed within the next 5 years) have been included in the cumulative assessment. In summary, key likely residual intra-plan cumulative effects are:

- Positive cumulative effects against the **population** and **health** objectives resulting from improved access to economic opportunities and health facilities, as well as positive effects on safety and air quality.

- Neutral/negative cumulative effects on the **water** objective due to potential negative effects on a WFD waterbody from and SIP intervention and another planned development which may have overlapping construction periods and are located close proximity.
- Mixed positive/negative effects on the **air**, **noise** and **climate** objectives

Table 7.12 SIP intra-plan cumulative effects

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ISA objective	Intra-plan cumulative effects
Population	<p>The overall effect on the population of the TE region is likely to be significantly positive. This is due to improvements to access jobs, schools and other facilities. This is particularly evident in Southend, Canvey and Clacton, which all benefit from multiple interventions over the next 5 years including:</p> <ul style="list-style-type: none"> ▪ Southend Airport Access Package ▪ Harp House Roundabout Improvement ▪ Clacton Town Centre Action Plan ▪ Improved Access to Canvey ▪ Urban Active Travel Package ▪ Inter-Urban Active Travel Package <p>Potential for localised disturbance and disruption of access on the road network, due to overlapping construction periods for Harp House Roundabout and Southend Airport Access Package, depending on scheme designs.</p> <p>There is also potential for benefits to population due to supporting access for tourism and recreation, with two large international airports within the SIP improving airport access:</p> <ol style="list-style-type: none"> 1. Southend Airport Access Package 2. Stansted Airport Sustainable Access Package
Equalities	<p>Some interventions in the SIP are likely to significantly improve access to both rural and coastal areas. Access to rural and coastal areas is likely be improved by improving road networks over the next 5 years, including:</p> <ul style="list-style-type: none"> ▪ Improved access to Canvey ▪ A12 strategic package North (A14 to A1152) <p>Access to rural and coastal areas may also be improved through improved public transport services and active travel provisions, such as the following interventions:</p> <ul style="list-style-type: none"> ▪ Rapid Transit - Cambridge to Uttlesford CAM ▪ A1306 improvements and bus priority ▪ Haughley Rail Junction – double track (freight capacity) <p>In addition, the Coastal Access Package, Ports Access Package and Rural Active Travel package are all regional interventions likely to result in overall access improvements for rural and coastal areas.</p>
Health	<p>Likely to be overall net benefit to public health within the region due to improvements in air quality as a result of multiple interventions that promote modal shift towards lower emission forms of transport such as public passenger transport and active travel. In addition to supporting a modal shift, multiple interventions are likely to reduce congestion on the region’s road network, likely to benefit the region’s air quality.</p> <p>Also potential for indirect benefits on access to Southend Hospital due to both Harp House Roundabout Improvements and Southend Airport Access package, as both aim to reduce congestion and improve access to facilities in close proximity to the hospital. This will be further strengthened by Southend Congestion Relief package which is included in the SIP at a later date.</p>
Safety	<p>Overall road user safety is likely to improve throughout the region, as the following interventions aim to introduce bypasses, reduce congestion or improve junctions:</p> <ul style="list-style-type: none"> ▪ A47/A17 Pullover Junction, Kings Lynn

ISA objective	Intra-plan cumulative effects
	<ul style="list-style-type: none"> ▪ Norwich Western Link ▪ Army and Navy Sustainable Transport Package ▪ A140/A1120 MRN ▪ Harp House roundabout improvements ▪ Improved access to Carvey ▪ A10 West Winch housing access road <p>Road user safety but may be particularly improved for those in Chelmsford, with a number of interventions located within Corridor C aiming to reduce congestion. Chelmsford may further benefit from the urban active travel package, and the inter-urban active travel package, improving active travel safety measures.</p> <p>Road user safety may also be improved indirectly due to interventions encouraging a modal shift from private vehicle use to public transport, resulting in fewer vehicles and potentially fewer road incidents/accidents.</p> <p>Safety of public transport users is also likely to improve regionally as a result of interventions which increase capacity, increase journey frequency and the introduction of transport hubs. High journey frequency for public transport will increase feelings of safety and security by reducing duration of waiting times in public spaces. Increasing capacity may reduce crowding on public transport, and transport hubs have potential to consider safety design elements such as lighting and staffing.</p>
Water	<p>The River Roach is in close proximity to both Harp House Roundabout Improvements and Southend Airport Access package. Both schemes included are included in the SIP 0-5 year timescale, and therefore there is potential for negative cumulative effects on the local water course (approximately 400m from Prittle Brook, which feeds into the River Roach) as a result of overlapping construction period.</p>
Natural capital Biodiversity	<p>Potential for cumulative negative effects arising from two schemes south of Kings Lynn which require significant new infrastructure construction and likely a degree of land take from greenfield land. The schemes are:</p> <ol style="list-style-type: none"> 1. A10 West Winch Housing Access Road 2. A47/A17 Pullover Junction, Kings Lynn <p>Cumulatively, these schemes may result in a loss of habitats and disturbance to wildlife (including protected species).</p>
Air quality	<p>Regional scale schemes prioritising active travel and sustainable travel likely to result in region wide benefits to air quality. A specific site which may directly benefit as a result of a combination of two schemes included in the SIP is an AQMA site located less than 1km South from Southend Airport Access Package and Harp House Roundabout Improvement. As the schemes aim to reduce congestion and improve sustainable access there may be a direct benefit on the AQMA site (Ref: 1625).</p> <p>Overall, the cumulative effects on nitrogen deposition are likely to be mixed positive/negative. Highway schemes are likely to alter road traffic patterns locally, potentially worsening effects in some locations. However, at a regional level effects are likely to be beneficial with overall net benefits to air quality as many of the SIP interventions support modal shift from conventionally fuelled private vehicles towards active travel, public transport and EVs.</p>
Climate	<p>Overall, there are likely for mixed positive/negative cumulative effects on climate ISA objectives. Regional scale schemes prioritising active travel and sustainable travel (including use of EVs and passenger transport) would help reduce transport related carbon emissions across the region. However, there a number of new highway schemes are likely to have significant carbon costs associated with construction including:</p> <ul style="list-style-type: none"> ▪ A10 West Winch Housing Access Road ▪ A47/A17 Pullover Junction, Kings Lynn ▪ Duallying the A120 between Braintree and A12

