A12 Chelmsford to A120 widening scheme

TR010060

7.1 Case for the Scheme

APFP Regulation 5(2)(q)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Volume 7

August 2022

Infrastructure Planning

Planning Act 2008

A12 Chelmsford to A120 widening scheme

Development Consent Order 202[ ]

7.1 Case for the Scheme

Regulation Reference	Regulation 5(2)(q)
Planning Inspectorate Scheme Reference	TR010060
Application Document Reference	TR010060/APP/7.1
Author	A12 Project Team and National Highways

Version	Date	Status of Version
P01	11/08/22	S4 - SUITABLE FOR STAGE APPROVAL

CONTENTS

APPENDICES

LIST OF PLATES

LIST OF TABLES

1 Introduction

1.1 Purpose of document

1.1.1 This Case for the Scheme (CftS) relates to an application (the Application) made by National Highways (the Applicant) to the Planning Inspectorate acting on behalf of the Secretary of State (SoS) under section 37 of the Planning Act 2008 for a Development Consent Order (DCO). If made, the DCO would grant consent for the Applicant to build, operate and maintain the A12 Chelmsford to A120 widening scheme (the proposed scheme).

1.1.2 This CftS aims to provide details of the requirements and purpose of the proposed scheme and related DCO. It also aims to act as an accessible guide to the proposed scheme, the Applicant and the Application. This CftS also provides a description of the proposed scheme and the surrounding environment, a summary of the design options considered and how the design has evolved.

1.1.3 While its submission is not a mandatory requirement under the Planning Act 2008, this document has been prepared to accompany the Application to summarise how the proposed scheme relates to and complies with government policy and the relevant planning policy context. It also provides details of the traffic assessment and related economic analysis upon which the need for the proposed scheme is based.

1.1.4 This CftS has been prepared in accordance with Regulation 5(2)(q) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 and the Planning Inspectorate's (2020) Advice Note Six: Preparation and Submission of Application Documents.

1.1.5 The Application will be determined in accordance with the Planning Act 2008. Section 104 of the Planning Act 2008 provides for the decision in cases where a National Policy Statement (NPS) has effect. Section 104(2)(a) states that, in deciding an application, the SoS must have regard to '*a relevant national policy statement*'. Section 104(3) states that the SoS must decide an application in accordance with any relevant NPS. As the NPS is (subject to section 104(4) and (8)) the primary policy reference for the SoS in decision making, it sets the scope of matters for this CftS to consider.

1.1.6 For the proposed scheme, the relevant NPS is the National Networks National Policy Statement (NNNPS) (Department for Transport (DfT), 2014). The Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011a; 2011b) will also guide decision making in relation to the Witham South to Little Braxted Gas Governor High Pressure Gas Main (AIA2) (herein referred to as the gas main diversion) element of the proposed scheme. The proposed Gas Main Diversion meets the criteria to be considered an NSIP in its own right under section 20 of the Planning Act 2008.

1.1.7 This CftS and the associated National Policy Accordance Tables in Appendix A, B, C , D and E set out other 'important and relevant' considerations to the determination of the Application in accordance with section 104(2) of the Planning Act 2008.

1.1.8 This CftS assesses the proposals against policy and important and relevant considerations, drawing on the environmental information presented in the Environmental Statement (ES) [TR010060/APP/6.1], submitted with the Application.

1.2 Structure of this document

1.2.1 This CftS comprises the sections as described below:

- Section 1 – The remainder of this section provides an overview of the proposed scheme, sets out the objectives and explains why a DCO is required.
- Section 2 – Describes the current performance of the Strategic Road Network (the SRN), national policy and economic context of the area along the route of the proposed scheme and how the proposed scheme would address these problems.
- Section 3 – Provides an overview of how the proposed scheme has developed over time. It details the alternatives considered and explains how these were refined to arrive at the proposed scheme that is the subject of the Application.
- Section 4 – Details the proposed scheme in its wider context, including the details of land uses, planning history and environmental designations as well as the wider road network.
- Section 5 – Presents the transport case for the proposed scheme.
- Section 6 – Summarises the methodology and results of the economic assessment for the proposed scheme.
- Section 7 – Identifies the main relevant national and local planning policies and provides an appraisal of compliance.
- Section 8 – Provides an analysis of the proposed scheme's compliance with planning policy.
- Section 9 – Presents the overall conclusion and explains why the proposed scheme should be granted development consent.

1.3 The Applicant

1.3.1 The Applicant is appointed and licensed as the strategic highways company for England by the Secretary of State for Transport, on whose behalf it is responsible for operating, maintaining and improving the Strategic Road Network (SRN). The network is made up of England's motorways and all-purpose trunk roads (the major A-roads), and the existing A12 is part of the

trunk road network for which the Applicant is responsible. Following construction of the proposed scheme, parts of the existing A12 will be de-trunked and placed in the responsibility of the local highways authority, and the Applicant will be responsible for operating, maintaining and, under its general statutory powers, improving the new route of the proposed scheme.

1.3.2 The Applicant seeks to provide a modern and reliable road network with fewer delays. In achieving this, its aims are for a network that:

- provides fast and reliable journeys (supporting economic growth).
- improves safety for all.
- delivers better environmental outcomes.
- meets the needs of all users.

1.3.3 Achieving the above aims can also support economic growth through creating jobs, helping businesses and opening up new areas for development. The underlying focus is to deliver long-term benefits for the community and road users and be environmentally sustainable.

1.4 Overview of the proposed scheme

1.4.1 The proposed scheme comprises improvements to the A12 between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange), a distance of approximately 24km, or 15 miles. The proposed scheme involves widening the A12 to three lanes throughout (where it is not already three lanes) with two new sections of three-lane dual carriageway, between junctions 22 and 23 and between junctions 24 and 25. It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and alterations and improvements for walkers, cyclists and horse riders (WCH) to existing non-vehicular routes along the A12. The proposed scheme also includes a Gas Main Diversion that meets the criteria to be considered an NSIP in its own right under section 20 of the Planning Act 2008. This is discussed in more detail in Section 1.6, 4.5 and 4.6 of this CftS.

1.4.2 The A12 is an important economic link in Essex and across the east of England. It provides the main south-west/north-east route through Essex and Suffolk, connecting Ipswich to London and to the M25. In addition, the A12 is an important commuter route between Chelmsford and Colchester, but current congestion often affects drivers' average speed during the morning commute, which has an average speed of 40mph compared to the speed limit of 70mph.

1.4.3 The section between Chelmsford and Colchester (junction 19 to junction 25) carries high volumes of traffic, with up to 90,000 vehicles every day. Heavy Goods Vehicles are between 9% and 12% of the traffic on this section due to its important freight connection, especially to Felixstowe and Haven ports. The proposed scheme in relation to the SRN is shown on Plate 1.1.

Plate 1.1 Proposed scheme in relation to the SRN

1.4.4 Based on the projected growth in jobs and houses in the area, referred to in Section 2.3 (Table 2.1) and where this growth is expected to occur, the A12 will continue to act as a vital strategic road in the future. However, if nothing is done to improve the road, the predicted increase in traffic will result in road users' delays getting significantly worse and journey times becoming even more unreliable. The A12 will act as a barrier to economic growth that would otherwise be achieved with an effectively operating road network. Traffic levels on the A12 will increase to such a level that the entire two-lane section of the route will be close to or above capacity.

1.4.5 There is therefore a need to improve the route to address the current levels of congestion and their impacts of delay and journey unreliability on road users. The investment in additional capacity that is required to address these issues will also help to address safety issues and support local economic growth by improving connectivity and enhancing traffic flow. The proposed scheme would achieve the following:

- Improve safety for drivers, especially at the junctions and slip roads through better design.
- Reduce traffic congestion by increasing the capacity of the road, making journey times more reliable. The proposed scheme will save motorists as much as 1 hour 20 mins in a working week if they travel daily between junctions 19 and 25.

- Take long distance traffic off the local roads and put it back onto the A12, to reduce rat running on local roads which affects local villages and their communities.
- Ensure that the road can cope with predicted increases in traffic by increasing capacity. Forecasts show that, by 2042, the road will operate above the capacity it was ever designed to handle if no improvements are made.
- Improve facilities for WCH and public transport users to provide better connectivity and safer, more enjoyable journeys.

1.4.6 The location of the proposed scheme is shown on the Location Plan [TR010060/APP/2.1]. The proposed scheme is defined as all works within the Order Limits (as defined in the draft DCO [TR010060/APP/3.1]), which are shown as the area edged in red on the General Arrangement Plans (the Order Limits) [TR010060/APP/2.9].

1.5 Proposed scheme aims and objectives

1.5.1 The overall aim of the proposed scheme is to alleviate strategic traffic problems and congestion, and associated safety issues along the SRN, between junctions 19 (Boreham interchange) and 25 (Marks Tey interchange).

1.5.2 Scheme-specific objectives have been used to develop the proposed scheme design (Table 1.2). The environmental objectives were developed based on the commitments within the National Highways Licence (DfT, 2015b) to reduce the environmental impacts of operating, maintaining and improving its network; protecting and enhancing the environment to achieve the best practicable environmental outcomes across its activities; and seeking to improve the wellbeing of road users and communities affected by the network.

Table 1.2 Scheme Objectives

Objective	How it aligns with DfT strategic objectives	How it aligns with RIS2 strategic outcomes
Proposed scheme supports the growth identified in Local Plans by reducing congestion related delay, improving journey time reliability and increasing the overall transport capacity of the A12	Grow and level up the economy	Providing fast and reliable journeys (supporting economic growth)
Improved safety design: private accesses to the strategic road network closed off and alternative access to local roads provided by the proposed scheme	Improve transport for the user	Improving safety for all
Proposed scheme improves road user safety		
Proposed scheme improves road worker safety during maintenance operation		

Objective	How it aligns with DfT strategic objectives	How it aligns with RIS2 strategic outcomes
Proposed scheme reduces current and forecast congestion related delays and therefore increases journey time reliability	Improve transport for the user	Providing fast and reliable journeys
Proposed scheme understands the impacts of other schemes and recognises other RIS schemes.		
Reduce the visual, air and noise quality impacts of the proposed scheme on affected communities on the route	Reduced environmental Impacts	Delivering better environmental outcomes
Reduce the capital carbon and biodiversity impact of the proposed scheme		
Proposed scheme reduces the impact of severance of communities along the route	Improve transport for the user	Meeting the needs of all users
Proposed scheme improves accessibility for walkers, cyclists, horse riders, and public transport users		
Improve customer satisfaction, and reduce customer impact during construction		

1.6 Requirement for a Development Consent Order

1.6.1 The proposed scheme is defined as an NSIP under Sections 14(1)(h) and 22(1)(b) and 22(2) of the Planning Act 2008 (as amended) by virtue of the fact that:

- It comprises the construction of a highway.
- The highway (when constructed) will wholly be in England.
- National Highways, the strategic highways company, will be the Strategic Highway Authority for the highway.
- The area of development exceeds the 12.5 hectare (ha) threshold, because the proposed scheme does not involve the construction of a motorway and the speed limit for any class of vehicle is expected to be 50 miles per hour or greater.

1.6.2 As the proposed scheme is an NSIP, development consent must be obtained from the SoS to authorise it, and an application for a DCO must be made to the SoS, care of the Planning Inspectorate, under section 37 of the Planning Act 2008.

1.6.3 Section 104 of the Planning Act 2008 requires applications to be decided in accordance with the relevant NPS, in this case the NNNPS (DfT, 2014). The NNNPS sets out principles by which applications for road and rail schemes should be assessed. Paragraph 4.3 of the NNNPS states:

'*In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:*

- *its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits;*
- *its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.*'

1.6.4 In addition, for the highway element of the proposed scheme to be delivered, it is necessary to divert the Gas Main owned and operated by Cadent Gas Limited (Cadent), which runs parallel to the A12 between Maldon Road Bridge (B1018) and Colemans Bridge (B1389) (Appendix 5.2 of the ES [TR010060/APP/6.3]). The Gas Main Diversion is required only in order to facilitate the highway scheme.

1.6.5 The relevant NPSs for the Gas Main Diversion element of the proposed scheme are the Overarching National Policy Statement for Energy (EN-1) and National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011a; 2011b). Both documents were published by the Department for Energy and Climate Change in July 2011. The Government is currently reviewing the suite of Energy NPSs. Appendix B and D of this document compares the current and emerging Energy NPSs and explains how the proposed scheme complies with both suites of documents. Appendix C of this document demonstrates how the proposed gas diversion complies with the National Policy Statement for Gas Supply Infrastructure (EN-4).

1.6.6 The proposed Gas Main Diversion meets the criteria to be considered an NSIP in its own right under section 20 of the Planning Act 2008. However, as the Gas Main Diversion forms part of the proposed scheme, it forms part of the Application that has been made by the Applicant to the SoS for Transport.

1.7 Requirement for Environmental Impact Assessment

1.7.1 The proposed scheme (including the Gas Main Diversion) is an Environmental Impact Assessment (EIA) development because it is of a type of development listed within schedule 2, regulation 3(1), part 10 (f) (construction of roads) and part 3(b) (energy industry) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations) and could generate significant environmental effects by virtue of its nature, scale and location.

1.7.2 In accordance with regulation 8(1)(b) of the EIA Regulations, National Highways notified the SoS in a letter to the Planning Inspectorate dated 28 October 2020 that an ES will be submitted with the Application. The letter was accompanied by an Environmental Scoping Report (Highways England, 2020a) for the proposed scheme and a request for a Scoping Opinion under regulation 10(1) of the EIA Regulations. The Planning Inspectorate reviewed and consulted on the Environmental Scoping Report that was submitted along with National Highways' letter dated 28 October 202 and published a Scoping Opinion in December 2020; see Appendix 5.1 of the ES [TR010060/APP/6.3].

1.7.3 The ES [TR010060/APP/6.1] submitted with the Application provides details of the assessments that have been undertaken for the proposed scheme. The ES also sets out a description of the likely significant effects of the proposed scheme on the environment and identifies the measures that are proposed to reduce and, if possible, avoid those likely significant effects. Assessments in the ES have been undertaken in line with the Design Manual for Roads and Bridges.

1.7.4 The EIA Regulations and the NNNPS also require that DCO applications set out alternative options as part of the proposed scheme development. Further details of these options can be found in Section 3 of this CftS and Chapter 3 of the ES [TR010060/APP/6.1].

1.8 Other consents, licences and agreements

1.8.1 The principal consent for the Scheme will be a DCO. The DCO process provides development consent for the works and enables land acquisition and temporary possession of land, along with other consents and powers to be dealt with at the same time.

1.8.2 However, the DCO application may need to be supplemented by other consents and agreements because:

- A specific consent cannot be contained in the DCO;
- A consenting authority declines to allow a consent to be contained within the DCO; or
- It is not desirable, or it is inappropriate, to include a consent within a DCO due to the stage of design development meaning the detail required is unavailable.

1.8.3 The Consents, Licences and Agreements Position Statement [TR010060/APP/3.3] sets out what consents and agreements are expected to be needed for the Scheme, along with the Applicant's intended strategy for obtaining those consents and associated agreements. Appendix A of the Position Statement identifies those permits consents and agreements that may be sought separately from the DCO.

2 The need for the proposed scheme

2.1 Overview

2.1.1 This section sets out the national policy support as well as the sub-regional economic, development planning and transport context that provides the strategic case for the for the proposed scheme.

2.2 National need for the proposed scheme

Road Investment Strategy 1 2015-2020

2.2.1 The development of improvements to the A12 Chelmsford to A120 were announced as part of the Government's 2015-2020 Road Investment Strategy 1 (RIS1) (DfT, 2015a). The A12 has previously been improved in stages and is now a dual carriageway for its entire length between the M25 and A14. However, this has resulted in a road constructed to varying standards with sections that are dual two- and three-lane, and locations where at-grade accesses to residential, commercial and agricultural properties have been retained. In March 2015, the DfT announced major new investment for the A12 as part of the RIS including widening the A12 to three lanes between junction 19 (north of Chelmsford) and junction 25 (A120 interchange), traffic technology improvements and a package of associated mitigation schemes.

2.2.2 Part 1 of RIS1 sets out that it wants National Highways to:

'*Make the network safer and improve user satisfaction, while smoothing traffic flow and encouraging economic growth. We want to see* [National Highways] *delivering better environmental outcomes and helping walkers, cyclists and other vulnerable users of the network at the same time as achieving real efficiency and keeping the network in good condition.*'

Road Investment Strategy 2 2020-2025

2.2.3 In March 2020, the Government published the 2020-2025 Road Investment Strategy 2 (RIS2), which covers investment in, and management of, the SRN from April 2020 to March 2025 (DfT, 2020). RIS2 commits £27.4 billion of government spending to deliver improvements in the capacity and quality of the SRN between financial year 2020/21 to 2024/25. It sets out the standard that National Highways must meet and identifies the proposed scheme for which funding will be made available and that the Government expects will be built. The proposed scheme is a committed scheme in RIS2:

'A12 Chelmsford to A120 – widening the A12 to three lanes between junction 19 (north of Chelmsford) and junction 25 (A120 interchange). This may include delivery of additional improvements around the site of the Colchester/Braintree Border Garden Community, subject to support from the HIF. This scheme will need to take into account evolving proposals for the A120 Braintree to A12.'

Highways England Strategic Business Plan 2020-2025

2.2.4 Highways England's (2020b) Strategic Business Plan sets out its commitment to protecting the environment and neighbouring communities, while preparing roads for future developments. It sets out the National Highways' response to RIS2 and presents the careful balancing between maintaining and operating the SRN safely and providing new capacity where it's needed.

Highways England Delivery Plan 2020-2025

2.2.5 The Highways England's (2020c) Delivery Plan 2020-2025 explains how the committed schemes included in RIS2 will be delivered in the period up to 2025. The Delivery Plan 2020-2025 notes that the proposed scheme will deliver a wide range of benefits, including reduced congestion, and will align with local authority development plans.

The East of England Route Strategy (March 2017)

2.2.6 The East of England Route Strategy 2017 (Highways England, 2017a) contains the current investment plans and growth potential for the road network, including the A12. The strategy highlights that there are capacity and safety issues for the road users at junctions 20b (Hatfield Peverel), 22 (Witham) to 23 (Kelvedon) among other challenges for the RIS1.