ISA objective	Intra-plan cumulative effects
	<p>In addition to the carbon associated with construction, these new schemes may result in induced demand, although modal shift towards EVs would help reduce the resultant rise in carbon emissions.</p>
Noise/vibration	<p>There would be mixed positive/negative cumulative effects on the noise and vibration ISA objective. Cumulative negative effects on noise and vibration would result from localised disturbance due to overlapping construction periods for example, Harp House Roundabout Improvements and Southend Airport Access Package. Following construction, reduced congestion and improved access may result in long term positive cumulative effects, however this may be partly offset due to induced demand.</p> <p>It is likely that due to numerous interventions supporting a modal shift from private vehicle use to public transport and active travel, there may be a decrease in noise and vibration impacts. This may be particularly noticeable in Southend and Clacton due to a combination of the following interventions:</p> <ol style="list-style-type: none"> 1. Southend Congestion relief package, Urban Active travel package 2. Clacton Town Center Action Plan, Urban Active travel package
Heritage	<p>No cumulative effects on specific heritage receptors have been identified, although it is acknowledged that many interventions require new infrastructure construction, and therefore risk disturbance to or truncation of archaeological remains.</p>
Soils/geology	<p>As mentioned above in cumulative effects affecting air quality, there is potential for mixed positive/negative cumulative effects on nitrogen emissions. Deposition of nitrogen oxides can potentially alter soil chemistry and fertility, and therefore interventions which may induce demand and increase deposition may potentially experience negative impacts. While there is potential for localised negative effects, regionally there may be overall net benefits due to improvements to air quality (see above).</p>
Material assets	<p>A number of interventions within the SIP aim to improve or re-use existing infrastructure, resulting on cumulative positive effects on the material assets ISA objectives. The interventions include Army and Navy Sustainable Transport Package, Haughley Rail Junction - double track (freight capacity) and Dualling the A120 between Braintree and Marks Tey.</p> <p>Other interventions may cumulatively result in beneficial impacts on another material assets ISA objective, relating to supporting existing and planned land use. The A10 West Winch housing access road intervention is particularly notable as it is the supporting infrastructure required for a large, planned housing development.</p> <p>The following three interventions are likely to require land take from agricultural land, with cumulative negative impacts on the material assets ISA objectives. The first two interventions below are located within close proximity to one another and so have greatest potential for impacts on local agricultural holdings.</p> <ul style="list-style-type: none"> ▪ A10 West Winch Housing Access Road ▪ A47/A17 Pullover Junction, Kings Lynn ▪ Norwich Western Link Road
Landscape	<p>No cumulative effects on specific landscape receptors have been identified.</p>

Inter-plan cumulative effects

Inter-plan cumulative impacts have been assessed using interventions in the SIP and other plans and schemes. Table 7.13 shows planned development within the study area, those that are greyed out were not considered to result in cumulative effects related to interactions between schemes¹.

Table 7.13 List of other plans and schemes within the Inter-plan cumulative assessment

Scheme	Nationally Significant Infrastructure Projects (NSIPs)	SIP Committed Projects	Scoped in/out Comment
The Sizewell C project	X		Potential interaction identified
North Falls Offshore Windfarm	X		No interaction
Five Estuaries Offshore Windfarm	X		No interaction
Oikod Marine and South Side Development	X		Application pending
East Anglia TWO offshore windfarm	X		No interaction
East Anglia ONE North Offshore Windfarm	X		No interaction
A47 – A11 Thickthorn Junction	X		Potential interaction identified
A47 North Tuddenham to Easton	X		Potential interaction identified
A47 Blofield to North Burlingham	X		Potential interaction identified
Bradwell B new nuclear power station	X		Application pending
Sheringham and Dudgeon Extension Projects	X		No interaction
Norfolk Vanguard	X		No interaction
Sunnica Energy Farm	X		Potential interaction identified
Bramford to Twinstead	X		No interaction

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¹ All plans or schemes involving new infrastructure construction, or which may lead to altered traffic patterns, have potential to result in loss of habitat, land use, soils and impacts on landscape and cultural heritage and would also generate carbon emissions. This assessment recognises the need to minimise such effects and identifies mitigation for SIP priority interventions, but for reasons of proportionality the scope of the cumulative effects assessment has been limited to other schemes which are located within close proximity to SIP to priority interventions where there is potential for combined interactions on receptors and there would be opportunities to influence environmental outcomes or take account of combined impacts by working with scheme promoters at prior to and during project delivery stage.

Scheme	Nationally Significant Infrastructure Projects (NSIPs)	SIP Committed Projects	Scoped in/out Comment
Nautilus Interconnector	X		Application pending
Progress Power Station	X		Scoped out – application from 2015
Great Yarmouth Third River Crossing	X	X	Potential interaction identified
Norfolk Boreas	X		No interaction
Longfield Solar Farm	X		Application pending
East Anglia THREE Offshore Wind Farm	X		No interaction
Lake Lothing Third Crossing	X	X	Potential interaction identified
East Anglia ONE offshore windfarm	X		No interaction
TIGRE Project 1 (TP1)	X		No interaction
Palm Paper 3 CCGT power station kings lynn	X		Scoped out – application from 2016
Kings Lynn Connection B project	X		Scoped out – application from 2013
Thurrock Flexible Generation Plan	X		No interaction identified.
Rampion 2 Offshore Windfarm	X		No interaction
M25 junction 28 improvements	X		Potential interaction identified
Navitus Bay Wind Park	X		No interaction
Lower Thames Crossing	X	X	Potential interaction identified
Rampion Offshore Wind Farm	X		No interaction
Thanet Extension Offshore Wind Farm	X		No interaction
Beaulieu Station		X	Potential interaction identified
A120 NW slips		X	No interaction
Fairglen Junction Short Term improvements		X	Potential interaction identified

Scheme	Nationally Significant Infrastructure Projects (NSIPs)	SIP Committed Projects	Scoped in/out Comment
Stanford-Le-Hope station		X	Potential interaction identified
A13 widening (including 13/A1014 junction)		X	Potential interaction identified
North Essex Rapid Transit		X	Potential interaction identified
M11 junction improvements at J7, J8 including new J7a		X	No interaction
Harlow and Gilston Sustainable Transport Corridors		X	Potential interaction identified

Table 7.14 sets out the inter-plan cumulative effects identified for the SIP against each ISA objective. In summary, they key residual inter-plan impacts are likely to be beneficial in nature. Most interventions included in the SIP within the next 5 years along with other local plans and planned development are likely to result in beneficial cumulative effects against the ISA objectives.

Due to the in depth consultee response relating to cumulative effects of the SIP committed project CP4, Lower Thames Crossing, this has been assessed separately below in Table 7.15.

Table 7.14 SIP inter-plan cumulative effects

ISA objective	Inter-plan cumulative effects
Population	<p>A number of committed projects have potential to result in cumulative effects with schemes included in the SIP.</p> <p>The following SIP committed projects have potential to result in cumulative positive effects on access to ports when in combination with the Ports Access Package (depending on location of package):</p> <ul style="list-style-type: none"> ▪ Lower Thames Crossing ▪ Gullwing Crossing ▪ Great Yarmouth Third Crossing ▪ A13 Widening <p>This improvement on access to ports will positive effects to ISA objectives relating to supporting access to employment and facilities and may improve journey times and quality of travel through providing new routes and easing congestion.</p> <p>The SIP committed scheme 'North Essex Rapid Transit' may also result in beneficial cumulative effects on access to facilities and services when combined with the effects of the following SIP schemes:</p> <ul style="list-style-type: none"> ▪ Ports Access Package (includes North Tendring Access Package) ▪ A133 Frating to Clacton Enhancement (may utilise enhanced infrastructure) <p>In particular, this is likely to benefit those in rural North Essex, and settlements surrounding Colchester.</p> <p>Sizewell C is a current NSIP project, proposing a new nuclear power station on the Suffolk Coast. Scheme C4 in the SIP (A12 Strategic Package North) aims to provide mitigation for the significant energy project potentially through access measures. There is therefore potential to support local economic development and access to the site.</p> <p>There is potential for interaction between SIP scheme Norwich Western Link (B2), and three NSIP projects; A47 North Tuddenham to Easton, A47 – A11 Thickthorn Junction and</p>

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ISA objective	Inter-plan cumulative effects
	<p>A47 Blofield to North Burlingham. All schemes are connected through traffic use therefore there is potential for operational impacts related to traffic flow – as these schemes are aimed to reduce congestion the main concern is likely to be induced traffic.</p>
Equalities	<p>There is potential for positive cumulative effects on the equalities objective due to improvements to access for coastal and rural populations. There are a number of schemes likely to benefit rural and coastal populations access (see section Error! Reference source not found.), however the following committed schemes are likely to act cumulatively and further improve this access:</p> <ul style="list-style-type: none"> ▪ North Essex Rapid Transit – connecting rural areas surrounding Colchester, Chelmsford and Braintree to urban areas and key transport links <p>In addition to positive cumulative effects on rural and coastal populations, there is also potential for positive cumulative effects on affordability of transport. Within the SIP baseline, there are three interventions which provide/support public transport in Essex: Stanford-Le-Hope Station, Beaulieu Station and North Essex Rapid Transit. It is likely that these modes of transport will be affordable and with certain design elements, have the potential to be accessible to young, old and mobility impaired.</p>
Health	<p>The following SIP committed schemes incorporate active travel provisions, and when combined with the Urban Active Travel Package, may result in positive cumulative effects:</p> <ul style="list-style-type: none"> ▪ Fairglen Junction Improvements ▪ Harlow and Gilston Sustainable Transport Corridors <p>A recent application (Cambridge South infrastructure enhancement: Transport and Works Order) for a new railway station is listed on the Department for Transport’s Transport and Works Order and is also included as an outside the region scheme. The proposed new station aims to provide a service to a large biomedical facility in South Cambridge, listed as a priority growth area in the Cambridge Local Plan 2018. There is potential for interaction with the Rapid Transit scheme in the SIP, resulting in further improvements to access to Cambridge, as well as the large health facility.</p> <p>The new station application also includes significant opportunities to facilitate active travel to and from the station, with over 1000 cycle spaces proposed, and designated walkways. When combined with the active travel packages included in the SIP, there is opportunity for significant beneficial impacts to health through active travel measures.</p>
Safety	<p>All local transport plans refer to prioritising improving safety and reducing the number of KSI. Road safety across the region is likely to benefit cumulatively from both local transport plans, and a number of schemes listed in the SIP which aim to reduce congestion and improve road user safety and experience.</p> <p>Potential for increased traffic on routes towards coastal areas, including A13 due to the LTC, as well as local roads by users avoiding larger roads and motorways. When assessing cumulative effects of the LTC, it is likely the coastal access package (A9), Ports access package (A8) and demand an ambitious programme of traffic demand management measures across the region (A7), will contribute to alleviating the increased road user traffic and safety risk.</p> <p>The Norwich Western Link (SIP scheme 2) has the potential to affect and result in negative cumulative effects when interacting with three NSIP projects. This is due to the projects being connected through traffic flow – the schemes are aimed to reduce congestion but there may be potential for increased or induced traffic, noise, air pollution and related safety risks if these resulted in higher volumes of traffic.</p> <ul style="list-style-type: none"> ▪ A47-A11 Thickthorn Junction ▪ A47 Blofield to North Burlingham ▪ A47 North Tuddenham to Easton
Water	<p>There is potential for negative cumulative effects on the water ISA objective, resulting from the combination of the Norwich Western Link Road intervention and the A47 North Tuddenham to Easton scheme which could both potentially have adverse effects on the River Tud depending on the final design and construction methodologies employed.</p>