The National Infrastructure Delivery Plan (March 2016)

2.2.7 This plan sets out what infrastructure will be built and where, focusing specifically on nearly £300 billion of the Pipeline that will be delivered over the next 5 years to 2020-21. The National Infrastructure Delivery Plan (Infrastructure and Projects Authority, 2016) states:

'*The government is committed to delivering a step-change in investment in the SRN, and to introducing significant additional road capacity*' and that '*A reliable and high-performing road network helps improve productivity, but over decades, the quality of the network has declined, and congestion, noise and poor air quality have become problems at certain hotspots. Poor or missing links mean cities which are close together do less business with one another.*'

Summary

2.2.8 The proposed scheme has been promoted for many years, and is identified as a national priority in the National Infrastructure Delivery Plan, East of England Route Strategy, various Highways England plans and the DfT's RIS1 and RIS2.

2.2.9 The proposed scheme is part of a group of highway schemes that would improve the SRN network across Essex between M11/M25, Stansted Airport, Chelmsford, Braintree, Colchester, Ipswich and the Haven ports at Harwich, Felixstowe and Ispwich. The key elements of that group of highways schemes are as follows:

- A120 between M11 junction 8, Stansted Airport and A12 junction 25.
- A120 between A12 junction 25 and Harwich.
- A12 between M25 junction 28 and A14 junction 55.

2.2.10 The proposed scheme meets a national need to increase the capacity of the SRN, improve the safe operation of the network for all users, improve the freight connections to the three ports described above, and would be fundamental to provide the necessary highway capacity to support the traffic growth generated by the wider housing and employment development plans for Essex.

2.3 Local need for the proposed scheme

2.3.1 The purpose of the proposed scheme is to address longstanding issues of connectivity, congestion, reliability and safety along the SRN between junctions 19 (Boreham interchange) and 25 (Marks Tey interchange).

2.3.2 This section highlights the factors affecting the current capacity and performance of the SRN, what the wider issues are and how the proposed scheme would address these problems.

Network performance

2.3.3 Over the years, the A12 has been improved and upgraded in stages. As a result of this piecemeal improvement approach, the route has very little consistency in terms of provision, varying in standard with the added disadvantage of numerous variations of junction types and forms.

2.3.4 The 15-mile (24km) section between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) is a poorly performing section of the wider corridor and currently experiences congestion at peak times, with reduced speeds and increased vehicular delays and journey times. In the east of England, the A12 is among the most heavily trafficked roads.

2.3.5 Due to variability in the standard of the corridor and limited suitable diversion routes, the A12 is vulnerable to collisions and incidents, which can cause significant disruption over a wide area.

Population and employment growth

2.3.6 Population growth in Essex is expected to remain high, with a projected increase of 13% between 2018 and 2043 (ONS, 2020).

2.3.7 Employment growth is also expected, particularly due to the ongoing major port developments at Felixstowe and Harwich, business investment and the year-on-year growth of Stansted Airport. Further information on economic development is provided in the business growth section below, as well as the economic case for the proposed scheme in Section 6 of this CftS.

2.3.8 All the sections of the A12 between junctions 19 to 25 are in the worst performing 10% of the SRN in the east of England. Without intervention, the performance of the A12 will get worse as projected growth in population and local development increase pressure on the road. Congestion on the road will inhibit further business investment and limit the quantity of housing development that can be given planning permission, leading to problems with housing supply.

Increasing housing supply

2.3.9 The proposed scheme passes through the administrative areas of Braintree District Council, Chelmsford City Council, Colchester Borough Council and Maldon District Council (the ‘host authorities’), although there is a need to be mindful of the planned growth in the administrative areas of other local authorities between the M25 (A12 junction 11) and the A12/A120 (A12 junction 29).

2.3.10 The proposed scheme is included or acknowledged in the host authorities' adopted and emerging Development Plans, which set out the substantial housing and employment growth to be delivered over the relevant plan periods. The proposed scheme would play an important part in facilitating this planned growth. A summary of the key growth aspirations in these areas, as outlined in existing Core Strategies and emerging Local Plans, is provided in Table 2.1.

Table 2.1 Housing and employment growth

Local authority	Housing target	Employment / employment land target	Data source
Chelmsford City Council	805 homes per annum between 2013 and 2036. This equates to 18,515 houses between 2013 and 2036.	725 jobs per annum. This equates to 16,675 new jobs between 2013 and 2036	Adopted Local Plan (Chelmsford City Council, 2020)
Braintree District Council	716 homes per annum between 2013 and 2033. This equates to 14,320 houses between 2013 and 2033 (Braintree)	Policy SP4 in the Section 1 Local Plan has confirmed that Braintree should deliver between 20.9ha and 43.3ha of new employment land	Adopted Section 1 Local Plan (Braintree District Council, 2021a) Submitted emerging Local Plan (Section 2 Main Modifications for Consultation) (Braintree District Council, 2021b)*
Maldon District Council	5,108 homes between 2014 and 2029. This equates to 340 per annum.	Minimum of 2,000 new jobs by 2029.	Maldon District Approved Local Development Plan 2014 – 2029 (Maldon District Council, 2017)
Colchester Borough Council	920 homes per annum or 14,720 new homes over the plan period between 2017 and 2033	Policy SP4 in the Section 1 Local Plan has confirmed that Colchester should deliver between 22ha and 30ha of new employment land	Adopted Section 1 Local Plan (Colchester Borough Council, 2021a) Submitted emerging Local Plan, which is currently being examined (Section 2 Colchester Publication Draft Local Plan – Main and additional Modifications) (Colchester Borough Council, 2021b)*
**On Monday 4 July 2022 Colchester Borough Council formally adopted the Colchester Borough Local Plan 2017-2033 (Section 2). On Monday 25 July Braintree District Council formally adopted its Local Plan 2033 (Section 2). Due to the timing of the submission of the DCO application it has not been possible to address specific implications arising from any additional or minor modifications to these plans recommended by the Inspectors.*			

2.3.11 As identified in Table 2.1, the adopted and emerging plans total a planned provision of 52,663 homes across all councils and 18,675 jobs (in Chelmsford and Maldon) and between 20ha and 40ha of employment space in Braintree and Colchester. This growth is anticipated to intensify traffic volumes both along the A12 and on the surrounding network, resulting in slower journey times and less reliable journeys without the proposed scheme in place.

Business growth

2.3.12 While Essex County Council has predicted to continue to show significant population growth, its economy is underperforming relative to its potential.

2.3.13 The Essex Economic Commission (2018) cited several challenges to achieving growth, which included the growing pressure on transport infrastructure. The proposed scheme is identified as a scheme that will help to address this.

2.3.14 Felixstowe is the UK's biggest port in terms of the value of imports and exports passing through it, handling 37% of all container units. Harwich port has one of the UK's top five international short sea routes (DfT, 2018). Ipswich Port is the Uk's largest grain export port. These ports are important links between the UK and the global supply chain, and the A12 therefore plays a significant role at a national level as a link to an international gateway.

2.3.15 The importance of Felixstowe to the UK economy is increasing. According to the Port of Felixstowe Growth and Development Needs Study – Final Report (Suffolk Coastal District Council, 2018), under the central scenario, the throughput of containers through Felixstowe port will increase by 40% between 2017 and 2036. It is essential that the links to and from the ports can handle demand and support productivity. The ability to export and import goods in a reliable and efficient manner is vital to the UK's economy. Following a bidding process, the ports of Harwich and Felixstowe were announced as freeport locations in the 2021 Budget (HM Treasury, 2021).

2.3.16 Stansted Airport is the UK's fourth largest airport, with 28 million passengers per year in 2018[1], and the third largest for air freight, handling around 10% of the UK's air cargo. Stansted Airport is also the largest single employment site in the East of England, with 200 companies based at the airport providing 12,000 onsite jobs.

2.3.17 The A12 provides an important link via the A120 to Stansted Airport, facilitating the movement of passengers and employees from Essex and Suffolk, and linking local firms with global markets.

Future transport related problems

2.3.18 Over the coming decades, there is forecast to be an increase in traffic volume during peak periods on the A12, associated with new land use, and demographic factors.

[1] Data is not up to date and 2018 figures used, due to the impact of the COVID-19 pandemic

2.3.19 Without further interventions, the issues of congestion, road safety and impact on the economy as described above are anticipated to worsen in the future, exacerbated by forecast traffic growth both locally and strategically. The high volume of traffic using the A12 corridor, combined with the forecast growth in traffic, is likely to result in a greater level of conflict between highway users, with the potential to result in a greater number of incidents. In addition, without intervention, network resilience is likely to reduce as traffic volumes increase, resulting in a network less able to cope with incidents.

3 Proposed scheme development and options considered

3.1 Introduction and overview

3.1.1 The proposed scheme has been subject to a process of staged development and evolution between its inception and DCO submission. A detailed description and analysis of the options considered is available in Chapter 3: Assessment of alternatives, of the ES [TR010060/APP/6.1]. In addition, the Consultation Report [TR010060/APP/5.1] provides further detail on how comments made by stakeholders have been taken into account in the development of the proposed scheme.

3.1.2 The proposed scheme was identified in RIS1 and RIS2 and was subject to consideration of alternatives as part of the investment decision-making process that informed its inclusion as a committed scheme in those documents.

3.1.3 Paragraph 4.27 of the NNNPS (DfT, 2014) states:

'*Where projects have been subject to full options appraisal in achieving their status within Road or Rail Investment Strategies or other appropriate polices or investment plans, options testing need not be considered by the examining authority or the decision maker. For national road and rail schemes, proportionate option consideration of alternatives will have been undertaken as part of the investment decision making process. It is not necessary for the examining authority and the decision maker to reconsider this process, but they should be satisfied that this assessment has been undertaken.*'

3.1.4 In accordance with the NNNPS, it is therefore not necessary for the Examining Authority or the SoS to consider the option testing stage of design development, but they must be satisfied that such an assessment took place.

3.1.5 This section provides an overview of the main stages in the optioneering and design development of the proposed scheme up to the submission of the DCO. The main development stages included up to DCO submission were as follows:

- Initial options identification, assessment and sifting
- Options development and short listing
- Assessment of short listed options to identify viable options for consultation
- Consultation and option selection
- Preferred Route Announcement (PRA)
- Design development for statutory consultation
- Continued design development post statutory consultation

3.1.6 This section concludes with a revised set of scheme objectives that reflect the evolution of the scheme through design development and consultation.

3.2 Options identification, assessment and short listing for consultation

3.2.1 This section covers the first three development stages listed above. In August 2015, National Highways explored a number of opportunities to improve the A12 which included junction modifications, online/offline widening[2] and complementary sustainable transport measures. The list below outlines the high-level options which emerged:

- Online widening (whole route).
- Limited widening (priority sections).
- Rail capacity enhancements.
- Offline widening (whole route).
- Offline widening (limited sections).
- Junction upgrades only (grade separation, removal/relocation of accesses, ramp metering).
- Park and ride.
- Bus rapid transit.
- Bus/high-occupancy vehicle lanes.
- Road user charging.
- Technology enhancements.
- Managed motorway and widening (combination of).

3.2.2 The purpose of the option identification process was to derive a broad range of measures or interventions, in a logical, transparent and auditable manner, that looked to address or ameliorate the problems faced on the A12 between junctions 19 and 25.

3.2.3 The options aim to address strategic issues along the corridor but also concerns of a more localised nature, which tackle areas and facilities that could be enhanced and developed in order to reduce congestion, address safety concerns and improve the local environment.

3.2.4 A range of modes were considered, and an incremental approach to potential combinations of online and offline highway improvements adopted, in order to develop a range of options that reflect various scales of intervention.

[2] Online widening refers to the widening of the existing road carriageway. Offline widening refers to the provision of a widened carriageway along a new alignment physically separate from the existing carriageway.

Long list sift exercise

3.2.5 An Options Assessment Report (Highways England, 2016) set out a long list of 23 options that could meet the overall objective of improving the A12 between junctions 19 (Boreham interchange) and 25 (Marks Tey interchange). It included 15 highways improvement options, five public transport options and three collision reduction and incident management measures.

Short listing options

3.2.6 The long list of options was further assessed against the objectives to see which performed best. The first sift eliminated the five public transport options and three collision reduction and incident management options. The latter included safety improvements, the removal and diversion of public rights of way (PRoWs) and access for emergency vehicles. While all eight options could provide some benefits, individually they did not meet all the policy requirements of the NNNPS. Nine highways options were also eliminated, including the following:

- A new parallel offline route from junction 19 to junction 25.
- A parallel motorway M12 scheme.
- Improving the existing carriageway and central reservation barriers.
- Improving lay-bys and the existing road.

3.2.7 The long list was thus reduced to six strategic options using the DfT's Early Assessment and Sifting Tool. The six options included two options that fully met the RIS1 commitment of improving the A12 corridor to three lanes between junctions 19 and 25 (options HI-03 and HI-03a) and four lower cost options that looked at improvements to the most congested sections of the corridor (HI-04, HI-05, HI06 and HI-09). These strategic options are presented in Table 3.1 below.

Table 3.1 Strategic options

Option	Comments	Summary
HI-03: Offline improvements between junction 22 and junction 23, and between junction 24 to junction 25. Online widening and junction improvements including removal of junction 20b.	Strong strategic case as it provides upgrades to the whole section between junction 19 and junction 25. It is a higher cost option but offers good value for money.	Taken forward for further assessment
		

Option	Comments	Summary
HI-03a: Offline improvements between junction 22 and junction 23, and between junction 24 to junction 25. Online widening and junction improvements with reduced specification.	Strong strategic case providing upgrades to the whole section of the A12 between junction 19 and junction 25. This is a slightly lower cost option than HI-03.	Taken forward for further assessment
		
HI-04: Offline improvements between junction 22 and junction 23, and between junction 24 to junction 25. Online widening and junction improvements.	Good strategic and lower cost scheme. However, by not including junction 23 to junction 24, it may be difficult to justify upgrading this section at a later date. Dismissed as did not meet the RIS1 objectives.	Dismissed
		
HI-05: Offline improvements between junction 22 and junction 23. Online widening and junction improvements.	Good lower cost option that would provide a viable solution to the proposed scheme objectives. Initially taken forward, but later dismissed as did not meet the RIS1 objectives.	Dismissed
		
HI-06: Offline improvements between junction 22 and junction 23. Online widening and junction improvements.	Option would offer a good	Dismissed

Option	Comments	Summary
	strategic and lower cost scheme. However, by not including junction 21 to junction 22 and junction 23 to junction 25, it may be difficult to justify upgrading these sections at a later date. Dismissed as did not meet the RIS1 objectives.	
HI-09: Online widening between junction 20a and junction 21 and junction improvements.	Lower cost option but provides a low strategic benefit compared to other options. Initially taken forward, but later dismissed as did not meet the RIS1 objectives.	Dismissed
		
Blue links indicate three-lane carriageway capacity through existing, new or upgraded roads. Blue circles indicate junction upgrades. A black circle indicates junction removal.		

3.2.8 Following the initial long sift exercise, options HI-03 and HI-03a were taken forward for further assessment as they were the only options that met the RIS1 commitment to delivering a three-lane highway. From these two options, a further nine scheme options were developed. These included four options that had two offline bypasses but different junction arrangements (Options 3a, 101, 102 and 103), two that were wholly online with different junctions (Options 104 and 105), one option with a significant length of new bypass to the north of the existing A12 (Option 106) and two options with a single bypass (Options 107 and 108).

3.2.9 Option 106 was subsequently discounted as the option required two major structures crossing the Great Eastern Main Line (GEML) railway, which would have had significant costs and significant landscape, visual and environmental impacts.

3.2.10 It was also concluded that most junctions were likely to require some level of improvement. Therefore, the following four alternative alignments were taken forward to the non-statutory consultation (in January 2017):

- Option 1 (former option 104 and 105 alignment) – online widening throughout and provision of a local access road to provide alternative access to existing single tier junctions.
- Option 2 (former 3a, 101, 102 and 103 alignment) – online widening with two offline bypasses: one between junctions 22 and 23 and one between junctions 24 and 25.
- Option 3 (former 107 alignment) – online widening with an offline bypass between junctions 22 and 23.
- Option 4 (former 108 alignment) – online widening with an offline bypass between junctions 24 and 25.

3.2.11 Table 3.2 shows the detail of the four scheme options.

Table 3.2 Scheme options progressed to non-statutory consultation

Option number	Description	Option taken forward to non-statutory consultation
3a	Three lanes provided throughout with offline sections to the south of the A12 between junctions 22 and 23 and junctions 24 and 25 to remove local direct accesses to the A12.	Option 2
101	Three lanes provided throughout with offline sections to the south of the A12 between junctions 22 and 23 and junctions 24 and 25 to remove local direct accesses to the A12. Remove junction 20a and junction 20b and replace with a combined junction 20 to the south of Hatfield Peverel.	
102	Same as 101 except without a new junction 20 and assumes complete removal of junction 23.	
103	Three lanes provided throughout with offline sections between junctions 22 and 23 and junctions 24 and 25 to remove local direct accesses to the A12. Remove junction 22 and junction 24 but upgrade junction 21 and junction 23 to provide access to Witham and Kelvedon respectively.	
104	Three lanes provided throughout completely online with removal of single tier junctions by providing local access roads. Remove junction 20a and junction 20b and replace with a combined junction 20 to the south of Hatfield Peverel.	Option 1
105	Three lanes provided throughout completely online with removal of single tier junctions by providing local access roads. Remove junction 20a and junction 20b and replace with an improved junction 21 with access roads to Hatfield Peverel.	

Option number	Description	Option taken forward to non-statutory consultation
106	Same as 101 but offline to the north of the A12 (and GEML) between junctions 22 and 25.	Dismissed
107	Three lanes provided throughout with offline sections to the south of the A12 between junctions 22 and 23.	Option 3
108	Three lanes provided throughout with offline sections to the south of the A12 between junctions 24 and 25.	Option 4

3.3 Consultation and option selection

Overview

3.3.1 This section provides a summary of each stage of public consultation and the associated stages of design development and refinement of the proposed scheme from January 2017 up to the publication of an addendum to the Scheme Assessment Report (Highways England, 2020d) in July 2020.

Non-statutory consultation January 2017 (junctions 19 to 25)

3.3.2 A six-week non-statutory consultation on Options 1 to 4 was held from Monday 23 January 2017 to Friday 3 March 2017. During this time, seven public information events were held in towns and villages along the A12.

3.3.3 Option 2 emerged as the preferred option, with 49% of responses expressing a preference for this option as their favoured route. Option 2 was seen to be the most resilient and was considered to generate the greatest capacity across both the SRN and Local Road Network. It would also have the highest safety performance for road users, would provide the greatest lengths of segregated WCH provision away from the A12 mainline, and would be safest for road workers during both construction and operation due to the length of offline working. The second most popular consultation option was Option 1, with 28% of responses indicating it as their preferred route option.