ISA objective	Inter-plan cumulative effects
Natural capital Biodiversity	There is potential for negative cumulative effects on natural capital, biodiversity and landscape, resulting from the combination of the A47 North Tuddenham to Easton and the Norwich Western Link Road.
Landscape	<p>The two schemes are located in close proximity and intersect in places. As the schemes include dualling of an existing road and construction of a new road there is potential for land take, with cumulative negative effects on natural capital, habitats and wildlife (including protected species) and the existing rural landscape. No cumulative effects on the River Wensum SAC are anticipated based on the publicly available information for the A47 Tuddenham to Easton scheme.</p> <p>All schemes involving land take and habitat loss or affecting habitat condition can have a combined effects on habitat types and species that are supported and represent a loss of natural capital. Biodiversity net gain will not address irreplaceable habitat losses but will be required for other habitats. This is likely to include the need for offset provision for many of the schemes.</p>
Climate	Each local transport plan within the study area prioritises decarbonisation and sustainable transport, and therefore when combined with a number of schemes included in the SIP, there is likely to be an overall net benefit to local emissions in the long term. However, considering the committed schemes and the priority schemes involving construction and the transition time to alternative fuels, the cumulative effect is likely to be adverse in the shorter term and beneficial over the lifetime of the Transport Strategy and SIP.
Air Noise/vibration	<p>There is potential for cumulative effects resulting from the Norwich Western Link Road intervention included in the SIP and the A47 North Tuddenham to Easton scheme which are located in very close proximity. There is therefore potential for overlapping construction periods resulting in short term negative effects on both air quality and noise and vibration. Long term, the collective result will be overall decrease in noise and vibration, and improved air quality due to decreased congestion and transition to alternative fuels.</p> <p>Sunnica Energy Farm West site is proposed in close proximity to Junction 37 on the A14. Scheme D8 in the SIP (A14 Package) includes this junction and therefore there is potential for interaction. There is potential for overlapping construction periods, resulting in congestion on nearby roads as a result of both increased traffic, and potential road closures while construction is underway on A14. This will likely result in short term adverse effects on noise and vibration.</p> <p>There is potential for interaction between the Nationally Significant Infrastructure Project (NSIP) M25 Junction 28, and scheme C2 in the SIP (A12 Strategic Package South (M25 – A14) *expanded*). Junction 28 on the M25 connects the M25 to the A12 near Brentwood. Both schemes will likely address congestion and improvements to highways, which will likely reduce long term adverse effects on noise and air quality as a result of congestion. However short term, there is potential for increased adverse effects as a result of overlapping construction periods.</p>
Heritage	No cumulative effects on specific heritage receptors have been identified at this stage, although it is acknowledged that many interventions require new infrastructure construction, and therefore risk disturbance to or truncation of archaeological remains.
Soils/geology	Regional level impacts through combined effects on nitrogen deposition from SIP interventions involving new or amended highway infrastructure in conjunction with other highway schemes within the region. However, there is also potential for combined positive effects through SIP priority interventions and committed schemes that support both alternative fuel transition and modal shift schemes.
Material assets	<p>Could be a cumulative adverse effect on agricultural land arising from the three SIP interventions identified in Table 7.14 and the A47 Tuddenham to Easton. As described against the noise/vibration objective, the Norwich Western Link Road SIP intervention and A47 Tuddenham to Easton scheme are located in close proximity and therefore have potential for combined impacts on the economic viability of local agricultural holdings.</p> <p>As identified in Noise and Vibration, there is potential for interaction between scheme D8 and the Sunnica Energy Farm project identified in Error! Reference source not found.. As a result the improvements proposed in scheme D8 may provide supporting infrastructure for a nationally significant infrastructure project (NSIP) and beneficial effects on planned land use.</p>

ISA objective	Inter-plan cumulative effects
	As identified in Noise and Vibration, there is potential for interaction between scheme C2 and the M25 Junction 28 project identified in Table 7.14 . As a result of the improvements proposed in scheme C2, it is likely it will support/compliment the NSIP project, providing beneficial effects on planned land use.

Table 7.15 shows the cumulative effects of the committed scheme CP4, Lower Thames Crossing, with other SIP schemes. It should be noted that this assessment is not assessing cumulative effects between committed schemes, and instead seeks to identify potential cumulative effects between this scheme and those included in the SIP (0-5 Years). The following schemes have potential for cumulative effects with the Lower Thames Crossing, however as the delivery time is 5+ years, they have not been assessed here. It is suggested they are assessed for cumulative effects when there is more information on the schemes, as appropriate.

- E2. M25 Junction 30 Capacity enhancement
- E4. A127 Strategic Package
- E5: A127 Outer Relief Road - Southend and Essex
- E6: A127 Northern Relief Road - Southend and Rochford
- E8: South Essex Bus Metro – rapid transit
- G6. Tilbury Link Road

Table 7.15 Cumulative effects of the committed scheme CP4 (Lower Thames Crossing) and SIP schemes.

ISA Objective	Effects
Population	Schemes A7, (Develop and ambitious programme of traffic demand management measures across the region and scheme A13 (Widespread roll out of fibre broadband and 5)), supporting home working could potentially contribute to reducing induced traffic due to the Lower Thames Crossing.
Equalities	
Health	
Safety	
	Construction of the Lower Thames Crossing and schemes in close proximity (such as E1 (A1306 improvements and bus priority) and E15 (A13/A126 East facing slips could have combined construction impacts if their construction work phases overlap with potential impacts from construction traffic and diversions. Construction management and traffic plans will need to take account of potential interactions
	Due to the location of the Lower Thames Crossing, it is likely there will be mixed positive and negative effects when considered with schemes A8 and A9 (Ports Access Package and Coastal Access Package respectively). Overall these schemes are expected to support improved safety and access.
Water	Construction of the Lower Thames Crossing and schemes in close proximity (such as E1 (A1306 improvements and bus priority) and E15 (A13/A126 East facing slips could have combined construction impacts if their construction work phases overlap with potential for some common receptors to be affected by disturbance and pollution risk.
Natural Capital	
Biodiversity	
Landscape	
	There is potential for land take for the schemes potentially affecting similar land uses or habitat types and species for LTC and other schemes in the region. This may result in overall cumulative effects on natural capital and biodiversity from loss, fragmentation or condition impacts.
Soils/Geology	Construction of schemes may also result in negative cumulative effects on soils/geology and water in the region, however this is likely to be mitigated through following construction best practice
Climate	As noted above (in population), schemes A7, A8, A9 and A13 may all contribute to alleviating congestion and road use, alleviating any induced demand and emissions predicted to increase due to the Lower Thames Crossing. Therefore, all schemes are likely to result in neutral/positive cumulative effects relating to Climate, Air, Noise and Vibration.
Air	
Noise/Vibration	
Heritage	

Material Assets	Construction of the Lower Thames Crossing along with construction of other nearby schemes including E1 (A1306 improvements and bus priority) and E15 (A13/A126 East facing slips) could result in negative cumulative effects on material assets and heritage ISA objectives.
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Cumulative effects mitigation recommendations

Strategy level mitigation for potential cumulative adverse effects on the climate and landscape, biodiversity, natural capital and heritage objectives as set out in Appendix G: Table 1 and Table 7.11 would provide mitigation for the priority SIP interventions. In addition, the following SIP specific measures have been identified:

- Work with Local Authorities and Local Transport Authorities to undertake a high-level assessment of capital carbon emissions associated with (i) priority SIP interventions planned for delivery within the next five years and (ii) other interventions planned for delivery within the 5–10-year period (see measure SSA-C-1 of Sustainability Action Plan provided in Table 8.1 **Error! Reference source not found.**). This information could then be used in conjunction with the future Natural Capital assessment, and Biodiversity and Environmental Net Gain reporting for the Transport Strategy and coordinated approach on landscape proposed in section **Error! Reference source not found.** to identify opportunities for contributing to carbon sequestration through habitat creation and/or land use management.
- Engage with the scheme proponents for the Harp House Roundabout and Southend Airport Access Package priority SIP interventions to ensure appropriate mitigation for potential adverse cumulative effects on the River Roach is implemented at project delivery stage.
- Engage with the scheme proponents for Norwich Western Link Road SIP intervention and for the A47 North Tuddenham to Easton scheme to ensure that the landscape and ecological mitigation proposals for both schemes maximise opportunities to delivery environmental net gain, and at project delivery stage to identify appropriate mitigation to ensure that there are no cumulative adverse effects on the River Tud or on local communities associated with disruption to access along the highway network or construction related noise and dust emissions.

8 Sustainability Action and Monitoring Plans

The SEA Regulations require the monitoring of a plan or strategy, so that significant effects can be identified, and any action required is undertaken. Monitoring Plans provide a means to demonstrate the sustainability of the adopted strategy using sustainability objectives, targets and indicators. They also permit the early identification of emerging significant effects to enable corrective actions to be taken during strategy implementation.

Table 8.1 sets out a Sustainability Action Plan for the Transport Strategy which includes strategic level actions which will support delivery of the Monitoring Plan. This includes actions to work with partners across areas such as reporting on natural capital/ecosystem services, biodiversity net gain provision and carbon emissions accounting and including developing templates or proformas for collecting data and information on scheme proposals on a consistent basis so this can support regional analysis and reporting in the future.

Table 8.2 presents the ISA Monitoring Plan for the Transport East Transport Strategy and SIP. This covers the specific ISA objectives and proposals for measuring performance against these. Where monitoring identifies targets included in the ISA monitoring plan or Transport Strategy and SIP monitoring and evaluation plan that have not or will not be achieved, future Transport Strategy goals and SIP interventions will need to incorporate appropriate revisions.

Table 8.1 Sustainability Action Plan

ISA objective	ID	Action	Target	Responsible party
General (applicable to all or multiple ISA objectives)	SSA-GEN-1	Integrate ISA Sustainability Action Plan and ISA Monitoring Plan with Transport Strategy and SIP Monitoring and Evaluation Plan	Facilitate coherent single set of monitoring targets and indicators, and single reporting schedule	TE
	SSA-GEN-2	Engage with partners to develop templates/proformas for monitoring reporting, including schedule of data inputs and associated timescales where data to be provided by third parties and including a template for individual scheme reporting to collect and update information as scheme proposals are developed. (see Table 8.2). Templates to be digital/online to facilitate updating and access and data analysis/mapping. – this could also facilitate future digital and interactive reporting.	Facilitate ISA monitoring and reporting and input to future SIP and Strategy updates	TE in partnership with local authorities
	SSA-GEN-3	Reporting on funding % across the strategic priorities and strategic partners	Balance of funding reflecting Strategy priorities and achieving sustainability objectives	TE and LTAs
	SSA-GEN-5	Given limited information available in public domain regarding sustainability of shipping fuels and opportunities to minimise air and water pollution and disturbance to aquatic wildlife - engage with	Identify appropriate targets	TE in partnership with relevant organisations

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ISA objective	ID	Action	Target	Responsible party
		government and partners to identify approaches.		
Population and Equalities	SSA-EQ-1	Work with partners to bring together existing knowledge on accessibility needs across groups and identify where additional consultation is required and ensure that schemes are identified and designed with requirements taken into account The EqIA identified that further consideration could be given to the methods of engagement with PCGs and those from deprived communities	Support inclusive modal shift, access to alternative fuel transport and active travel participation	TE in partnership with local authorities
	SSA-EQ-2	Develop methodology for tracking strategy monitoring objectives (also included in ISA monitoring plan) regarding elimination of transport deserts and % of people with access to services	Support reporting on access and provide evidence baseline for future iterations of the Strategy and SIP	TE
	SSA-EQ-3	Lack of information regarding reasonable alternatives to home EV charging for private vehicles where this is not physically possible (i.e. for around 1/3 of UK dwellings), which will limit shift from conventionally fuelled vehicles. TE to work with partners to develop thinking and coordinated response around this issue.	Support transition from conventional fuels	TE in partnership with local authorities
Biodiversity Natural Capital	SSA-B-1	Engage with responsible authorities (likely to be Local Authorities) during development of Local Nature Recovery Strategies (LNRS) to identify how interventions supported by Transport East can contribute towards net gain targets on strategic scale	Identify a coordinated approach and opportunities for delivering biodiversity and environmental net gain on a strategic scale and contribute to local and national targets	TE in partnership with local authorities
	SSA-B-2	Engage with partners and authorities to develop a coordinated reporting approach for Nature capital, Biodiversity and Environmental Net Gain for interventions proposed under the Transport Strategy and SIP including establishing a consistent baseline.		
Landscape Heritage Water	SSA-GEN-4	Engage with local authorities on principles for an integrated approach to the protection and management of landscapes and townscapes (including built heritage assets and	Support a coordinated approach to explore potentially synergies for addressing impacts and opportunities between,	TE in partnership with local authorities