3.3.4 The consultation also asked for views on the need to improve junctions. The majority of respondents felt that improvements were needed at all junctions from junction 19 to junction 25. This was particularly clear for junction 22, which 75% of respondents felt was in need of improvements.

3.3.5 A Scheme Assessment Report was produced in 2017, which recommended Option 2 as the preferred route.

Design changes and route refinements following preferred route recommendation 2017 (junctions 19 to 23)

3.3.6 Following the recommendation of the preferred route in the Scheme Assessment Report (Highways England, 2017), the proposed scheme underwent subsequent design changes, including value engineering and design refinements, to address environmental concerns and policy requirements in accordance with the NNNPS (DfT, 2014).

3.3.7 As a result of the uncertainty that surrounded the proposed Colchester Braintree Borders Garden Community (CBBGC), only refinement of the alignment between junctions 22 and 23 was initially investigated, with the aim to reduce impacts on the Rivenhall Long Mortuary Scheduled Monument and the River Blackwater flood zone. Alternative alignments were developed to address the impacts of the CBBGC and presented at a non-statutory consultation in 2019. Further detail on this is provided later in this section.

Value engineering design changes

3.3.8 During a value engineering workshop held on 22 January 2019, a number of additional design changes were made. These are listed below:

- Descoping verge and central reserve works between junction 19 and junction 20a. The carriageway is already three lanes in this section, so descoping works here would still be consistent with the RIS1 commitment for three-lane provision.
- Removal of existing junction 23 (the previous proposals had included a new junction 23). This would improve safety, reduce fill material requirements, and reduce environmental impacts (including on the River Blackwater and associated floodplain). Traffic modelling indicated that the removal of junction 23 from the proposed scheme would result in minimal adverse impact to traffic due to the relatively few vehicles that utilise the junction.
- Given the removal of junction 23, a local access road would be required to facilitate access in and around Kelvedon. The entire existing A12 between junctions 22 and 23 would be retained as a local access road, with provision of a new mini-roundabout to provide access over the A12 to the Essex County Fire and Rescue Service Headquarters. The local access road would be retained as a dual carriageway from junction 22 to the new mini roundabout at the Essex County Fire and Rescue Service Headquarters. A single carriageway would be provided from the mini-roundabout connecting to the B1024 into Kelvedon.
- Retaining the River Ter Bridge width (ie three lanes gained by changing verges, working widths and lane markings, as opposed to physically widening the bridge).
- Assumption on the use of borrow pits for fill material instead of importing material. A number of potential borrow pit locations were investigated previously in 2017.

Route refinements to address NNNPS compliance

3.3.9 Option 2 was chosen as the emerging preferred option in 2017, this enabled the proposed scheme to move into preliminary design stages. With the design evolution and further understanding of the area through engagement, studies and surveys. The proposed scheme reviewed the NNNPS assessment and identified further route refinements necessary to address environmental impacts that did not comply with NNNPS requirements. The points below and in

paragraph 3.3.10 and 3.3.11 explain the key environmental impacts that were identified and how they have been mitigated through design refinements:

- Flood risk: For the Exception Test to be passed it must be demonstrated that the proposed scheme provides wider sustainability benefits to the community that outweigh flood risk; and a Flood Risk Assessment (FRA) must demonstrate that the proposed scheme would be safe for its lifetime, without increasing flood risk elsewhere and, where practicable, would reduce flood risk overall. Option 2, prior to design refinements, would have involved offline development in the River Blackwater floodplain.

- Historic environment: Where a proposed development would lead to substantial harm to or total loss of significance of a designated heritage asset, the SoS should refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm. Historic England raised concerns over Option 2, prior to design refinements, as the new offline bypass would have likely resulted in substantial harm to the Rivenhall Long Mortuary Enclosure Scheduled Monument, as well as associated archaeological remains that contribute to the wider historic setting of the monument.

- Minerals sterilisation: Where a proposed development has an impact on a Mineral Safeguarding Area, the SoS should ensure that the applicant has put forward appropriate mitigation measures to safeguard mineral resources. Option 2 had the largest footprint within a sand and gravel Mineral Safeguarding Area (A46 Land at Colemans Farm).

- Best and most versatile (BMV) agricultural land: Applicants should take into account the economic and other benefits of BMV agricultural land (defined as land in grades 1, 2 and 3a of the Agricultural Land Classification). Where significant development of agricultural land is demonstrated to be necessary, applicants should seek to use areas of poorer quality land in preference to that of a higher quality. Option 2 had the largest footprint in areas of BMV land.

3.3.10 A refined Option 2 alignment was created to reduce impacts on the Rivenhall Long Mortuary Enclosure Scheduled Monument and the River Blackwater floodplain. For the refined Option 2, the length of the bypass between junctions 22 and 23 was reduced, re-joining the existing A12 at a point just east of Rivenhall End, thereby taking the alignment away from the scheduled monument and reducing potential development in the floodplain.

3.3.11 The refined option also reduced loss of BMV land and sterilisation of minerals compared to the original Option 2. The refined Option 2 therefore reduces overall impacts in compliance with the NNNPS.

Non-statutory consultation, October to December 2019 (junctions 23 to 25)

3.3.12 In the same year as the first non-statutory consultation and preferred route recommendation (as described above), the North Essex Authorities of Braintree District Council, Colchester Borough Council and Tendring District Council submitted their joint draft Section 1 Local Plan, which proposed several garden communities, including the CBBGC, to the SoS. If the CBBGC were to go ahead, it would likely impact on Options 1 to 4 that were presented in the 2017 non-statutory consultation, specifically on the section between junction 23 and junction 25.

3.3.13 Additional options (Options A to D) for Option 2 therefore had to be developed to consider the section of the A12 between these junctions that could accommodate the potential footprint of the proposed CBBGC. This additional options appraisal delayed the A12 scheme progress. These options were consulted on through a second non-statutory consultation event between 21 October 2019 and 1 December 2019.

Route refinements to junctions 23 to 25 following 2019 non-statutory consultation

CBBGC

3.3.14 In May 2020, the Planning Inspectorate published their response to the North Essex Authorities draft Section 1 Local Plan. The Planning Inspectorate concluded that the proposals for the CBBGC were not sound, and as a result, it was removed from the draft Section 1 Local Plan. As the CBBGC was removed, the route between junctions 23 and 25 was reverted back to the Option 2 that was presented in the 2017 non-statutory consultation.

3.3.15 Following the recommendation of the Planning Inspectorate on the CBBGC, a potential further refinement of Option 2 was investigated to improve the design.

Mainline alignment

3.3.16 A bypass between junction 23 and junction 25 was considered to be less favourable in terms of environmental impact. Option 2 previously raised concerns due to its impact on the historic environment which includes designated heritage assets. Between junction 23 and junction 25, the proposed mainline alignment passed through Doggetts Hammer Farm which is a grade II listed building, and subsequently would require demolition of this property.

3.3.17 The mainline alignment between junction 23 and junction 25 largely follows the original 2017 design, but it has undergone a slight refinement near the existing junction 25. The new proposed mainline alignment now bypasses Doggetts Hammer Farm and then joins the existing A12 near junction 25. This slight refinement moves the mainline alignment away from Doggetts Hammer Farm, which as a result no longer requires demolition. There was also a small adjustment to the mainline close to Easthorpe Road to avoid a veteran tree that has a Tree Protection Order. The proposed alignment of the A12 mainline between junction 24 and junction 25 would avoid environmental significant effects on the points mentioned above. These route refinements were also inclusive of consultee feedback, the detail of which is provided in the Statement of Reasons [TR010060/APP/4.1].

Junction 24

3.3.18 The most significant change from the 2017 design is the refinement to junction 24. A junction strategy refinement exercise was undertaken to confirm junction proposals, which recommended relocation of the proposed junction 24 further south, to the west of Inworth Road. Due to the relocation of junction 24, there is a lesser impact on the setting of Prested Hall (grade II listed building), and the visual landscape intrusion to the listed building and Feering village are avoided. Relocating the junction further south also required less Crown Land (special category land) to be purchased.

3.3.19 The new location for Junction 24 at Inworth Road closely aligns with preferences that emerged from the public consultations held in 2017 and 2019[3]. The revised proposed junction 24 design consists of an all-movements dumbbell junction with a direct connection to Inworth Road.

3.3.20 The provision of a junction close to Inworth Road provides an overall benefit to the proposed scheme, as it provides better connectivity between Tiptree and the SRN. In addition, it reduces the volume of strategic traffic making journeys on the wider Local Road Network in comparison to the previous design from 2017.

3.3.21 In 2020, an addendum to the Scheme Assessment Report (Highways England, 2020d) was produced to account for these design refinements.

3.4 Preferred Route Announcements (PRAs)

Overview

3.4.1 Given the uncertainty that the CBBGC introduced to the proposed scheme option development, two PRAs were made for the proposed scheme: one covering junctions 19 to 23 announced in October 2019 (2019 PRA), and another covering junctions 23 to 25 announced on 28 August 2020 (2020 PRA). These are discussed in turn below.

PRA junctions 19 to 23 (October 2019)

3.4.2 Option 2 was chosen in 2017 as the emerging preferred option. Although this option was assessed to have the least favourable impact on the environment compared to the other options considered, it was the most popular option from the non-statutory public consultation, would deliver the greatest capacity, and would have design advantages over the other options. In addition, between 2017 and 2019, the Option 2 design was refined to avoid or reduce its environmental impacts. Given the reduced environmental impact of the refined Option 2 compared to the original Option 2 alignment, a PRA was made on 21 October 2019 for the A12 between junctions 19 and 23 with the refined Option 2 as the preferred route (incorporating design refinements described in the previous sections of this report).

[3] Further information on stakeholder involvement is provided in Chapter 3: Assessment of alternatives of the ES [TR010060/APP/6.1]

3.4.3 It should be noted, junction 21 moved 250m closer to Hatfield Peverel in 2019 (at the time of the 2019 PRA) to make it more appealing for strategic traffic to use the A12 rather than travel through local settlements.

PRA junctions 23 to 25 (August 2020)

3.4.4 Following the decision to remove the CBBGC from the North Essex Authorities' draft Section 1 Local Plan, and the subsequent dismissal of the CBBCG options (Options A to D) in Spring 2020, Option 2 was chosen as the preferred route for the A12 between junctions 23 and 25. A PRA was made for this section on 28 August 2020.

3.5 Design development for statutory consultation

Overview

3.5.1 This section summarises the design refinements and alternative ways of delivering the proposed scheme (and associated environmental assessment) following the 2020 PRA, the subsequent statutory consultation between June and August 2021, and the design refinements that took into account stakeholder feedback and additional information on construction requirements and utility diversions.

Design development and environmental assessment

3.5.2 This included consideration of the following:

- Location and type of technology to be included (eg traffic signals and gantries)..
- Construction methodology and programme (including the phasing of construction works and number and location of compounds and haul roads).
- Optimising the cut-fill balance to reduce material requirements and waste, including consideration of the location and size of borrow pits.
- Location and extent of carriageway widening.
- Alignment of new offline carriageway.
- Location and design of proposed WCH routes.
- Type, location and extent of environmental mitigation.

3.5.3 The design and siting of the borrow pits was taken into consideration in the Preliminary Environmental Information Report (Highways England, 2021), which described the borrow pit locations included in the provisional Order Limits. The siting of borrow pits considered the anticipated type and quantity of material yields, location, access to the A12 and proposed works, proximity to residential areas, groundwater levels, archaeology, and other environmental factors.

3.5.4 The Preliminary Environmental Information Report also considered the proposed construction compounds within the proposed Order Limits. The siting of compounds considered location, access to the A12 and proposed works, access to existing utility supplies, proximity to residential areas, and other environmental factors. The Preliminary Environmental Information Report provided further detail on the proposed construction compounds.

3.5.5 The Preliminary Environmental Information Report was produced to support a statutory public consultation for the proposed scheme. The statutory consultation period ran from 22 June to 16 August 2021 and is detailed below.

Statutory consultation (June to August 2021)

3.5.6 The Applicant held a statutory consultation between 22 June 2021 and 16 August 2021. During this period, the Applicant engaged with consultees in accordance with the requirements of Section 42 of the Planning Act 2008. The consultees included Natural England, the Environment Agency, Historic England, relevant planning authorities, and interested parties (e.g. landowners and tenants).

3.5.7 Local communities and the wider public were also consulted on the proposed scheme via the statutory consultation programme in accordance with sections 47 and 48 of the Planning Act 2008.

3.5.8 A Consultation Report has been produced and submitted as part of the Application [TR010060/APP/5.1]. The Consultation Report demonstrates how National Highways has complied with the consultation requirements of the Planning Act 2008.

Design refinements following statutory consultation

3.5.9 Further design work was undertaken following the statutory consultation. This was part of the ongoing design development process, taking into consideration further information on construction and utility diversion requirements, as well as stakeholder feedback that was received from the statutory consultation. The main areas where the design changed, or was updated, following the statutory consultation and that affect the environment or proposed scheme design were as follows:

- Closing Easthorpe Road to traffic accessing the existing A12, which would be de-trunked as part of the proposed scheme.
- Widening Inworth Road where there are existing pinch-points and providing suitable drainage and flood risk mitigation.
- Diverting the Gas Main operated by Cadent Gas Limited (Cadent) – five initial options were presented for diverting this Gas Main to the community in the subsequent supplementary consultation (see Section 3.6). Through consideration of the consultation responses and preliminary design provided by Cadent, the Applicant has identified one of the five initial routes to become the proposed gas main diversion corridor, as described in Chapter 2: The proposed scheme, of the ES [TR010060/APP/6.1] and summarised in Section 4 of this report.

- Using Wellington Bridge as a northern link road to junction 21 instead of The Street as a southern link road to junction 21.
- Removing a proposed noise barrier through Hatfield Peverel and using road surfacing with increased noise reducing properties instead.
- Temporary removal of an existing noise barrier at Market Lane to facilitate construction of a retaining wall.

3.6 Continued design development post statutory consultation

Overview

3.6.1 Two further consultations were undertaken following the design refinements set out above. The purpose and outcome of these is summarised below.

Supplementary consultation (November to December 2021)

3.6.2 A consultation was held between 9 November and 19 December 2021 to inform stakeholders and seek feedback on the design changes listed in paragraph 3.5.9 above, including location of construction compounds.

3.6.3 An Environmental Report was produced to support the supplementary consultation (National Highways, 2021). The Environmental Report documented the potential significant environmental effects from these design changes, as well as the mitigation that would be required to reduce any significant adverse effects. The Environmental Report also formed the basis of the Gas Main Diversion EIA Screening exercise that is included in Appendix 5.2 of the ES [TR010060/APP/6.3].

3.6.4 Annex N of the Consultation Report [TR010060/APP/5.2] summarises the feedback received during the consultation as well as how the project team have considered this feedback in the proposed scheme design.

Targeted consultation (February to March 2022)

3.6.5 A targeted consultation was held between 11 February and 18 March. The consultation focused on Boreham, Inworth, Marks Tey and Copford locations along the route of the proposed scheme where predicted noise impacts changed since the statutory consultation discussed above.

3.6.6 Predicted noise levels have mostly stayed the same, or in some instances gone up or down by a small amount than that predicted at the statutory consultation. However, more residents have been considered to experience significant effects due to a change in how the proposed scheme reports significant effects on noise.

3.6.7 Previously, the threshold for a significant effect was an increase in noise levels of 3dB. Under the revised approach, a significant effect is now considered to occur when an increase of 1dB is predicted in locations where existing noise levels are already considered high. Further information on this targeted consultation can be found in the Consultation Report [TR010060/APP/5.1].

4 The proposed scheme and the Order Limits

4.1 Scheme location

4.1.1 The location and Order Limits of the proposed scheme are illustrated on Plate 4.1 in this CftS and the Location Plan [TR010060/APP/2.1] that makes up part of the DCO submission.

4.1.2 The proposed scheme lies wholly within the upper tier authority and local highway authority of Essex County Council and passes through the administrative boundary of Braintree District Council, Colchester Borough Council, Chelmsford City Council and Maldon District Council. Chelmsford is located to the south-west of the proposed scheme and Colchester to the north-east. The settlements of Boreham, Hatfield Peverel, Witham, Rivenhall End, Kelvedon, Feering and Marks Tey lie adjacent to the proposed scheme.

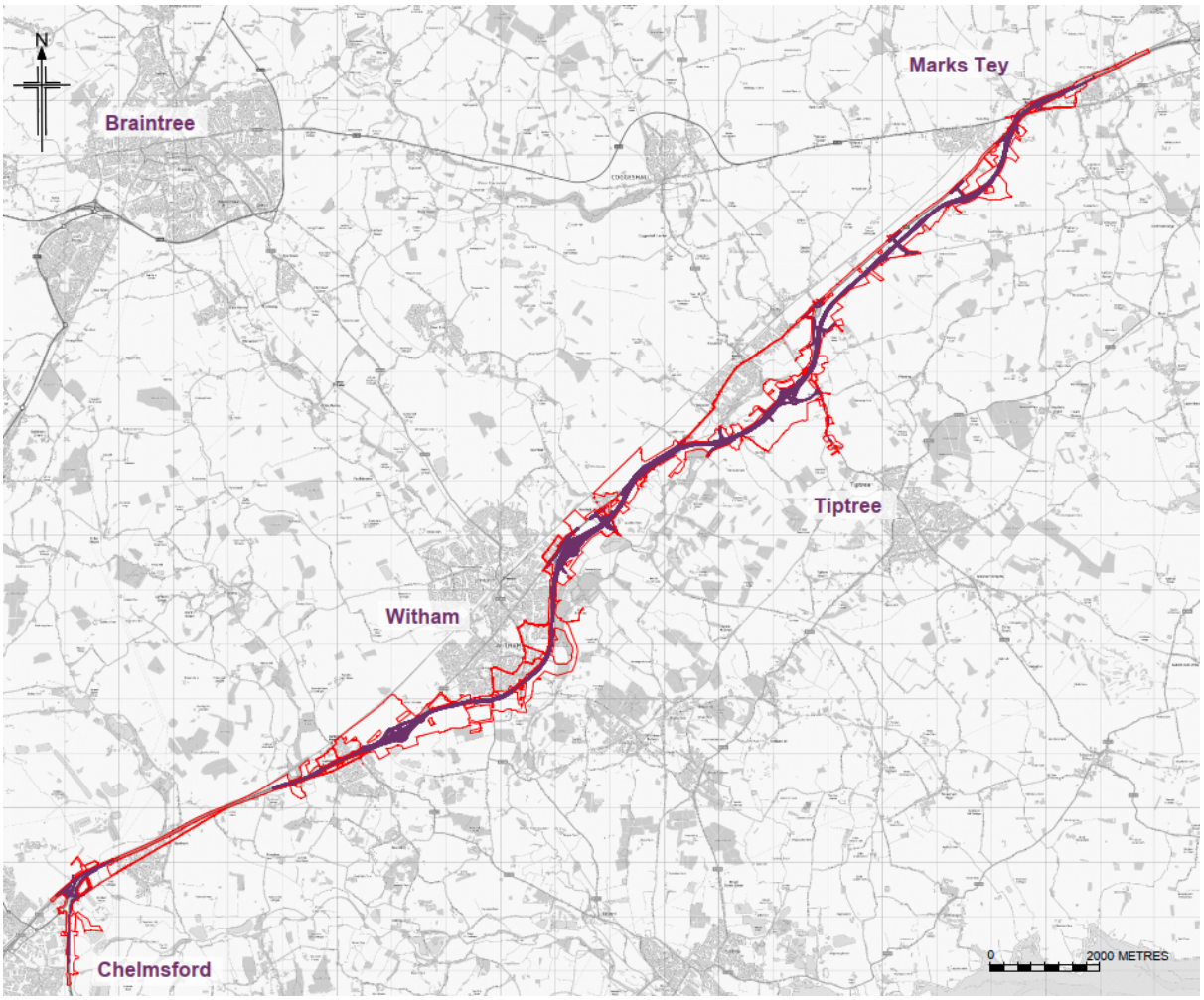
4.1.3 The A12 runs parallel to, and to the south of, the GEML railway for most of its length between junctions 19 and 25. Major connecting roads include the A130 which joins the A12 at junction 19 (Boreham interchange) and the A120 which joins the A12 at junction 25 (Marks Tey interchange). The B1018 and the B1019 link Maldon to Witham and Hatfield Peverel respectively. The B1023 links Kelvedon and Tiptree.