ISA objective	ID	Action	Target	Responsible party
Soils/geology		historic landscapes), flood risk and habitat, development, maintenance and management. This would be an opportunity to consider links to biodiversity net gain, environmental gain, recreation and active travel in relation to the initiatives from the Transport Strategy and SIP	landscapes and townscapes, heritage assets, biodiversity, carbon sequestration, and flood risk over the TE region	
Climate	SSA-C-1	Develop common methodology across local authority partners for regular assessment of cumulative carbon emissions associated with interventions implemented under the Transport Strategy, building on baseline assessment in the ESC Phase 1 study. Include a review of lifecycle analysis covering vehicle manufacture carbon footprint differences between EV and conventional vehicles with recommendations on how this could be appropriately considered in future carbon analysis.	Monitor progress towards carbon net zero in 2040 through the 3-5 yearly updates to the SIP and Strategy	TE in partnership with local authorities
	SSA-C-2	Encourage scheme sponsors to require CEEQUAL assessment (or similar), with view to obtaining Very Good or Excellent rating – as a systematic way to include best practice sustainability approaches in design.	Planning consented Schemes supported by Transport Strategy and included in SIP to obtain CEEQUAL or Very Good or Excellent rating (or similar)	TE with partners

Biodiversity and nature recovery

In relation to SSAB -1 and 2, Figure 8.1 shows Natural England’s habitat network areas for the region. These identify areas where there is potential to enhance or connect habitats. This is based on national level mapping information but can be used along with engagement with relevant local stakeholders including for example Natural England, the Broads Authority, local councils and wildlife Trusts, to identify additional regional and local opportunities and priorities. The Environment Act requires that Local Nature Recovery Strategies are to be developed in the future and these will be important sources of information on where enhancement actions should be targeted. Impacts on biodiversity and natural capital will need to be assessed further (along with other potential impacts) as part of the Connectivity studies for the six strategic corridors but also opportunities for contribution to valuable enhancement as part of a coherent approach working with other partners to provide meaningful and long term benefits.

In line with the Environmental Act aims, strategic approaches to meeting biodiversity net gain requirements should also consider potential for wider environmental gain including linking biodiversity enhancement with ecosystem service provision such as carbon sequestration, water retention reducing flood risk and recreation amenity provision.

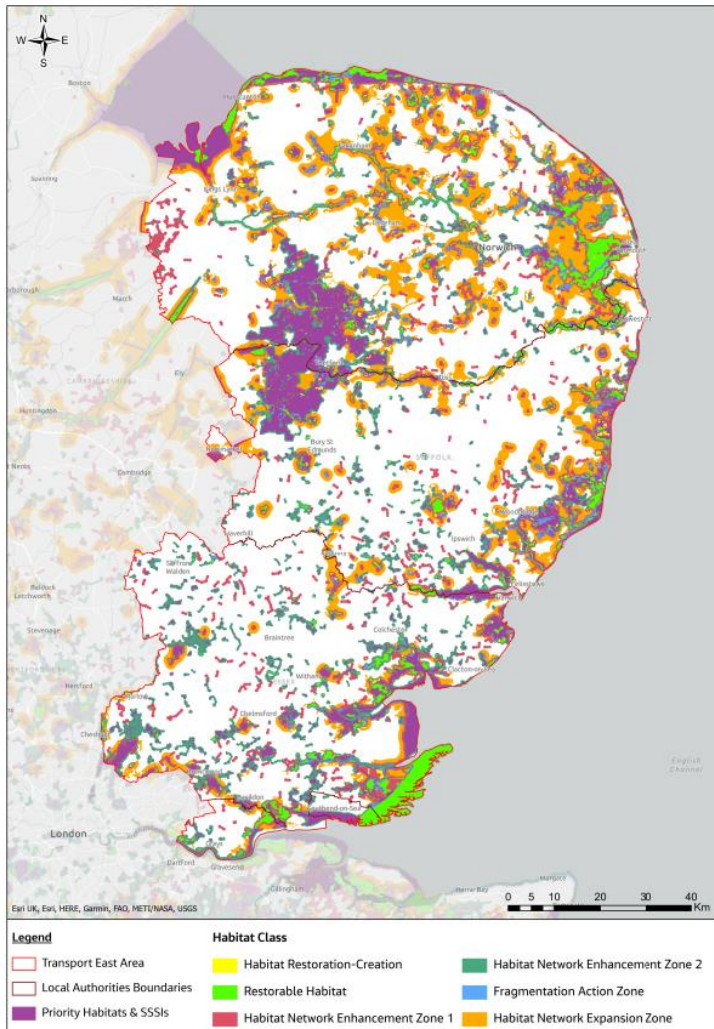


Figure 8.1 Habitat Networks Map

Inclusion and equality

The SIP sets out the proposed approach to enable delivery of the Transport Strategy and will be regularly reviewed to ensure there is a pipeline of identified investment to deliver the pathways, goals and actions within the Strategy. It is recommended that consideration is given to eliminating discrimination and promote equality of opportunity for all protected characteristic groups when assessing projects or interventions that occur as part of the Strategic Investment Programme.

For each project this should include:

- 1) *Engagement with representatives of specific protected groups:* It is recommended that Transport East seeks to engage with representatives of those with protected characteristics (whether individuals, representative bodies, established organisations or agencies, or specifically sought out target groups), to ensure that the needs of these groups are being captured and mitigated for where appropriate. When engaging with these groups it's important to employ participatory methods and/or use peer-support personnel to ensure the process is as inclusive as possible.
- 2) *Baseline data collection to inform implementation approach:* It is suggested that Transport East could use the EqlA as a foundational analysis to consider ongoing assessment of impacts throughout the strategy's implementation lifecycle to evaluation. As detailed schemes and interventions emerge as a result of the Transport Strategy, it is recommended that baseline data be collected and appraised in greater detail to understand the potential impacts on specific local populations and vulnerable groups, including community receptors.
- 3) *Methodology:* It is recommended that Transport East works with partners to develop a methodology or equality toolkit to assist in the assessment of Equality impacts for each project. This could include guidelines for practitioners on how to understand and assess impacts of specific interventions on protected characteristic groups e.g., accessibility of passenger rail services and transport connections for disabled people, affordability of scheme initiatives for lower income households, safety considerations for groups who express greater levels of concern regarding personal safety when using active or passenger transport modes.
- 4) *Scoping additional work:* Where specific equality concerns are raised either through stakeholder engagement or the equality impact assessment, consideration should be given to additional studies which take an in-depth look at equality issues. For example, Transport East could consider undertaking a more in-depth study of inclusivity and equality issues surrounding rural and coastal communities in comparison to urban areas. This could include further engagement with community groups to explore how feelings of safety and accessibility can be cultivated within rural communities.
- 5) *Monitoring:* It is recommended that the monitoring plan specifically reports on impacts on protected characteristic groups. If the monitoring results in greater adverse impact than predicted, or if opportunities arise which would allow for greater equality of opportunity to be promoted, it is recommended that the strategy is revised to achieve better outcomes for the relevant equality groups. In line with the Public Sector and Human Rights Duty, it is recommended that Transport East report on developments and achievements in its annual report.

Table 8.2 Draft monitoring plan

People	P1	Reduction in percentage of areas classified as a 'transport desert'	Percentage of areas classified as transport desert	DfT data on access to public transport services for example - over 500m away from hourly bus or train service mapped using TRACC	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	TE	TE reporting through updates to SIP and Strategy and reporting in business plan on overall progress
	P2	Improved access to services, education, training and facilities in rural and coastal areas	Engage with partners to agree appropriate baseline and indicators	Sources of data to be agreed with partners – considering DfT data for journey times to services, education, health, employment (to be confirmed)	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	To be agreed with TE partners	TE
Equalities	E1	Maintain or increase accessibility of public transport for people all Protected Characteristic Groups (PCGs)	Annual average number of public transport trips taken, and journey length of trips taken by public transport - identify a way to measure PCG trips	DfT National Transport Survey disability and accessibility statistics	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	To be agreed with TE partners	TE
	E2	Improve accessibility to public Transport in transport deserts	Bus service proximity and frequency in areas classed as transport deserts	DfT data on access to public transport services for example - over 500m away from hourly bus or train service mapped using TRACC	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	TE	TE
	E3	Accessible and affordable access to EVs for low income households and	New EV vehicle registrations as a proportion of new vehicle registrations by	DfT Vehicle Licensing Statistics Charging point location mapping	Update schedule for Transport Strategy - 5 years and SIP- 2	To be agreed with TE partners	TE

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		people with disabilities	IMD income deprivation decile		years (or sooner if required))		
	E4	Increase proportion of active travel journeys undertaken by older and younger people, women and people with disabilities	Number/proportion of walking and cycling journeys undertaken by people aged under 16, over 65, women and people with a disability	DfT National Transport Survey disability and accessibility statistics DfT National Transport Survey: mode by age and gender statistics	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	To be agreed with TE partners	TE
Health	H1	Significant increased rates of active travel	Annual average number of trips undertaken by walking and cycling	DfT National Transport Survey: mode by region statistics Use of data sources like Strava Metro and travel surveys as supplementary evidence.	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	To be agreed with TE partners	TE
	H2		Percentage of adults walking for travel at least three days per week Percentage of adults cycling for travel at least three days per week Percentage of children walking for travel at least 3 days per week Percentage of children cycling for travel at least 3 days per week	Public Health England (PHE) physical activity webtool	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	To be agreed with TE partners	TE
Safety	S1	Reduction in transport crime	Crime incident rates:	British Transport Police rail crime dataset	Update schedule for Transport Strategy - 5 years and SIP- 2	British Transport Police	TE

			In rail stations or on trains In bus stations or on buses	Bus crime statistics (source to be confirmed with police /bus operators) Incident records from rail and bus operators	years (or sooner if required))	Police Rail and bus operators	
	S2	Zero KSIs by 2050 – regional ambition	Number of KSI road traffic collisions	Department for Transport (DfT) road accidents and safety datasets	Annually/Dependent on Transport Strategy and SIP update schedule (TBC)	DfT	TE
	S3	Reduction in road traffic collisions and incident rates, including within vulnerable groups	Number and rate of road collisions causing personal injury Number and rate of road collisions involving vulnerable group	Department for Transport (DfT) road accidents and safety datasets Vulnerable groups to be agreed with each LTA	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required))	DfT and LTAs	TE
Biodiversity	B1	Minimum 10% biodiversity net gain across all planning consent schemes supported by TE	Biodiversity net gain associated with TE supported schemes	Defra biodiversity metric 3.0 (or updated version) calculation output prepared as part of project level environmental assessment (see SSA-GEN 2) Also high level assessment of SIP with scheme GIS information	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local transport authorities NR and national Highways LPAs	TE
				Area of land/ total units to be created where offsite habitats are allocated/ funded or implemented to meet net gain obligations (See SSA- Bio 3)	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	TE, assisted by local transport authorities/ LPAs	TE

	B2	No loss of irreplaceable habitat or loss of condition or area of protected sites	Area of loss or degradation of irreplaceable or protected sites recorded by type	Scheme GIS Information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2)	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local transport authorities National Highways (Scheme sponsors)	TE
	B3	Increase in active travel routes created using part of green infrastructure network such as new footpaths, cycle ways	Added length/area of green infrastructure network across the TE region	Engage with local authorities to establish baseline data and develop Scheme GIS Information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2) County level green infrastructure mapping	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local authorities/ local transport authorities	TE
	B4	Decrease in nitrogen deposition within European sites or SSSIs with sensitive habitats (Linked with air quality objectives)	No of schemes predicting improvement or reduction in levels of nitrogen deposition for sensitive sites based on qualitative assessment or air quality modelling for proposed schemes.	Scheme GIS Information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2)	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local transport authorities	TE
Water	W1	Decrease in number of WFD watercourses in TE area where 'Transport drainage' is a Reason for Not Achieving Good (RNAG)	WFD waterbody environment Agency RNAG datasets Engage with partners to identify data sources for regional analysis	Environment Agency (EA)	TBC Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Environment Agency	TE