4.1.4 The proposed scheme is shown on the General Arrangement Plans [TR010060/APP/2.10]. The land required for the proposed scheme, subject to compulsory acquisition, temporary possession with permanent land rights acquired and temporary possession powers, is shown on the Land Plans [TR010060/APP/2.8]. Brief descriptions of each plot of land that would be required for the proposed scheme are provided in the Book of Reference [TR010060/APP/4.3]. The scope of the compulsory acquisition powers sought by the Applicant is set out in full in Part 5 of the draft DCO [TR010060/APP/3.1].

4.1.5 The Order Limits cover an area of 835ha, of which 647ha is to be retained permanently as part of the proposed scheme. The remaining 188ha of land will be acquired for temporary possession (including 56 ha permanent access rights) and will be used for site compounds, working room to construct boundary fences maintenance tracks, utilities diversions and private means of access. The proposed scheme will also use 186 ha of land currently owned by NH. Further information is provided in the Statement of Reasons [TR010060/APP/4.1].

4.1.6 The local authorities have been classified with regard to their relationship with the proposed scheme, in order to determine which are prescribed consultees. The authorities are described in relation to the guidance in Advice Note Two: The Role of Local Authorities in the Development Consent Process (Planning Inspectorate, 2015).

Plate 4.1 Location plan and Order Limits



4.2 Existing land uses and character

4.2.1 The existing conditions within the proposed scheme Order Limits and surrounding area are reported in Chapters 6 to 15 of the ES [TR010060/APP/6.1]. A summary of the existing baseline and areas assessed for the different environmental features is provided in this section. The study areas for which baseline data is collected varies between the environmental topics. Each will be referred to summarily in the CftS. Further information can be found in the relevant ES chapters as referred to in this CftS.

Communities

4.2.2 The existing A12 connects the large communities of Chelmsford and Colchester. It passes through and connects several smaller communities at Boreham, Hatfield Peverel, Witham, Rivenhall End, Kelvedon, Marks Tey and Copford. These communities are also served by a network of PRoWs including bridleways. Land use outside of built-up areas is generally arable land with pockets of other land uses. There are a number of large commercial plots (over 100ha in size) along the route. Soils are generally classed as ‘good’ or ‘very good’ according to provisional Agricultural Land Classification data.

4.2.3 There is one Air Quality Management Area (AQMA) located in proximity to roads affected by the proposed scheme (known as the Affected Road Network (ARN), which is defined in Chapter 6: Air quality, of the ES [TR010060/APP/6.1]). This is the Lucy Lane North AQMA located in Colchester near junction 26 of the A12.

4.2.4 There are several Noise Important Areas along the route, including at Boreham, Hatfield Peverel, Witham, Rivenhall End, between junction 24 and junction 25, Chelmsford and Marks Tey. These are discussed in Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1].

Historic environment

4.2.5 A study area within 300m of the Order Limits has been applied to all heritage assets, which is considered appropriate to assess the potential physical and setting impacts on designated and non-designated assets. The assessment has also considered a wider study area of 1km from the Order Limits for impacts on the settings of designated heritage assets, comprising scheduled monuments, listed buildings (all grades), registered battlefields, registered parks and gardens, and conservation areas.

4.2.6 Beyond 1km, a selection of heritage assets has been assessed for setting impacts based on professional judgement, informed by the ZTV and viewpoint analysis provided in the LVIA (Chapter 8: Landscape and visual, of the Environmental Statement [TR010060/APP/6.1]).

4.2.7 There are 946 cultural heritage assets within the baseline of the proposed scheme including 462 known archaeological remains. The cultural heritage baseline is set out in Chapter 7: Cultural heritage of the ES [[TR010060/APP/6.1] and is illustrated on Figures 7.1 Cultural Heritage Archaeological Remains and 7.2 Cultural Heritage Historic Buildings and Historic Landscape of the ES [TR010060/APP/6.2].

4.2.8 Within the 1km study area there are eight scheduled monuments: Hatfield Priory; Wickham Bishops timber trestle railway viaduct; Rivenhall long mortuary enclosure; Anglo-Saxon hall, cemetery and church site; Long mortuary enclosure and round barrow; circular brick kilns; and Marks Tey Hall Moated Site. There are also 10 grade I listed buildings within the 1km study area along with 40 grade II* listed buildings and 375 grade II listed buildings. There are four registered parks and gardens: Braxted Park (grade II* registered); and New Hall, Boreham; Boreham House; and Hatfield Priory (all grade II registered).

4.2.9 Further aerial mapping, geophysical survey, archaeological trial trenching and palaeolithic evaluation have all been undertaken. The results of these can be found in the appendices to Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.3]. There are around 50 additional archaeological sites, deposits and features have been identified by these activities as shown within Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1].

Landscape

4.2.10 The study area for the landscape assessment incorporates a buffer of approximately 2km from the proposed scheme centreline, and a minimum of 1km from the Order Limits (illustrated on Figure 8.1 [TR010060/APP/6.2]) of

Chapter 8: Landscape and Visual of the ES [TR010060/APP/6.1]. The study area falls within national character areas 86 and 111. Both landscape character areas contain a complex network of ancient woods and parklands, species-rich hedgerows, and meadows with streams and rivers. The wooded arable countryside provides a distinct sense of enclosure. Further key characteristics for these national character areas are presented in Appendix 8.1 of the ES [TR010060/APP/6.3].

4.2.11 The network of ditches and streams, water bodies and rivers are key distinctive features of this landscape. The winding routes of the rivers and smaller waterways influence field pattern, providing a strong sense of place and offering continuity throughout the landscape.

4.2.12 Existing vegetation includes highway vegetation, the pattern of small woodland blocks and copses scattered throughout the wider surrounding landscape, hedgerow boundaries, watercourses lined with trees, and the woodland and locally distinctive plantations along the River Blackwater.

4.2.13 The landscape within the study area is generally low-lying and relatively flat, with very gentle undulations leading to open views across agricultural fields. However, hedgerows, tree belts, woodlands and built development restrict the distance of such views. Potential visual receptors include those living and working on the edge of settlements and in scattered rural properties. In addition, users of PRoWs, cycle routes, the A12 and public and private open spaces could be affected by alterations in views.

4.2.14 Representative and illustrative viewpoints are shown on Figure 8.3 of the ES [TR010060/APP/6.2].

4.2.15 Key environmental designations and features along the route include the Blackwater Valley Landscape Character Area; Whetmead Local Nature Reserve (LNR) to the east of the A12 at Witham; Rivenhall Long Mortuary Enclosure Scheduled Monument, located south of the A12 to the east of Rivenhall End; and a geological Site of Special Scientific Interest (SSSI) to the north of junction 25.

Biodiversity

4.2.16 There are no confirmed or potential Special Protection Areas (SPAs), Special Areas of Conservation (SACs), or Ramsar sites located within the 2km study area around the Order Limits or within 200m of the ARN, and no SACs designated for bats within the 30km study area. Designated sites are shown on Figure 9.1 of the ES [TR010060/APP/6.2].

4.2.17 There are three designated sites beyond 2km from the proposed scheme that are hydrologically linked to it: Blackwater Estuary (Mid-Essex Coast Phase 4) SPA and Ramsar; Essex Estuaries SAC; and Colne Estuary (Mid-Essex Coast Phase 2) SPA and Ramsar, all of which are designated for Annex I habitats.

4.2.18 There are fifteen sites where there is possible interaction between the proposed scheme and ranging bird species associated with those designated sites: Blackwater Estuary (Mid-Essex Coast Phase 4) SPA and Ramsar; Abberton Reservoir SPA and Ramsar; Colne Estuary (Mid-Essex Coast Phase 2) SPA and Ramsar; Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA and Ramsar; Dengie (Mid-Essex Coast Phase 1) SPA and Ramsar; Outer

Thames Estuary SPA; Stour and Orwell Estuaries SPA and Ramsar; and Alde-Ore Estuary SPA and Ramsar.

4.2.19 There is one SSSI with hydrological connectivity to the site, the River Ter SSSI, which is located approximately 8km upstream of the proposed scheme to the north of Boreham.

4.2.20 One SSSI (Tiptree Heath SSSI, designated for heathland habitats) is located within 200m of the ARN (see Figure 9.1 of the ES [TR010060/APP/6.2]).

4.2.21 Two LNRs, Whetmead and Brockwell Meadows, are located within 2km of the proposed scheme (see Table 9.10 of Chapter 9: Biodiversity [TR010060/APP/6.1] and Figure 9.1 of the ES [TR010060/APP/6.2]). The Order Limits encroach approximately 100m across the western boundary of Whetmead LNR between junction 21 (Witham South interchange) and junction 22 (Colemans interchange); and Brockwell Meadows LNR is located approximately 55m west of the proposed scheme in Kelvedon between junction 23 (Kelvedon South interchange) and junction 24 (Kelvedon North interchange).

4.2.22 Habitat capable of supporting various protected and notable species is located along the route of the proposed scheme. These include bats, badgers, great crested newt, breeding birds, barn owl, reptiles, water vole, otters and aquatic species.

Water

4.2.23 The A12 crosses seven Main Rivers between junctions 19 and 25 (Chapter 14: Road drainage and the water environment, of the ES [TR010060/APP/6.1] provides further information). These are Boreham Brook, River Ter, River Brain, Rivenhall Brook, River Blackwater, Domsey Brook and Roman River. There are also approximately 30 Ordinary Watercourses and numerous tributaries. All of the water bodies fail the Water Framework Directive chemical status.

4.2.24 There are 35 abstractions within 500m of the proposed scheme: 26 from surface water and nine from groundwater. There are four surface water safeguard zones and four surface water nitrate vulnerable zones. Four hundred ponds are located within the study area, although the majority are not hydrologically connected to the proposed scheme.

Material Assets and Waste

4.2.25 Most of the study area is classed as mineral safeguarding areas for either sand and gravel or brick clay (in the east). A Mineral Safeguarding Area designation denotes where mineral capable of being an economic resource is considered to be present, and where prior extraction should take place if practicable to avoid its sterilisation by non-mineral development. There is also an active quarry at Colemans Farm, within the river valley at Rivenhall End. Please see Chapter 11: Material assets and waste, of the ES for details [TR010060/APP/6.1].

Geology and Soils

4.2.26 There is one designated geological SSSI, Marks Tey Brickpit, 115m north-west of junction 25 (Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1]). There are no other geological sites within 250m of the Order Limits.

4.2.27 There are six historic landfill sites within 250m of the Order Limits. Due to the largely rural nature of the A12 route, most of the potential sources of ground contamination are around Chelmsford and Witham, including disused railway lines, sewage works, rifle ranges and current and former industrial areas.

4.3 Planning applications, permissions and allocations

4.3.1 A review of planning permissions, planning applications and development plan site allocations has been undertaken for sites within the Order Limits and the immediate surrounding area. This has been undertaken through the analysis of the host authorities' respective websites for planning application data as well as emerging and adopted development plans. Planning data reviewed includes the following:

- Pending planning applications and extant planning permissions registered with the relevant local planning authorities since January 2016 (including reserved matter applications and discharge of conditions).
- Development allocations within an adopted local plan or emerging local plan (for which a draft has been submitted to the Planning Inspectorate) including neighbourhood plans.
- NSIPs listed on the Planning Inspectorate's (2021b) register of projects.
- Development of transport systems authorised by the Transport and Works Act 1992.
- Hybrid bills before parliament.

4.3.2 Section 8.13 sets out the impacts of the proposed scheme on existing and proposed development and associated mitigation measures.

Special Category Land

4.3.3 The Applicant has prepared a Replacement Land Statement (document reference [TR010060/APP/7.9]) for the proposed scheme, in which the areas of open space impacted by the proposed scheme are identified and suitable alternatives to replace the lost open space is set out. The Replacement Land Statement explains how section 131 of the 2008 PA is applied and treated by the proposed scheme.

The proposed scheme also impacts on Crown Land for which consent for acquisition is sought in accordance with section 135 of the Planning Act 2008. The extent of land to be permanently acquired is shown on the special category land plans (document reference: [TR010060/APP/2.5]). No green belt landor registered common land are impacted by the proposed scheme.

4.4 Description of the proposed scheme

4.4.1 The proposed scheme between junctions 19 (Boreham interchange) and 25 (Marks Tey interchange) is proposed to improve safety, solve strategic traffic problems arising from inadequate and varying route standards, and reduce

congestion and delay, which will collectively increase resilience along this key part of the SRN.

4.4.2 The Applicant is seeking powers to widen the existing A12 to three lanes (where it is not already three lanes) between junction 19 and junction 25. The proposed works extend for a total of 15 miles (24km).

4.4.3 The proposed scheme also includes safety-related improvements, including closing off existing private and local direct accesses onto the main carriageway, and alterations and improvements to existing non-vehicular routes along the A12 for WCH.

4.4.4 A detailed description of the proposed scheme can be found in Chapter 2: The proposed scheme, of the ES [TR010060/APP/6.1].

4.4.5 The section of the A12 to be altered is located wholly within the administrative area of Essex County Council (which is the local highway authority for roads not forming part of the SRN in Essex). The proposed scheme is mainly within the administrative areas of Braintree District Council and Colchester Borough Council, with parts also being within the Chelmsford City Council and Maldon District Council administrative areas.

4.4.6 Chelmsford is located to the south-west of the proposed scheme and Colchester to the north-east. The settlements of Boreham, Hatfield Peverel, Witham, Rivenhall End, Kelvedon, Feering and Marks Tey are along the route. The A12 runs parallel and to the south of the GEML railway (which connects London with Colchester, Ipswich and Norwich) for most of its length between junctions 19 and 25.

4.4.7 Major connecting roads include the A130, which joins the A12 at junction 19, and the A120, which joins the A12 at junction 25. The B1137 links Boreham to junction 19 and Hatfield Peverel, and the B1018 and the B1019 link Maldon to Witham and Hatfield Peverel respectively. The B1023 (Inworth Road) links Kelvedon to Tiptree, and Braxted Park Road connects Tiptree to Rivenhall End. These are the main local roads that connect directly to the A12 and therefore will be subject to some associated development to integrate the proposed scheme with the local traffic network.

4.4.8 The proposed scheme will also require the diversion and alteration of utilities, including apparatus for electricity, communications, water and gas. One of the high-pressure gas main diversions (the Gas Main Diversion) has the potential to be an NSIP in its own right under section 20 of the Planning Act 2008.

Proposed scheme's main components

Alteration of the A12 and associated highway development

4.4.9 This includes the following:

- Widening of A12 junction 19 Boreham Interchange Bridge from two to three lanes in each direction and associated roundabouts to increase capacity and to enable the A12 to be widened to three lanes at the junction (to tie in with the current three-lane section between Boreham and Hatfield Peverel (junction 20a)).

- Two new three-lane dual carriageway sections, between the existing junctions 22 and 23 and between junctions 24 and 25.

4.4.10 The remaining sections of the existing A12 to be altered will be widened online.

4.4.11 Three new all movement junctions (dumbbell layout) would be provided at junctions 21, 22 and 24, which would replace junctions 20a, 20b and 23. Junctions 21 and 22 will be above ground level with a bridge over the A12 to connect both roundabouts. Junction 24 will be built in cutting, with the A12 at ground level and an underpass to connect both roundabouts.

4.4.12 Junction 25 will be improved with the south roundabout replaced by a signalised junction and a new local road connection (London Road) where the new section of A12 joins the existing mainline.

Utilities

4.4.13 The proposed scheme will have to divert existing utilities that are either located on existing A12 verges or will be affected by the widening works (embankments, retaining walls and associated works). The diversion will include water mains; wastewater; low, medium and high voltage cables, gas main (low and high pressure) and telecommunications.

4.4.14 To enable construction of the proposed scheme, several existing utilities will need to be temporarily diverted. This will safeguard the existing supplies during construction while the permanent diversion routes are being constructed. The quantity and length of temporary diversions will be minimised where practicable and will include all of the affected utilities mentioned above.

Biodiversity, ecology and open spaces

4.4.15 The proposed scheme has sought to maximise biodiversity value with several proposed green areas where habitats, hedgerows and native species of trees and hedges are intended to improve and connect wildlife corridors. Landscape screening is proposed, including retaining existing vegetation where practicable

4.4.16 The proposed green areas are to be located adjacent to the A12 and comprise flood and drainage mitigation areas, together with a new network of ditches, pipes and drainage systems.

4.4.17 As the proposed scheme will impact on some open space and an LNR, National Highways will provide replacement open space of an equivalent area as a minimum.

Mitigation of operational effects

4.4.18 The proposed scheme includes design and mitigation measures to avoid or reduce its operational and construction effects. The following are examples of measures that are embedded into the proposed scheme design:

- Mitigation planting to screen views of the proposed scheme, including planting of woodland, individual trees, hedgerows, shrubs, and grassland.
- Noise bunds and use of low noise road surfacing to reduce noise impacts from vehicles using the proposed scheme.

- Provision of sustainable drainage systems and attenuation to reduce flood risk and mitigate water quality impacts.

4.4.19 Additional mitigation measures have also been developed to mitigate likely significant adverse effects during construction and operation, including the following:

- Habitat creation and enhancements to replace habitat lost to the proposed scheme.
- Use of noise barriers and surfacing with better noise reducing properties than a conventional low noise surface to mitigate significant noise impacts.
- Flood storage areas to mitigate increased flood risk.
- Use of bank protection measures, baffles and pool-riffle sequences to mitigate impacts on hydromorphology.

Compounds, haul roads and borrow pits

4.4.20 The proposed scheme includes two main compounds, one located north of junction 21 and another north of junction 22, adjacent to Eastways Industrial.

4.4.21 The main compounds will have offices, welfare facilities, parking, training rooms, materials storage, asphalt and concrete batching plants.

4.4.22 Three small satellites compounds are also proposed adjacent to the other junctions in the proposed scheme. There will also be laydown areas (self-contained small compound) throughout the proposed scheme.

4.4.23 There will be a prefabrication site compound west of Hatfield Peverel that will allow offline construction of some bridge elements.

4.4.24 Throughout the proposed scheme will be soil storage areas to store topsoil during construction and haul routes parallel to the A12 to connect borrow pits, site compounds and construction areas, reducing construction traffic on the LRN and SRN.

4.4.25 There are four proposed borrow pits in total, which would be located as follows:

- North of the proposed junction 21.
- South of the A12 to the east of junction 21.
- East of Rivenhall End between the A12 and GEML railway.
- South of the A12 to the west of the proposed junction 24.

4.4.26 These borrow pits will be used to extract materials from the order land for the construction of the proposed scheme and reduce the import of inert materials from other quarries.

4.4.27 Junction 22 will be built on a currently active quarry (owned by Brice Aggregates), where extraction is being expedited to prevent sterilisation of minerals.

Slow moving traffic and WCH infrastructure

4.4.28 The proposed scheme will improve the quality and capacity of existing WCH infrastructure, seek opportunities for new routes and address historic

severance. This includes controlled and uncontrolled crossings at junctions and adjacent local roads.

4.4.29 The proposed scheme will also create new WCH routes to connect north and south of the A12 and connect existing routes along the A12. This includes seven pedestrian and cyclist bridges. There will be four additional new accommodation bridges to provide local residents and farmers access to their land.

4.4.30 The speed limit would be reduced on local roads within villages (Boreham and Hatfield Peverel) and standardise speed limits put in place between villages of Boreham to Hatfield, Inworth to Tiptree and de-trunked sections of the A12) to improve safety, especially for home-to-school transport, and other walking and cycling activity on local roads.

4.4.31 WCH, horse-drawn carriages and slow-moving vehicles would be prohibited from using the A12 mainline between junctions 21 and 25 (Witham South interchange to Marks Tey interchange). These user groups will be accommodated on local roads, including being diverted to safe alternative routes, including de-trunked sections of the existing A12, once realigned sections have been implemented.

4.4.32 Roadside technology will be added between junctions 21 and 25 to smooth traffic flow, reduce speed limits in congestion to improve safety and to close lanes when vehicles break down or other incidents occur, to reduce the likelihood of collisions. Messages on electronic signs will inform drivers of reasons for lane closures or reduced speed limits.

Works to the local highway network, including those parts of the existing A12 that will no longer from part of the SRN

4.4.33 The proposed scheme also includes the de-trunking of two sections of the A12 which will become local roads managed by Essex County Council. These are at Rivenhall End and between Feering and Marks Tey.

4.4.34 There will be traffic management improvements to Boreham (Main Road), Hatfield Peverel (The Street), Little Braxted Road and Inworth Road.

4.4.35 New alignments with new overbridges over the A12 are proposed for Braxted Road, Easthorpe Road. The proposed scheme will also provide three accommodation overbridges along Kelvedon bypass at Highfields Lane, Ewell Overbridge, Prested and Threshelfords Bridges.

4.5 High Pressure Gas Main Diversion Witham South to Little Braxted governor

4.5.1 The proposed scheme also includes the diversion of the existing Gas Main (Work No U69) (the Gas Main Diversion). The construction of a gas pipeline by a gas transporter will be treated as an NSIP if it meets the following conditions as set out in section 20 of the Planning Act 2008:

- (2) The pipeline will be wholly or partly in England.

- (3) Either (a) the pipeline will be more than 800mm in diameter and more than 40km in length, or (b) the construction of the pipeline will likely have a significant effect on the environment.
- (4) The pipeline will have a design operating pressure of more than 7 bar gauge.
- (5) The pipeline will convey gas for the supply (directly or indirectly) to at least 50,000 customers, or potential customers, of one or more gas suppliers.

4.5.2 The Gas Main Diversion is expected to be constructed by Cadent Gas Limited (the current operator of the gas pipeline to be diverted) who is a 'gas transporter' (as it holds a licence under the Gas Act 1986). The gas main will be wholly in England, have a design operating pressure of more than 7 bar gauge and would supply more than 50,000 customers, and therefore meets the conditions in Section 20(4) and 20(5) of the Planning Act 2008.

4.5.3 The Gas Main Diversion would be approximately 3km in length and have a diameter of 600mm and therefore would not meet the condition in sub-section (3)(a). In order to determine whether the diversion of the gas main will have a significant effect on the environment, and therefore meet the condition in sub-section (3)(b), National Highways has prepared a Screening Assessment of the environmental effects of the construction of the Gas Main Diversion. The results of the Screening Assessment can be found at Appendix 5.2 of the ES [TR010060/APP/6.3].

4.5.4 The existing Gas Main runs parallel to the proposed scheme between Maldon Road Bridge (B1018) and Colemans Bridge (B1389). Adjacent to the Coleman Bridge works is an existing Cadent above ground installation called Little Braxted Pressure Reduction Station. The Pressure Reduction Station has six pipelines either feeding into or out of it, one of which is the high pressure pipeline adjacent to the proposed scheme.

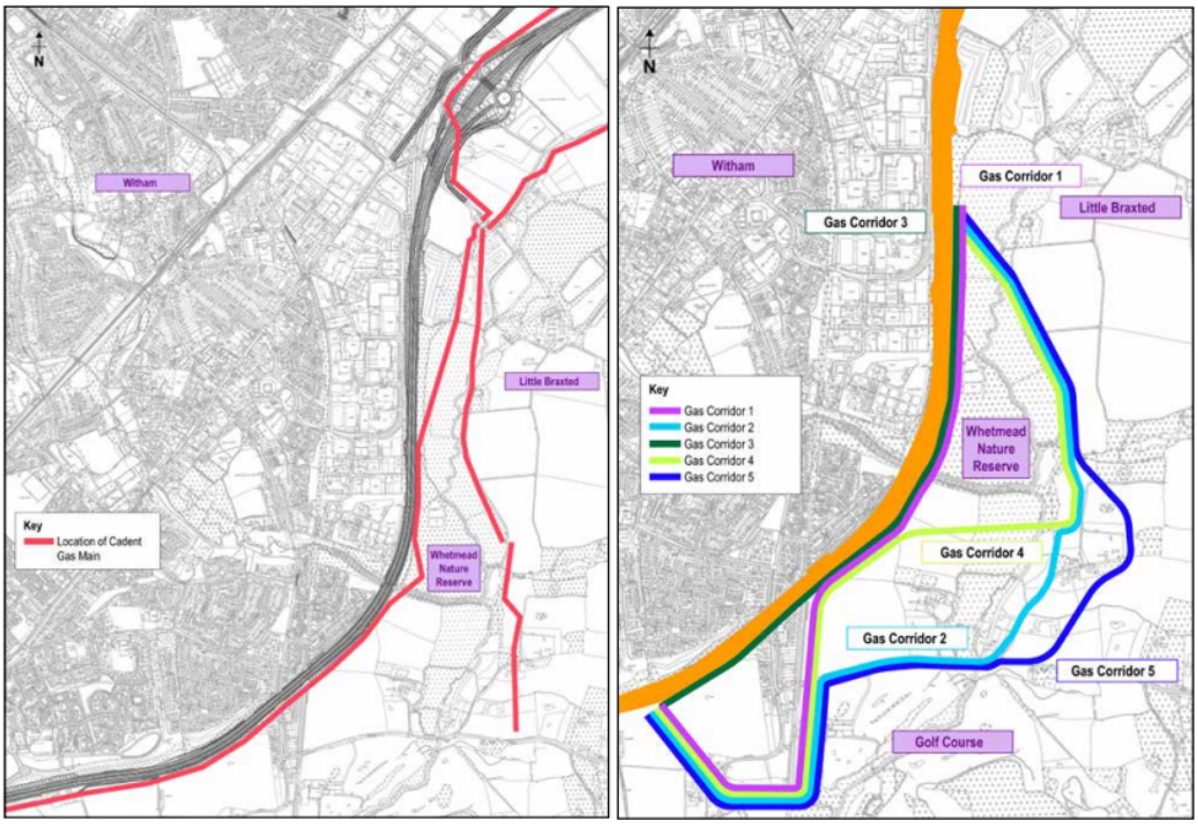
4.5.5 The proposed scheme widening will be built where the current gas main is located. The current gas main runs parallel along the southbound carriageway of the A12 and runs under residential back gardens, a nature reserve that is an historic landfill site, and 11kV cables that run directly above the pipeline. The proposed scheme cannot widen asymmetrically to the north as it would impact on Witham residential and business properties. All of these constraints raised the need for the gas main to be diverted.

4.5.6 The Applicant initially consulted on five possible corridors. The supplementary consultation ran from 9 November 2021 until 14 December 2021. The consultation responses are available in Annex N of the Consultation Report [TR010060/APP/5.2].

4.5.7 The Applicant has included a route based on corridor 4 in the proposed scheme to accommodate the Gas Main Diversion. The proposed gas main diversion still has a 100m wide corridor to enable changes of direction or to enable alternative methods of construction (including directional drilling for river crossings). Cadent has not yet undertaken a detailed design study in respect of the Gas

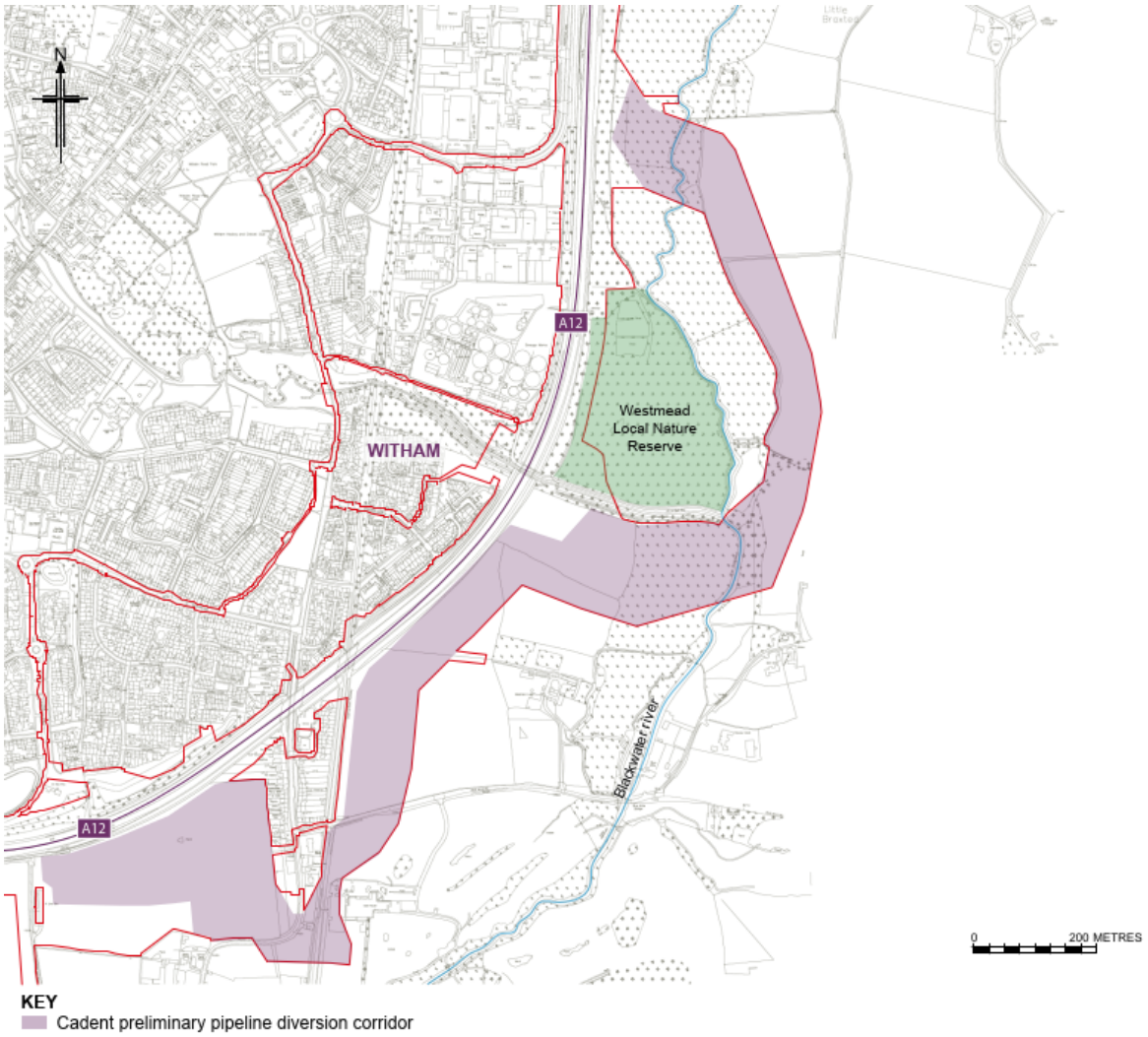
Main Diversion. The existing location of the gas main and five proposed corridors that were subject to consultation, are presented in Plate 4.2 below.

Plate 4.2 Existing cadent gas main (left) and gas corridor options (right)



4.5.8 The proposed Gas Main Diversion (shown in Plate 4.3) will avoid, where practicable, running close to residential properties around Maldon Road (B1018), and by doing so will run between the Witham disused railway linear country park and Bluemills golf course car park. It will avoid the possible area of contaminated land around Whetmead LNR, thus resulting in two crossings of the Blackwater River and affecting woodland that surrounds the Blackwater River. The Screening Assessment at Appendix 5.2 of the ES [TR010060/APP/6.3] concludes that the proposed Gas Main Diversion is likely to give rise to significant landscape and visual effects due to the loss of trees and woodlands which would impact the landscape character of the River Blackwater valley and open up views across the Blackwater River Valley towards the A12. Therefore, the Gas Main Diversion is being treated as an NSIP in its own right for the purposes of the Application.

Plate 4.3 Proposed Gas Main Diversion Corridor



4.5.9 As the proposed Gas Main Diversion is being treated as an NSIP in its own right for the purpose of the Application, it has been considered against the relevant Energy NPSs. These are the Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011a; 2011b). Appendix B and C of this CftS contains the EN-1 and EN-4 NPS Accordance Table.

4.5.10 Due to the ongoing review of the Energy NPSs, as set out in the Energy White Paper (HM Government, 2020), a draft EN-1 has been published (Department for Business, Energy and Industrial Strategy, 2021a). As the consultation period for the draft EN-1 closed on the 29 November 2021, it is likely that EN-1 will be adopted during the proposed scheme's examination period. As such, both the current and draft versions of EN-1 have been assessed and included to account for differences between the versions. The draft Energy NPS accordance table is available in Appendix D of this CftS. Similarly, to the draft EN-1 there is also a draft National Policy Statement for Gas and Supply Infrastructure and Gas and Oil Pipelines (EN-4). The proposed scheme prepared an accordance table for the draft EN-4 that is available in Appendix E of this document.

4.5.11 Further details concerning the qualification of this element of the proposed scheme as an NSIP can be found within the Application Form [TR010060/APP/1.4] and in the Explanatory Memorandum to the draft DCO [TR010060/APP/3.2].

4.5.12 The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 set out the statutory requirements for what information must accompany an application for development consent. Section 4.6 of this CftS has been prepared to address Regulation 6(4), which requires an application to be accompanied by details of the pipeline(s) that meet the thresholds for an NSIP under the Planning Act 2008.

4.6 Information required under Regulation 6(4) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

4.6.1 Where an application for development consent is for the construction of a pipeline, Regulation 6(4) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 sets out that the application must be accompanied by the following information:

- The name of the proposed pipeline.
- The owner of the proposed pipeline.
- The start and end point of the proposed pipeline.
- The length of the proposed pipeline in kilometres.
- The external diameter in millimetres of the proposed pipeline.
- What will be conveyed by the proposed pipeline.
- Whether the grant of any rights in land or consents to road or river crossing works are required and if so whether they can be obtained by agreement.

4.6.2 The following table sets out the required information under Regulation 6(4) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009.

Table 4.1 Requirements under Regulation 6(4) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

Regulation	Requirement	Response
6(4)(a)	Name of the proposed pipeline	Gas Main Diversion Witham South to Little Braxted Gas Governor
6(4)(b)	Owner of the proposed pipeline	Cadent Gas Limited (Company registration number 10080864) whose registered address is Pilot Way, Ansty, Coventry, England, CV7 9JU

Regulation	Requirement	Response
6(4)(c)	Start point of the proposed pipeline	Subject to the limits of deviation in article 10 of the draft DCO [TR010060/APP/3.1], the indicative start point is grid reference: Grid reference: TL 82100 13000
6(4)(c)	End point of the proposed pipeline	Subject to the limits of deviation in article 10 of the draft DCO [TR010060/APP/3.1], the indicative end point is grid reference: Grid reference: TL 83000 14400
6(4)(d)	Length of the proposed pipeline in kilometres	Approximately 3km
6(4)(e)	External diameter in millimetres of the proposed pipeline	The existing high pressure pipeline is 600mm and the proposed diverted Gas Main would also have an external diameter of 600mm
6(4)(f)	What will be conveyed by the proposed pipeline	Natural gas
6(4)(g)	Whether the grant of any rights in land or consent to road or river crossing works are required and if so whether they can be obtained by agreement	The gas main diversion will cross under the local highways of Maldon Road and Blue Mills Hill, south-east of Witham. It is anticipated the crossings underground will be achieved by installation in trenches, which will then be backfilled, or by directional drilling. The Gas Main Diversion will also cross under the River Blackwater. It is anticipated this will be achieved by directional drilling. While agreement will be sought with the relevant owners and the local highway authority, powers of compulsory acquisition to secure new rights and restrictive covenants for the crossings are sought in the draft DCO.