	W2	No net increase in flood risk vulnerability to transport network or communities	Loss of floodplain from SIP schemes Change to strategic transport network considered vulnerable to flood events	Project information templates completed by responsible authority/sponsor (see SSA-GEN 2)	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local transport authorities/local authorities	TE
Air	A1	Reduction in concentrations of transport related air pollutants monitored by EHOs within the TE region	NO _x , PM _{2.5} , PM ₁₀ , SO _x and CO from Automatic Urban and Rural Network monitoring (AURN) and from EHOs	Defra UK Air Information Resource datasets and Local EHO data	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Defra	TE
	A2	Reduce to zero the number of AQMAs where transport is identified as the primary source of pollutant emissions	Number of AQMAs where transport emissions identified as primary source of pollutant emissions	Defra UK Air Information Resource datasets Local authority Air Quality Annual Status Reports	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local authorities	TE
	A3	Net improvement to air quality	Indicator to be agreed for example - number (approx.) of people benefiting from improved air quality vs affected by reduced air quality	Engage with partners to develop a methodology to capture impacts of transport related schemes Project level environmental assessments - scheme GIS information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2)	Update schedule for Transport Strategy - 5 years and SIP- 2 years (or sooner if required)	Local transport authorities NR National Highways	TE
Noise	N1	Reduction in population exposed	Population exposed to noise levels above SOAEL	Defra Noise Exposure data	Update schedule for Transport Strategy - 5 years and SIP- 2	Defra	TE

		to road and rail noise emissions		Project level information on noise impacts (see SSA-GEN 2)	years (or sooner if required)		
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	A3	Net improvement to air quality	Indicator to be agreed for example - number (approx.) of people benefiting from improved air quality vs affected by reduced air quality	Engage with partners to develop a methodology to capture impacts of transport related schemes Project level environmental assessments - scheme GIS information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2)	Transport Strategy and SIP update schedule (3-5 years)	Local transport authorities NR National Highways	TE
Noise	N1	Reduction in population exposed to road and rail noise emissions	Population exposed to noise levels above SOAEL	Defra Noise Exposure data Project level information on noise impacts (see SSA-GEN 2)	Transport Strategy and SIP update schedule (3-5 years)	Defra	TE
	N2	Reduction in number of road and rail NIAs	Number of NIAs within Transport East region	Defra strategic noise mapping	Transport Strategy and SIP update schedule (3-5 years)	Local authorities	TBC

Climate	C1	Reduce carbon emissions from transport to net zero by 2040	Predicted carbon emissions for the SIP implementation	Transport East's developing trajectory assessment which will inform methodology for monitoring	Transport Strategy and SIP update schedule (3-5 years) Note SIP proposals to be updated annually and published on TE website and monitoring schedule for the strategy to be developed	TE	TE
	C2	Proportion of the transport network/fuels in the TE region to be powered offshore wind and renewables	Proportion of public EV chargers powered by renewable sources	Establish data sources for regional renewable energy level Establish methodology for estimating EV charging use	Transport Strategy and SIP update schedule (3-5 years)	TE	TE
	C3	Modal shift of containerised freight from road to rail	Proportion of containerised freight transported by rail	Current & future number of containers on rail	Transport Strategy and SIP update schedule (3-5 years)	TE	TE
	C4	Increase patronage on public transport	Numbers using public transport by type compared to private vehicle trips	DfT data on public Transport use.	Transport Strategy and SIP update schedule (3-5 years)	TE	TE
	C5	Reduction construction carbon including embodied carbon emissions associated with infrastructure	Commitment to use PAS 2080 for infrastructure carbon management (or equivalent schemes)	Scheme information on approach to be taken for carbon management - project information templates completed by responsible authority/sponsor	Transport Strategy and SIP update schedule (3-5 years)	TE and partners	TE

		construction for SIP interventions	This does not cover vehicle lifecycle analysis	(see SSA-GEN 2)			
Landscape	L1	No significant adverse effects on statutory and non-statutory landscape designations	Number of schemes within protected or valuable landscape areas	Indicators to be developed based on agreement with partners Scheme GIS information and project information templates completed by responsible authority/sponsor (see SSA-Gen 2 and SSA-Gen 4) Regional mapping of proposed schemes against baseline information	Transport Strategy and SIP update schedule (3-5 years)	TE and partners	TBC
Heritage	H1	No significant adverse effects on cultural heritage assets	Significant effects on designated and undesignated heritage assets	Indicator to be developed and agreed with partners Scheme GIS information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2 and SSA-Gen 4)	Transport Strategy and SIP update schedule (3-5 years)	TE and partners	TE
Soils/geology	SG1	No loss of peat and wetland soils and high value agricultural land.	Area of best and most versatile (BMV) agricultural land lost	Scheme GIS information and project information templates completed by responsible authority/sponsor	Transport Strategy and SIP update schedule (3-5 years)	TE and partners	TE

			Area of wetland soils lost	(see SSA-GEN 2) Regional mapping of proposed schemes against baseline information.			
Material assets	M1	Existing road, rail and active travel infrastructure reused or recycled	Commitment to apply waste hierarchy and to PAS 2080 for reducing infrastructure carbon	Project information templates completed by responsible authority/sponsor (see SSA-GEN 2)	Transport Strategy and SIP update schedule (3-5 years)	TE and partners	TE
	M2	Use of brownfield land over greenfield land where	Land take from brownfield land and greenfield for interventions proposed the strategy (Indicator to be confirmed)	Scheme GIS information and project information templates completed by responsible authority/sponsor (see SSA-GEN 2) (Also Regional Mapping - from natural capital land use analysis)	Transport Strategy and SIP update schedule (3-5 years)	TE and partners	TE
Natural capital	NC1	Environmental net gain	Natural Capital loss/gain compared to baseline information Ecosystem services loss/gain compared to baseline information	(see SSA-GEN 2 and B1 and 2) Analysis at regional level based on information on schemes and regional mapping. There are a range of methodologies ²⁶ and tools available and being used so a consistent approach would need be agreed.	Transport Strategy and SIP update schedule (3-5 years)	Develop approach with partners Local transport authorities/ Local planning authorities	TE

9 Next steps

9.1 Consultation and next steps

The ISA report has been updated following an 8-week consultation (ending 30th January 2022) and takes account of comments on the ISA report of the draft Strategy and SIP and also amendments made as part of finalising to the Strategy and SIP. The ISA has been split into two volumes: Transport Strategy ISA Volume 1 and the SIP ISA Volume 2 (this document) to support planned regular updates to the SIP.

An ISA Post Adoption Statement has been prepared to summarise how the ISA and consultation process has influenced the finalisation of the strategy and this statement. The final Habitats Regulations Assessment covering screening and appropriate assessment stages for the both the Transport Strategy and the SIP as separate reports have also been updated. These reports are published with the final Transport East Transport Strategy and SIP.

The final Transport Strategy and SIP, ISA reports and HRA reports are all provided at the following link: www.transporteast.org.uk/strategy/transport-strategy/

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