5 Transport case

5.1 Overview

5.1.1 This chapter provides further information on the transport problems that are driving the need to invest in the proposed scheme. It describes how the lack of capacity along the A12 is causing it to struggle with growing volumes of traffic, resulting in slower journeys. It also describes safety problems on the route and how the proposed scheme would help to address those problems, and provides a summary of how the proposed scheme would improve journeys for walkers, cyclists and horse riders.

5.2 Key functions of the A12

5.2.1 The A12 is a major A-road in the east of England, providing the main south-west/north-east road connection through Essex, Suffolk, and Norfolk. It connects Lowestoft in the north-east to London and the M25, intersecting with the A47, A14 and A120 which provide strategic connections to the ports of Felixstowe and Harwich, Peterborough, Cambridge and the M11. The A12 also acts as a link via the A120 to Stansted Airport.

5.2.2 The A12 performs essential functions at the strategic, regional, and local levels, as summarised in Table 5.1.

Table 5.1 Key functions of the A12

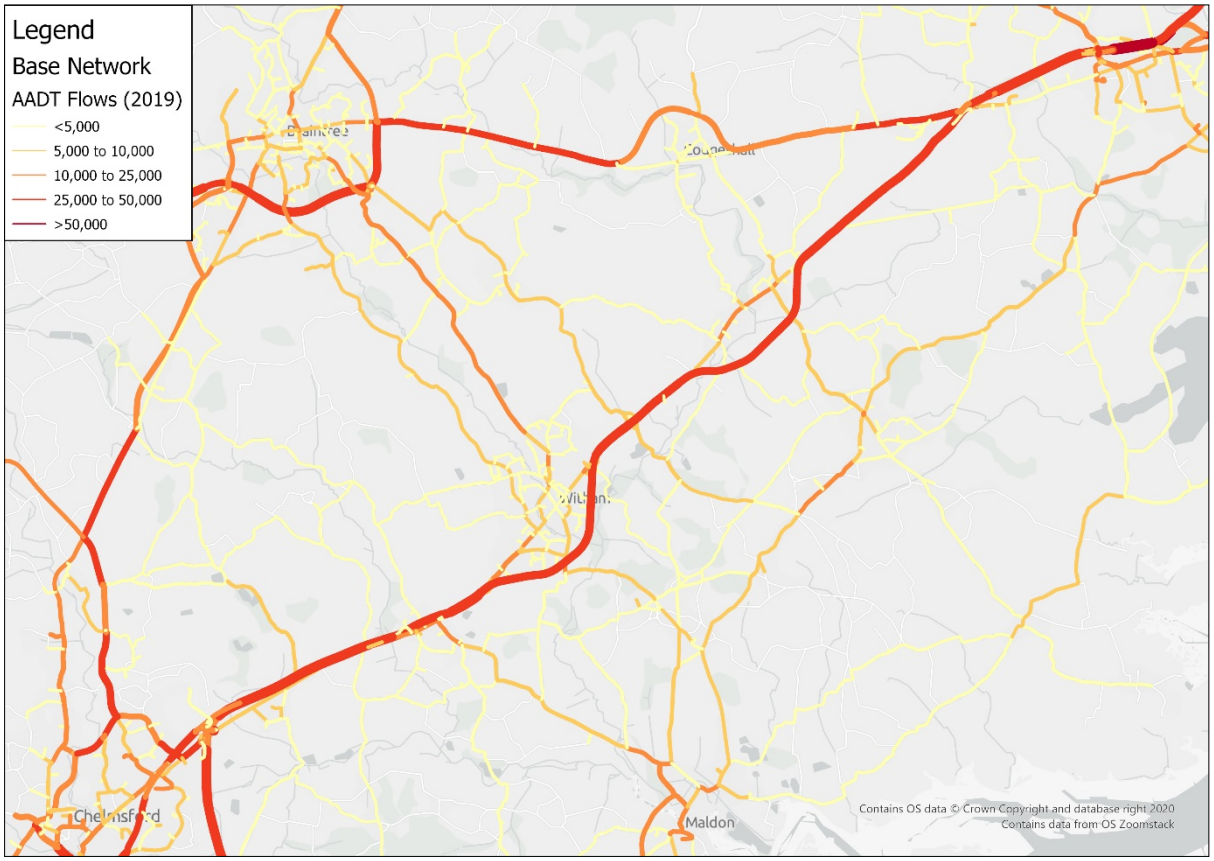
Functional level	Description
Strategic	• Forms part of the Trans-European Road Network carrying national, European, and international traffic • Provides a strategic connection to the ports of Felixstowe and Harwich for freight and passenger traffic, and to Stansted Airport • Forms part of the SRN between London, the south-east and the east of England
Regional	• Provides for the distribution of goods and services • Links the major regional commercial centres along the route • Provides access to holiday destinations within the region
Local	• Forms a bypass of some of the towns along the route • Provides the only means of access to some communities along the route • Is used by commuters on a daily basis.

5.3 Current traffic conditions

5.3.1 This section sets out an overview of the current road network performance, both on the existing A12 junctions 19 to 25 and on local roads.

5.3.2 Plate 5.1 shows the current Annual Average Daily Traffic (AADT) flows as of 2019.

Plate 5.1 Current traffic flows – 2019 AADT



5.3.3 Traffic flows are highest on the A12. Local roads close to the A12 with high traffic flows include the A130, A131 and A120, as well as within the communities of Hatfield Peverel, Witham and Kelvedon. Flows are also high on east–west B-road routes running parallel to the A12, and on B-roads leading out of settlements such as Maldon, Tiptree and Braintree towards the A12.

5.3.4 This current level of traffic on the A12 is extremely high for a two-lane dual carriageway. If a new road was being built today, the current level of traffic is either close to or exceeds the maximum recommended limit for what a two-lane road can support.

5.3.5 Plate 5.2 and Plate 5.3 show how close the current morning and evening rush hour traffic is to the theoretical capacity of the road. Much of the road is either close to or beyond this capacity in either the morning or evening rush hour. As the road has got closer to its capacity over time, queues and delays have become more regular and severe, and are expected to continue to increase in the future. Road users experience increased journey times, as well as journey times that are difficult to predict from day to day.

Plate 5.2 Congestion on the A12 (2019 AM peak hour)

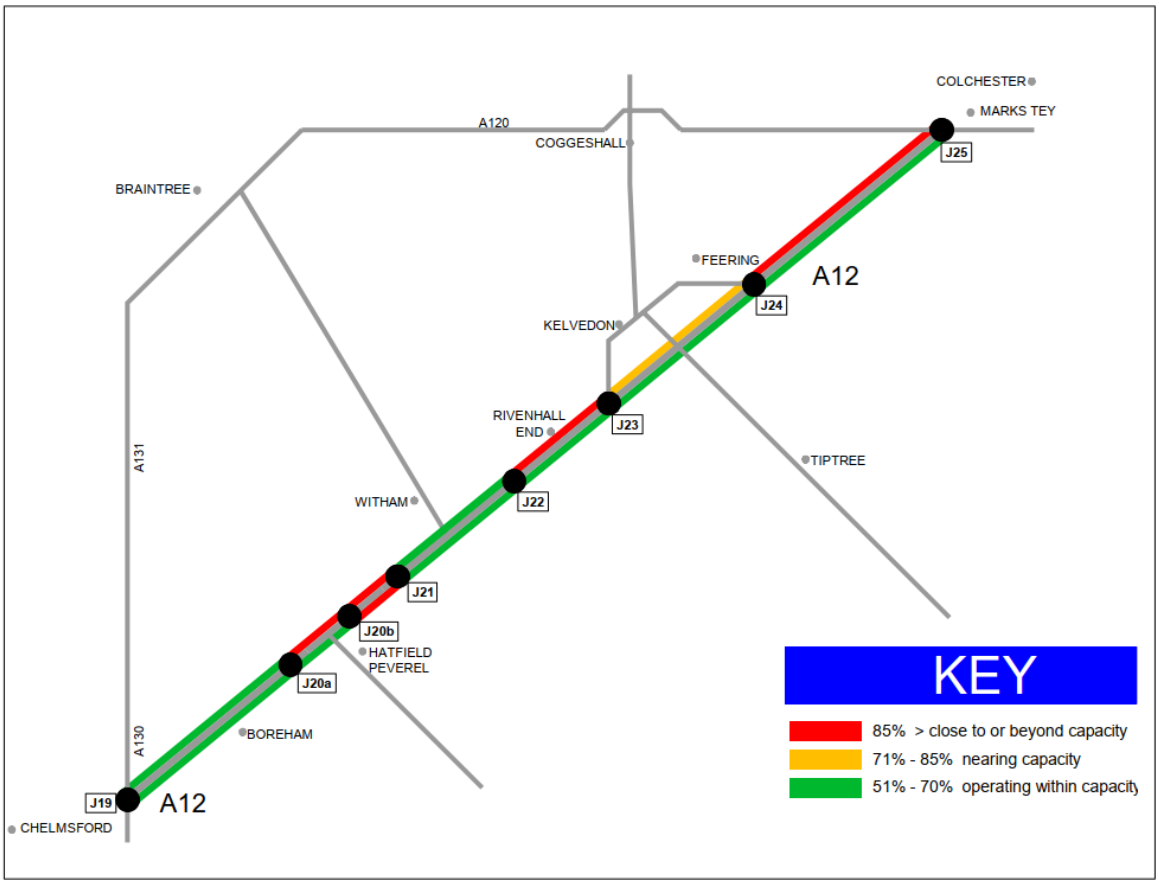
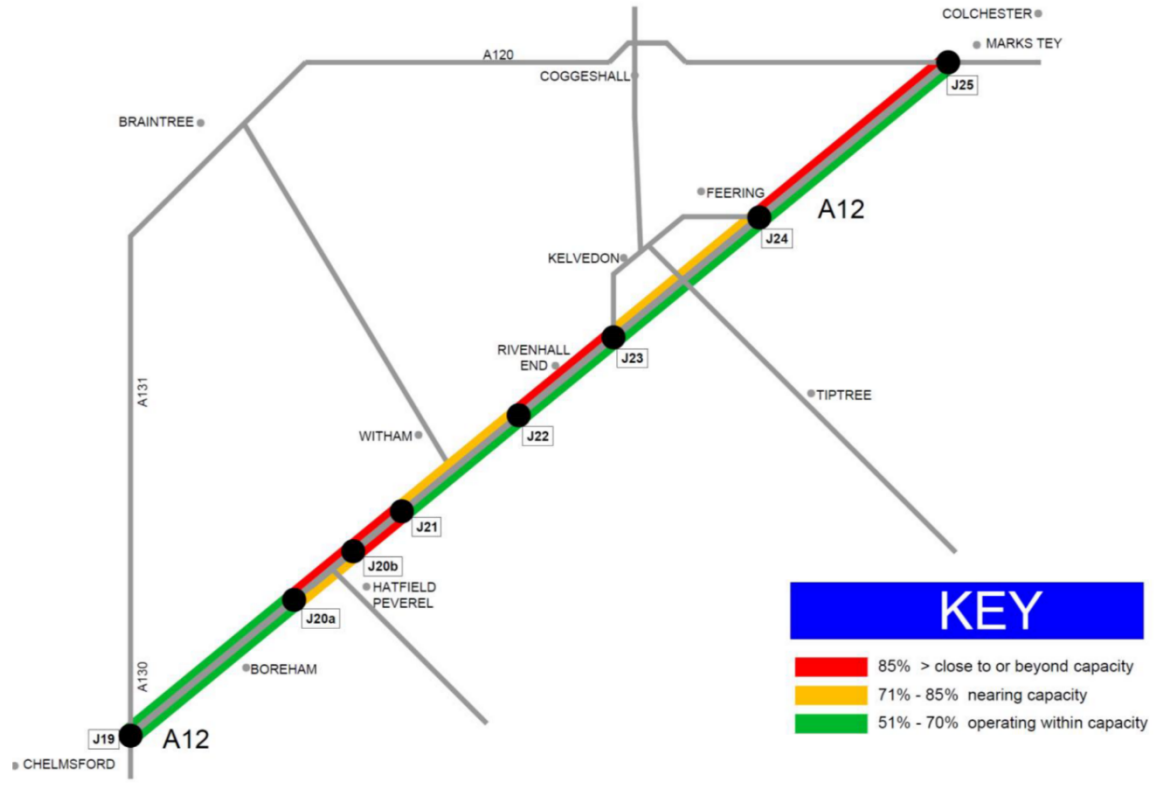


Plate 5.3 Congestion on the A12 (2019 PM peak hour)



5.3.6 Due to this high level of traffic for a two-lane dual carriageway, all sections of the A12 between junction 19 and junction 25 are in the worst performing 10% of links on National Highways' network in the East of England (Highways Agency, 2014) in terms of Vehicle Hours Delay.

5.3.7 As shown in Table 5.4, in 2019 average journey times towards Chelmsford in the morning peak (AM) were almost four minutes slower than in the middle of the day (inter-peak (IP)). Journey times towards Colchester in the evening peak (PM) were over five minutes slower than the IP. Congestion at junctions also results in delays on the local roads that join those junctions.

Table 5.4 Journey time by time period (2019)

Junction 19 to 25	Journey times		
	AM	IP (inter-peak)	PM
Northbound towards Colchester	15m 33s	15m 37s	21m 57s
Southbound towards Chelmsford	19m 47s	15m 14s	15m 33s

5.4 Future traffic conditions without the proposed scheme

5.4.1 Future traffic conditions have been predicted using a traffic model, as described in the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. This section summarises the future predicted traffic conditions if the proposed scheme is not built.

5.4.2 Based on the projected scale and location of housing and employment growth in the area, the A12 will continue to act as a vital strategic road in the future. However, if nothing is done to improve the road, the predicted increase in traffic will result in road user delays getting significantly worse and journey times becoming even more unreliable. Traffic levels on the A12 will increase to such a level that the entire two-lane section of the route will be close to or above capacity. The A12 will act as a barrier to economic growth that would otherwise be achieved with an effectively operating road network.

5.4.3 The predicted congestion on the network in 2042 without the proposed scheme (hereafter referred to as the 'Do Minimum scenario') is shown in Plate 5.4 and Plate 5.5.

Plate 5.4 Predicted congestion – 2042 AM (Do Minimum scenario)

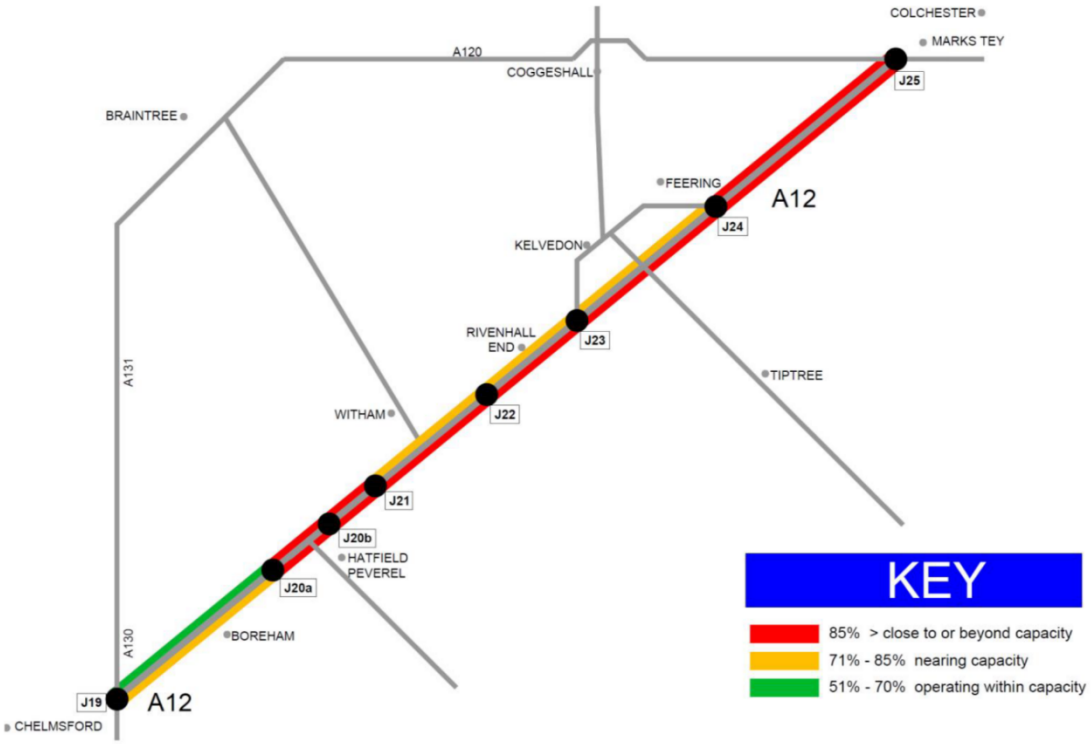
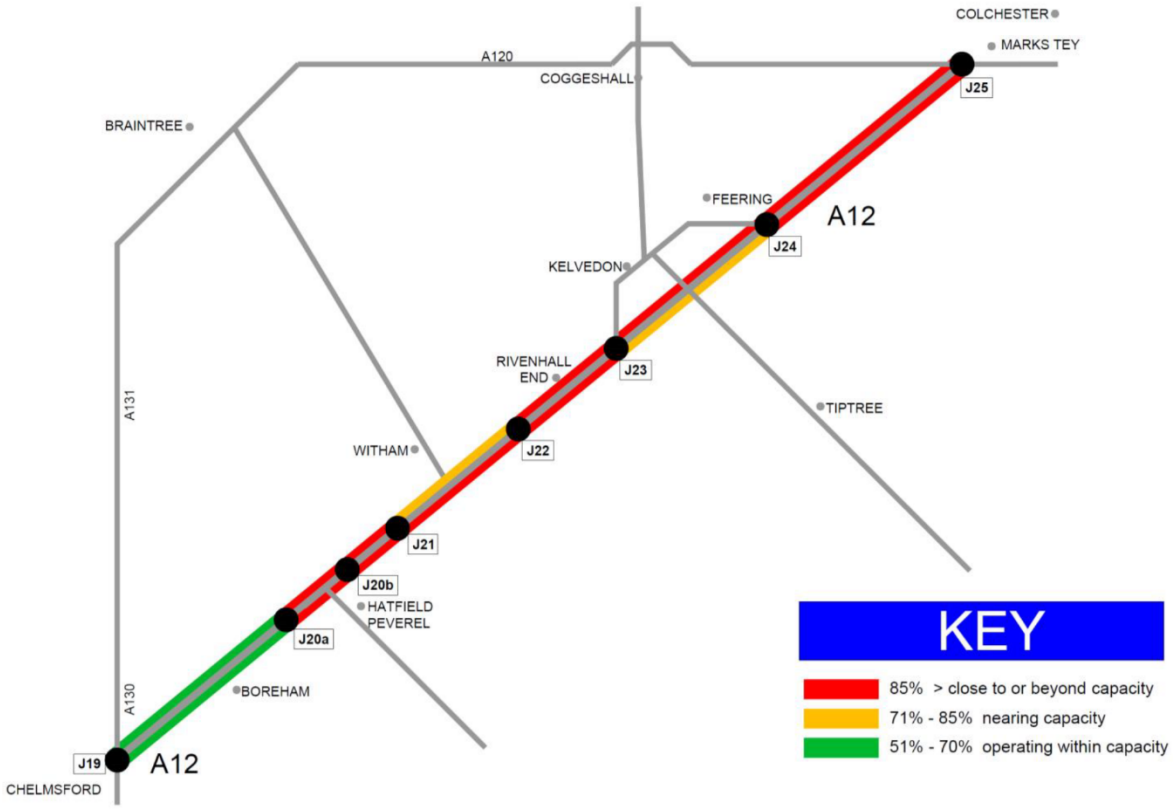


Plate 5.5 Predicted congestion – 2042 PM (Do Minimum scenario)



5.4.4 This demonstrates that no section of the A12 between junction 20a and junction 25 would comfortably operate within the theoretical capacity of the road in both the AM and PM peaks, a significant worsening of the current operational performance.

5.5 Future traffic conditions with the proposed scheme

5.5.1 With the proposed scheme in place (hereafter referred to as the 'Do Something scenario'), traffic is expected to reduce significantly on the two sections of the existing A12 that will be bypassed as part of the proposed scheme (Rivenhall End and between junction 24 and junction 25). Traffic levels would increase on the A12 between junction 19 and junction 25, as well as on the sections of the A12 on either side of the proposed scheme. This is because traffic would re-route onto the A12 away from other less suitable routes and because the increase in capacity on the proposed A12 would result in a general increase in trips.

5.5.2 Traffic is generally expected to reduce on local roads, particularly on The Street in Hatfield Peverel and through Kelvedon and Feering. Some roads leading into the A12 junctions, such as the B1023 north of Tiptree, the B1137 through Boreham and the B1408 at Copford, would have an increase in traffic. Some communities such as Boreham, Copford, Messing, Tiptree and Inworth would see an increase in traffic. Further information on the traffic changes on local roads is provided in the Appendix C of the Transport Assessment [TR010060/APP/7.2].

5.5.3 The proposed scheme is predicted to provide a significant improvement in journey times compared to the Do Minimum scenario. The journey times for peak hour trips on the A12 between junction 19 and junction 25 for the 2042 Do Minimum and Do Something scenarios are shown in Table 5.3. This shows a predicted reduction of over nine minutes in journey time towards Colchester in the evening peak and a reduction of nearly seven minutes in journey times towards Chelmsford in the morning peak.

Table 5.3 Comparison of journey times – 2042 Do Minimum and Do Something

	Peak hour journey time (Do Minimum)	Peak hour journey time (Do Something)	Journey time saving
Northbound towards Colchester in the evening peak	27m 44s	18m 07s	9m 37s
Southbound towards Chelmsford in the morning peak	22m 22s	15m 36s	6m 46s

5.5.4 The junctions along the A12 are also predicted to operate significantly better with the proposed scheme than they would without the proposed scheme. The results of the junction modelling are summarised in Appendix A of the Transport Assessment [TR010060/APP/7.2]. That report also describes the impact of the proposed scheme on local road junctions, which are expected to operate either the same or better as they would without the proposed scheme.

5.6 Road safety

5.6.1 This section provides an overview of road safety in the A12 study area. It summarises the current situation in terms of safety, and the benefits to safety in the future with the proposed scheme in place.

5.6.2 The route is currently of variable standard, with non-standard junctions, short slip roads and direct accesses onto the 70mph dual carriageway.

5.6.3 The current situation in terms of safety has been analysed. This analysis used local observed Personal Injury Accident (PIA) data from a nine-year period (from 2011 to 2019).

5.6.4 Table 5.4 shows the number of observed collisions and casualties on the A12 between junction 20a and junction 25 used as part of this analysis.

Table 5.4 Observed collisions and casualties between junction 20a and junction 25

Item	Fatal	Serious	Slight	Total
Collisions (2011–2019)	4	36	206	246
Casualties (2011–2019)	7	68	304	379

5.6.5 Based on current population and employment growth forecasts, traffic levels and congestion are expected to worsen, which will increase existing safety problems.

5.6.6 The proposed scheme would apply a consistent standard of design along the route, with a three-lane all-purpose road throughout and the removal of direct accesses onto the road, reducing risks to road users, road workers and residents.

5.6.7 The number of accidents and their associated costs was estimated for the situations both with and without the proposed scheme. This is shown in Section 6.3.

5.7 Walking, cycling and horse riding (WCH) assessment

5.7.1 The impact of the proposed scheme on existing PRoWs has been assessed, including consideration of those locations where there is severance (including existing severance).

5.7.2 Where the proposed scheme would directly affect existing PRoWs, such as footpaths, bridleways and existing cycle routes, provision has been made to ensure that, once the proposed scheme is open to traffic, the route remains open. This is through construction of overbridges or, where a direct connection is not feasible, the provision has been made for alternative routes using suitable diversions.

5.7.3 Proposals for WCH provision have been developed in discussion with a broad range of stakeholder groups and with local authorities throughout the development of the proposed scheme. The proposals are shown on the Streets, Rights of Way and Access Plans [TR010060/APP/2.6] and include the following:

- Separate walking and cycling links across four proposed major junctions, enabling users to bypass slip road junctions, including a section of the national cycle route affected by the proposed scheme.
- Provision of PRoW bridge connections, either as separate walking and cycling facilities or in conjunction with overbridges or side roads.
- Provision of paths to link groups of PRoWs to proposed bridge facilities.
- Provision of new toucan crossing facilities (crossings that allow both walkers and cyclists to cross).
- Improvements to existing shared walking/cycling facilities.
- Improved walking and cycling connections across sections of the existing A12 to be bypassed by the proposed scheme, and reintroduction of bus stopping facilities.

5.7.4 For safety reasons, WCH, horse-drawn carriages and slow-moving vehicles will be prohibited from using the A12 mainline between junctions 21 and 25 (Witham South interchange to Marks Tey interchange). These user groups will be diverted to safe alternative routes, including de-trunked sections of the existing A12, once realigned sections have been implemented. This is consistent with the specific requirements of the Design Manual for Roads and Bridges GD 300 design standard (Highways England, 2020e).

5.7.5 The proposed scheme will comply with the Equality Act 2010 requirements by accommodating visually impaired and mobility impaired users by providing ramps, as opposed to stairs, at structures, where practicable, and the use of tactile paving.

5.7.6 Effects on WCH from the proposed scheme are assessed in Chapter 13: Population and human health, of the ES [TR010060/APP/6.1].

6 Economic case

6.1 Overview

6.1.1 This section summarises the economic appraisal, which is used to demonstrate whether the proposed scheme is likely to be represent value for money. The appraisal estimates the monetised benefits and disbenefits of the proposed scheme, and compares them to the cost of the proposed scheme. This is presented in terms of a Benefit to Cost Ratio (BCR). Benefits and disbenefits that cannot be monetised are also assessed and taken into account when determining the proposed scheme's overall value for money.

6.1.2 As the proposed scheme would be operational for several decades, the standard approach is to evaluate the costs and benefits of the proposed scheme over a 60-year period (from the year of opening).

6.1.3 Full details of the economic assessment are provided in Combined Modelling and Appraisal Report (ComMA) [TR010060/APP/7.3].

6.2 Costs

6.2.0 The economic appraisal takes into account the costs of developing and constructing the proposed scheme, as well as the change in future road maintenance costs.

6.2.1 Certain adjustments are made to the scheme costs before they can be used in an economic appraisal. These are standard adjustments made for all UK transport economic appraisals, based on HM Treasury advice. It ensures that the costs can be fairly compared against the scheme benefits, and that costs are presented in a consistent way for all schemes across the country[4]. Full details of what this means are provided in the Combined Modelling and Appraisal Report (ComMA) [TR010060/APP/7.3]. The adjustments mean that although they are based on the same original source, the costs quoted in this economic appraisal appear differently to the costs quoted elsewhere in funding statements for example. The costs quoted here should be used in the context of economic appraisals only.

6.2.2 The overall proposed scheme cost calculated for use in economic appraisal, which is known as the Present Value of Costs, was calculated as **£452.1 million**. This comprises construction-related investment costs (including construction, land and property, preparation and administration, and supervision) of around £463.1 million and a reduction in maintenance costs of -£11.0 million.

6.3 Monetised benefits and disbenefits

6.3.1 Wherever possible, the benefits and disbenefits of the proposed scheme have been monetised. This allows them to be directly compared against the proposed scheme costs. In general, the monetised impacts were calculated

[4] The adjustments involve presenting the scheme costs as being in '2010 market prices, discounted to 2010'

using outputs from the proposed scheme's traffic model and running them through standard economic assessment software. This section of the report summarises the results of these assessments. Full details on the methodologies and results are provided in the Combined Modelling and Appraisal Report (ComMA) [TR010060/APP/7.3]. As with the proposed scheme costs (and in line with all other economic assessments of UK transport schemes) all monetised benefits quoted are provided in '2010 market prices, discounted to 2010'. The ComMA provides further information on what that means.

Economic efficiency

6.3.2 One of the main objectives of the proposed scheme is to address the problem of congestion, which causes slow and unreliable journeys and reduces economic efficiency. The largest predicted source of monetised benefits is due to travel time savings, as the proposed scheme would relieve congestion that would otherwise worsen if the proposed scheme is not built.

6.3.3 As well as the journey time savings once the proposed scheme is open, some other smaller impacts on road users have also been considered:

- Disbenefits for road users as they experience some additional delays while the proposed scheme is being constructed.
- Benefits from a reduction in road user delay during future road maintenance (reflecting the 'maintenance holiday' once the proposed scheme is newly built, and the additional traffic management flexibility offered by an extra lane).
- Disbenefits from increases in vehicle operating costs, as vehicles on average would travel faster and further once the proposed scheme opens.

6.3.4 In total, these Economic Efficiency benefits are worth **£434.8 million**. Split into three different types of journey purpose, this gives:

- Consumer users (commuting): **£78.3 million**.
- Consumer users (other): **£121.1 million**.
- Business users and providers: **£235.5 million**.

6.3.5 The proposed scheme will also lead to an increase in the tax revenues received by the Government over the 60 year appraisal timeframe, primarily due to an increase in fuel consumption as more vehicles move at a faster speed (based on traffic model predictions). This gives a benefit of **£29.1 million**.

Safety

6.3.6 The numbers of road user casualties and their associated costs were predicted for the situations both with and without the proposed scheme. Over the 60-year appraisal period, there would be two fewer fatalities, 200 fewer serious and 496 more slight casualties. The change in the overall number of accidents due to the proposed scheme would be an increase of 262.

6.3.7 The monetised benefit from improved safety is **£13.1 million**.

Noise, Air Quality and Greenhouse Gases

6.3.8 The proposed scheme is predicted to cause an increase in greenhouse gas emissions. This is due to more vehicles travelling at higher speeds, taking advantage of the enhanced opportunities for travel offered by the proposed scheme, as predicted by the traffic model.

6.3.9 As reported in the Chapter 15 of the Environmental Statement [TR010060/APP/6.1], there is predicted to be an increase in carbon dioxide emissions of 1,535,559 tonnes due to road users. This gives a monetary disbenefit of **-£113.4 million**.

6.3.10 This change in emissions was calculated using the Department for Environment, Food and Rural Affairs' (2021) Emission Factors Toolkit (v11). A sensitivity test has also been undertaken to test the impact that the Government's Transport Decarbonisation Plan (DfT, 2021) would have on the proposed scheme's greenhouse gas emissions. This sensitivity test assumes a greater take-up of electric vehicles than the core assessment. The results of this test show that the proposed scheme would still increase greenhouse gas emissions, but to a much lower extent. It predicts that the proposed scheme would cause an increase of 292,376 tonnes of CO_2 emissions over 60 years, giving a monetary disbenefit of -£30.0m (compared with £113.4m in the core assessment).

6.3.11 In terms of air quality, there is predicted to be increases in PM_{10} (particulate matter ≤10µm in diameter) and NOx emissions, due to changes in traffic flows, distances and speeds once the proposed scheme is in place. The total value of -the change in air quality is a disbenefit of **-£16.3 million**.

6.3.12 There is predicted to be a disbenefit from an increase in noise levels, equating to **-£6.6 million**. Note that although the noise and air quality monetised assessments are based on the work reported in Chapters 12 and 6 respectively of the Environmental Statement, they use their own standard economic assessment worksheets that are provided in Appendix E of the ComMA. This can lead to different conclusions than are in the Environmental Statement.

Journey time reliability impacts

6.3.13 Road users experience day-to-day variability in travel times due to high congestion, and delays from accidents and other incidents. The additional lane offered by the proposed scheme, and the presence of improved technology, would result in lower congestion and an ability to deal with incidents effectively. This improvement in journey time reliability would result in benefits of **£180.7 million**.

Wider economic impacts

As well as the direct economic impacts described above, the proposed scheme would also lead to productivity improvements in the wider economy. These wider economic impacts would provide overall benefits of **£253.9 million**.

6.3.14 The largest source of these productivity benefits are from increases in agglomeration (£216 million). This is due to the improvements in journey time that the proposed scheme provides between and within urban areas. Increasing the density of urban areas leads to an improvement in the productivity of jobs within those areas. There are also benefits from increasing the labour supply (£6 million) as some people decide to enter the workforce as travel costs fall, and from other increases in business output (£31 million).

Overall monetised benefits

6.3.15 The benefits described above can be summed to give an overall value, known as the Present Value of Benefits, of **£775.4 million.**

6.4 Benefit to Cost Ratio

6.4.1 Comparing the costs and benefits of the proposed scheme gives a Benefit to Cost Ratio (BCR).

6.4.2 As is standard in transport economic appraisal, two different BCRs are reported. An 'Initial BCR' that excludes benefits from wider economic impacts and journey time reliability, and an 'Adjusted BCR' that includes all monetised benefits.

6.4.3 The Initial BCR compares a Present Value of Benefits **(£340.7 million**) with the Present Value of Costs **(£452.1 million**) to give an Initial BCR of **0.8**.

6.4.4 The Adjusted BCR compares a Present Value of Benefits **(£775.4 million**) with the Present Value of Costs **(£452.1 million**) to give an Adjusted BCR of **1.7**.

6.5 Non-monetised benefits

6.5.1 A summary of the non-monetised benefits of the proposed scheme is provided in Table 6.1. Full details of each assessment are provided in Appendix E of the ComMA [TR010060/APP/7.3].

Table 6.1 Non-monetised impacts

Item	Impact
Landscape	Moderate adverse
Historic environment	Moderate adverse
Biodiversity	Very large adverse
Water environment	Neutral
Physical activity	Neutral
Journey quality	Large beneficial
Security	Slight beneficial
Access to services	Neutral
Severance	Moderate beneficial

Item	Impact
Options and non-use values	Neutral

6.6 Overall value for money conclusion

6.6.1 The proposed scheme has an adjusted BCR of 1.7 (which means that for £1 spent on the proposed scheme there will be a £1.70 return to society in benefits) when compared to a Present Value of Costs of £452.1 million. Impacts which cannot be monetised have also been considered. These include adverse that on landscape, the historic environment and biodiversity, and beneficial impacts from improved journey quality, security and severance.

6.6.2 Overall, taking into account the monetised and non-monetised benefits, as well as various sensitivity tests, the proposed scheme is considered to represent medium value for money.

7 Planning and transport policy context

7.1 Introduction

7.1.1 Local Plans and other documents, such as the National Planning Policy Framework (NPPF) (The Department for Levelling Up, Housing and Communities, 2021), can be a relevant consideration when making decisions on DCO applications. Section 104(2) of the Planning Act 2008 states that the relevant SoS must have regard to the relevant NPS, any local impact reports produced by host authorities, prescribed matters and any other matters that they consider are both important and relevant to the decision. The compliance of the proposed scheme with the relevant policies of the Local Development Plans is summarised in Section 8 and provided in more detail in the Local Planning Policy Accordance Tables in Appendix F.

7.1.2 This section provides and appraisal of the strategic alignment and conformity with the relevant national policies and how we are assessing the scheme against key policies, local and national.

7.2 National policy context

National Policy Statements

7.2.1 National Policy Statements (NPSs) are produced by government. As explained on the Planning Inspectorate's National Infrastructure Planning website[5], "*They give reasons for the policy set out in the statement, and must include an explanation of how the policy takes account of government policy relating to the mitigation of, and adaptation to, climate change. They comprise the Government's objectives for the development of nationally significant infrastructure in a particular sector and state, including:*

- *how this will contribute to sustainable development*
- *how these objectives have been integrated with other government policies*
- *how actual and projected capacity and demand have been taken into account*
- *consideration of relevant issues in relation to safety or technology*
- *circumstances where it would be particularly important to address the adverse impacts of development*
- *specific locations, where appropriate, in order to provide a clear framework for investment and planning decisions."*

7.2.2 NPS also include any other policies or circumstances that ministers consider should be taken into account in decisions on infrastructure development.

[5] https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/national-policy-statements/ (Accessed on 1 July 2022)

7.2.3 There are 12 designated NPSs setting out government policy on different types of national infrastructure development. The NNNPS (DfT, 2014) is the primary national policy document that guides decision making on the Application.

7.2.4 As mentioned in Section 4, the proposed scheme also incorporates a gas main diversion, and to the extent that this is considered to be an NSIP in its own right, the decision maker must also have regard to the NPSs for Energy. The Overarching National Policy Statement for Energy (EN-1) and National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011a; 2011b) will also guide decision making in relation to the gas main diversion element of the proposed scheme. The Government is currently reviewing the suite of Energy NPSs. Appendix B and D of this document provides the current and emerging Energy NPSs and explains how the proposed scheme complies with both sets of documents. As the emerging Energy NPS had a consultation and are under parliamentary review, significant weight should be given to the emerging Energy NPS's as they are close to be adopted.

7.3 National Planning Policy Framework (NPPF)

7.3.1 The NPPF (The Department for Levelling Up, Housing and Communities, 2021) sets out the Government's national planning policies for England and how these should be applied strategically in the development plan system and in the management of development.

7.3.2 The NPPF states that NPSs are the primary decision-making document for NSIPs under the Planning Act 2008. Paragraph 5 of the NPPF states:

'*The Framework does not contain specific policies for nationally significant infrastructure projects. These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the National Planning Policy Framework).*'

7.3.3 Paragraph 1.17 and 1.18 of the NNNPS (DfT, 2014) states that the overall strategic aims of the NNNPS and NPPF are consistent and that the NPPF will be an important and relevant consideration *'but only to the extent relevant to* [the] *project*'.

7.3.4 In some instances the NPPF may provide more detail. Consequently, throughout the ES chapters there are references to the NPPF.

7.3.5 The NPPF reiterates that the achievement of sustainable development lies at the heart of the planning system. This can be achieved through three overarching objectives: economic, social and environmental. These objectives are interdependent and need to be pursued in mutually supportive ways (paragraph 8).

7.4 Local planning and transport policy context

Development plans

7.4.1 Local planning authorities have a statutory duty to prepare a 'development plan' for their respective areas. This section identifies the relevant strategic and local development plans that may be material considerations in the determination of the proposed scheme. Appendix F of this document sets out the full list of strategic and local planning and transport policies that are considered relevant and provides an assessment of how the proposed scheme meets the requirements set out in those policies.

7.4.2 The adopted and emerging development plan documents that are considered relevant are presented in Table 7.1.

Table 7.1 Adopted and emerging development plan documents

Adopted	Emerging
Essex County Council	
Essex Minerals Local Plan (2014)	
Essex and Southend by-Sea Waste Local Plan (2017)	
Braintree District Council	
Braintree District Local Plan 2013-2033 Section 1, North Essex Authorities Shared Strategic Section 1 Plan (2021a)	Braintree Section 2 Main Modifications for Consultation (2021b)*
Braintree Local Development Framework Core Strategy (2011, updated 2021)	
Braintree Local Plan Review (2005), saved policies	
Colchester Borough Council	
Colchester Borough Local Plan 2013-2033 Section 1, North Essex Authorities Shared Strategic Section 1 Plan (2021a)	Section 2 Colchester Publication Draft Local Plan – Main and additional Modifications (2021b)*
Colchester Local Development Framework Core Strategy (2014a)	
Colchester Local Development Framework Development Polices (2014b)	
Colchester Local Development Framework Site Allocations (2010)	

Adopted	Emerging
Chelmsford City Council	
Chelmsford Local Plan (2020)	
Maldon District Council	
Maldon District Approved Local Development Plan 2014 – 2029 (2017)	
** On Monday 4 July 2022 Colchester Borough Council formally adopted the Colchester Borough Local Plan 2017-2033 (Section 2). On Monday 25 July Braintree District Council formally adopted its Local Plan 2033 (Section 2). Due to the timing of the submission of the DCO application it has not been possible to address specific implications arising from any additional or minor modifications to these plans recommended by the Inspectors.*	

7.4.3 The proposed scheme passes through the administrative areas of Chelmsford City Council, Colchester Borough Council, Braintree District Council and Maldon District Council.

7.4.4 The main planning policy issues raised by the proposed scheme across each of the 'host' local authorities relate to the need for enhancements to the SRN to support economic and housing growth, the management of traffic and construction impacts, and impacts on biodiversity and amenity such as noise, vibration and air quality. The proposed scheme is highlighted in most of the host authorities' Local Plans as a required piece of infrastructure to alleviate existing traffic congestion and to improve the safety of the route. It is also recognised that the proposed scheme would also result in an improvement in community connectivity across the area.

7.4.5 Further detail on what each council's local plan says about the role of the A12 and the need for improvements is contained in Section 8 of this CftS.

7.4.6 The proposed scheme passes through the administrative areas of Chelmsford City Council, Colchester Borough Council, Braintree District Council and Maldon District Council. Section 8.2 provides a short summary of what each council's Local Plan says about the role of the A12 and the need for improvements.

Local transport plans

Essex Transport Strategy

7.4.7 The Essex Transport Strategy (Essex County Council, 2011) was adopted in June 2011. This is a long-term plan covering 15 years that sets out the county council's aspirations for improving travel in the county, demonstrating the importance of the transport network to achieving sustainable long-term economic growth. The Essex Transport Strategy seeks to achieve five broad outcomes:

- Provide connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration.

- Reduce carbon dioxide emissions and improve air quality through lifestyle changes, innovation and technology.
- Improve safety on the transport network and enhance and promote a safe travelling environment.
- Secure and maintain all transport assets to an appropriate standard and ensure that the network is available for use.
- Provide sustainable access and travel choice for Essex residents to help create sustainable communities.

7.4.8 The Essex Transport Strategy provides a strategic context for the delivery of transport related infrastructure for Essex. The strategy states:

'*Problems encountered along the A12 are well documented, having been examined in 2008 by an Essex County Council funded Public Inquiry and the 2010 DfT-led London to Haven Ports Study. Through the A12 Alliance we will continue to lobby the Highways Agency to address specific local problems along the A12 and to develop a longer-term investment plan that recognises the importance of the A12 to the Essex economy.*'

7.4.9 Although published in 2011, the strategy acknowledges that at that time the A12 operated at capacity and had poor reliability and traffic delays. The strategy states:

'The A12, in particular, has significant reliability issues which have been highlighted by the Council-commissioned A12 Inquiry. Closures are common, with the Inquiry finding that there is a 1 in 30 chance that the A12 will be closed at some point on its length during a typical day. This impacts not only on traffic on the road itself, but also on traffic levels on other roads in Essex.'

7.4.10 The strategy provides detail to how the council plans to improve the strategic road corridors. On page 61, it states:

'Improving the capacity and reliability of the strategic road corridors in Essex is essential to support economic growth in the county and to enable the expansion of our international gateways. Whilst out of direct Council control, we will ensure that the needs of our residents and businesses are adequately understood by Government and will continue to lobby strongly for additional investment in our trunk roads and motorways. In particular we shall continue to press for…improvements to the resilience of the A12, in accordance with the recommendations of the independent A12 Inquiry.'

7.4.11 Policy 3 outlines how the council will tackle congestion and identifies the A12 as a key strategic road that requires measures be put in place to manage traffic, improve the road, and promote the use of public transport, cycling and walking to relieve the existing congestion pressure on the road.

7.4.12 In conclusion, the Essex Transport Strategy highlights the importance of the A12 as a key strategic route and highlights its need for improvement, to address the existing congestion issues that reduce journey reliability and resilience. As a strategic highway, the A12 is not managed by Essex County Council, so the

strategy does not provide specific policies or proposals for how the route should be improved.

8 Conformity with planning policy

8.1 Introduction

8.1.1 This section provides an assessment of the proposed scheme's strategic alignment and conformity with the relevant national planning policies within the NNNPS (DfT, 2014). This section also references local planning policy to highlight support for the proposed scheme in local development plans.

8.1.2 The assessment focuses on the key policy matters relevant to the proposed scheme and purposefully does not seek to set out how the proposed scheme performs against all policies within the NNNPS. An Accordance Table, which demonstrates accordance with individual policies in the NNNPS, is included in **Error! Reference source not found.**.

8.1.3 As explained above, the proposed scheme also incorporates the Gas Main Diversion that is an NSIP in its own right. However, as this is part of the proposed scheme – the gas pipeline would not need to be diverted should the highway works to the A12 not go ahead – the Gas Main Diversion forms part of the Application that has been made by National Highways to the SoS for Transport, and it is therefore considered here. The relevant national planning policy for energy NSIPs is set out in NPS EN-1 and NPS EN-4 (Department of Energy and Climate Change, 2011a; 2011b).

8.1.4 A separate assessment of how the proposed Gas Main Diversion conforms with these NPSs is contained within Appendix B and C. As the current Energy NPSs are under review with draft versions currently under consultation, a further assessment of the two relevant draft Energy NPSs is also available within Appendix D and Appendix E, which note how they differ from the current Energy NPSs.

8.1.5 Assessments of how the proposed scheme conforms with relevant policies in Local Plans are provided in Appendix F.

8.2 Principle of development – improvement to the Strategic Road Network

National planning policy

National Networks National Policy Statement (NNNPS)

8.2.1 The NNNPS (DfT, 2014) sets out the need for NSIPs on the national road and rail networks in England, and the Government's policy to deliver these projects. The document sets out a summary of the Government's vision and strategic objectives:

'*The Government will deliver national networks that meet the country's long-term needs; supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system.*'

8.2.2 Paragraph 1.2 of the NNNPS states that:

'*The Secretary of State will use this NPS as the primary basis for making decisions on development consent applications for national networks nationally significant infrastructure projects in England…Under section 104 of the Planning Act the Secretary of State must decide an application for a national networks nationally significant infrastructure project in accordance with this NPS unless he/she is satisfied that to do so would:*

- *Lead to the UK being in breach of its international obligations;*
- *Be unlawful;*
- *Lead to the Secretary of State being in breach of any duty imposed by or under any legislation;*
- *Result in adverse impacts of the development outweighing its benefits;*
- *Be contrary to legislation about how the decisions are to be taken'*

8.2.3 The NNNPS is not scheme specific and does not set out a programme of road schemes, but instead deals with road and rail networks and strategic rail freight interchanges. It also sets out the principles by which applications for road and rail schemes should be assessed.

8.2.4 Section 2 of the NNNPS sets out the need for development of the national networks, the Government's policy and strategic vision and objectives. Paragraph 2.2 of the NNNPS states: '*There is a critical need to improve the national networks to address road congestion and crowding on railways to provide safe, expeditious and resilient networks that better support social and economic activity; and to provide a transport network that is capable of stimulating and supporting economic growth.*'

8.2.5 The NNNPS estimates that, in 2010, approximately 16% of all travel time was spent delayed in traffic (paragraphs 2.3 and 2.4). The NNNPS also forecasts that, by 2030, road traffic will have increased by 30% – this is recognised in paragraph 2.9 of the NNNPS, which states that development of the national networks is necessary to address the concerning safety problems arising from a 30% increase in road traffic.

8.2.6 Paragraph 2.10 of the NNNPS states that the Government has concluded that, at a strategic level, there is a compelling need for development of the national networks. It further states that the Examining Authority and the SoS should start their assessment of applications for infrastructure covered by the NNNPS on that basis.

8.2.7 The NNNPS explains that improvements to the road network are critical to supporting economic growth and to enable the delivery of housing and employment opportunities. This is emphasised in paragraph 2.22 of the NNNPS:

'*Without improving the road network, including its performance, it will be difficult to support further economic development, employment and housing and this will impede economic growth and reduce people's quality of life. The Government has therefore concluded that at a strategic level there is a compelling need for development of the national road network*.'

8.2.8 The Government has therefore concluded that, at a strategic level, there is a compelling need for development of the national road network.

8.2.9 Based on the projected growth in jobs and houses in the area, and where this growth is expected to occur, the A12 will continue to act as a vital strategic road in the future. However, if nothing is done to improve the road, the predicted increase in traffic will result in road users' delays getting significantly worse and journey times becoming even more unreliable. The A12 would act as a barrier to economic growth that would otherwise be achieved with an effectively operating road network. Traffic levels on the A12 will increase to such a level that the entire two-lane section of the route will be close to or above capacity.

8.2.10 There is therefore a need to improve the route to address the current levels of congestion and their impacts of delay and journey time unreliability on road users. The investment in additional capacity that is required to address these issues will also help to address safety issues and support local economic growth by improving connectivity and enhancing traffic flow. The proposed scheme's improvements will achieve the following:

- Improve safety for drivers, especially at the junctions and slip roads through better design.
- Reduce traffic congestion by increasing the capacity of the road, making journey times more reliable. The proposed scheme will save motorists as much as 1hr 20mins in a working week if they travel daily between junctions 19 and 25.
- Take long distance traffic off the local roads and put it back onto the A12, to reduce rat running on local roads that affects local villages and their communities.
- Ensure that the road can cope with predicted increases to traffic by increasing capacity. Forecasts show that by 2042, the road will operate above the capacity it was ever designed to handle if no improvements are made.
- Improve facilities for WCH and public transport users to provide better connectivity and safer, more enjoyable journeys.

8.2.11 The proposed scheme was identified in RIS1 (DfT, 2015a) and continues to be a committed scheme in RIS2 (DfT, 2020). The stretch of A12 between junctions 19 and 25 was also highlighted as one of the routes in greatest need of improvement. The proposed scheme would therefore help address the compelling and strategic need for development identified in the NNNPS.

8.2.12 The NNNPS sets out a series of strategic objectives. Table 8.1 below sets out these strategic objectives and demonstrates how the proposed scheme accords with them.

Table 8.1 Proposed scheme compliance with NNNPS vision and strategic objectives

NNNPS vision and strategic objectives	The proposed scheme's conformity with the NNNPS
The Government will deliver national networks that meet the country's long-term needs; supporting a prosperous and competitive economy and improving overall quality of life, as part of a wider transport system	The proposed scheme would reduce journey times, congestion and delays for the local and longer distance road users, as explained in Sections 5 and 6 of this report. The proposed scheme would be part of the national network and would significantly improve the link between junction 19 and junction 25 and improve the connecting junctions to nearby smaller towns to provide easier access to the A12.
Networks with the capacity, connectivity and resilience to support national and local economic activity and facilitate growth and create jobs	The overall network improvement would help to achieve the planned delivery of housing and employment across the administrative areas the proposed scheme passes through (Chelmsford, Braintree, Maldon and Colchester). The adopted and emerging plans total a planned provision of 52,663 homes across all councils and 18,675 jobs (in Chelmsford and Maldon) and between 20ha and 40ha of employment space in Braintree and Colchester.
Networks which support and improve journey quality, reliability and safety	With the proposed scheme in place, there is predicted to be an overall decrease in the number of fatal and serious casualties. With a reduction in journey times, journey quality would be improved. The proposed scheme would also improve the quality and capacity of existing WCH infrastructure, seek opportunities for new routes and address historic severance. This includes controlled and uncontrolled crossings at junctions and adjacent local roads.
Networks which support the delivery of environmental goals and the move to a low carbon economy	The proposed scheme seeks to maximise biodiversity delivery and the increase in carbon emissions resulting from the proposed scheme are not so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets as set out in section 8.8 Biodiversity and 8.14 Climate of this report. The management of materials and waste will be done in a way that promotes to the use of recycled aggregates to minimise waste (see Section 8.11).
Networks which join up our communities and link effectively to each other	The proposed scheme would provide greater connectivity to and integration with the SRN and Local Road Network through improved junctions, which would increase capacity and improve accessibility between communities.

8.2.13 The proposed scheme directly addresses the Government's wider strategic policy objectives while specifically addressing problems with connectivity and

congestion. Further detail of these issues and the need for the proposed scheme is provided in Sections 1 and 2 of this CftS. The proposed scheme would deliver benefits in terms of resolving local transport, economic and environmental concerns and the Government's recognised national commitment to improving the SRN.

8.2.14 The NNNPS states that the assessment of the proposed scheme should consider the balance of potential benefits and adverse impacts (paragraph 4.3). Benefits to be considered include the facilitation of economic development, job creation, housing and environmental improvement, and any longer-term or wider benefits. Assessment of adverse impacts should include longer-term and cumulative adverse impacts, as well as planned mitigation of these impacts.

8.2.15 The NNNPS advises that environmental, safety, economic and social impacts should be considered at a national, regional and local level, and that the information provided be proportionate to the development (paragraph 4.4). The proposed scheme has been subject to a Transport Assessment [TR010060/APP/7.2], Economic Assessment (see Section 6 of this CftS) and information on likely significant effects is reported in the ES [TR010060/APP/6.1].

8.2.16 The proposed scheme has also been subject to a rigorous options appraisal process. A summary of the options considered and the appraisal process has been provided in Section 3 of this CftS and Chapter 3 of the ES [TR010060/APP/6.1].

8.2.17 Overall, the proposed scheme would accord with the aims and objectives indicated in the NNNPS, which demonstrates support in principle for the proposed scheme.

Local planning policy

The North Essex Authorities' Shared Strategic Section 1 Plan

8.2.18 The North Essex Authorities' Shared Strategic Section 1 Plan was formally adopted in February. Paragraph 3.3 of the plan identifies the A12 corridor as a main focus for development with the main town of Witham and service villages of Hatfield Peverel, Kelvedon and Feering with allocations of over 2,000 new homes.

8.2.19 Paragraph 6.8 states:

'*Braintree, Colchester…will continue to work closely with government departments, Highways England, Essex County Council…developers and other partners to better integrate all forms of transport and improve roads…Key projects during the plan period will see improvements to the A12….*'

8.2.20 Paragraph 6.9 states*:*

'The *A12 is set to have major improvements as part of the Government's Roads Investment Strategy (RIS1 and RIS), with the aim of improving capacity and relieving congestion. The A12 is being widened between junction 19 (Chelmsford) and junction 25 (A120 interchange) to increase safety, improve journey time reliability, provide a benefit to the local road network, and in doing so support long term sustainable growth. Highways England (HE) has*

announced its preferred route between junction 19 and 23 (October 2019) and between junction 23 and 25 in August 2020.The A12 junction 19 to junction 25 widening scheme will go ahead as part of the Road Investment Strategy 2 (RIS2) programme, and is now a fully funded scheme. It is expected the route will be open for traffic in 2027 – 2028. RIS2 stated that the A12 scheme will need to take account of the evolving proposals for the A120 Braintree to A12 improvements, and any potential future road link to the improvements for the A120 will be incorporated into the A12 scheme.'

8.2.21 Policy SP6: Infrastructure and Connectivity states that:

'*The local planning authorities will work with government departments, Highways England, Essex County Council, Network Rail, rail and bus operators, developers and other partners to deliver the following...New and improved road infrastructure and strategic highway connections to reduce congestion and provide more reliable journey times along the A12, A120 and A133, specifically: Improved access to and capacity of junctions on the A12 and other main roads; A dualled A120 from Braintree to the A12.*'

Chelmsford City Council

8.2.22 Paragraph 2.8 of the Chelmsford Local Plan (Chelmsford City Council, 2020) states:

'*The Essex economy currently supports nearly 820,000 jobs and is predicted to need around 79,000 new jobs by 2036, representing growth of 10% (Cambridge Econometrics, EEFM, 2016). Due to its strategic position along the A12 corridor, existing strong local economy and highly educated population, Chelmsford is expected to accommodate a major share of the forecast new employment and retail growth.'*

8.2.23 The Local Plan identifies the A12 as one of the many principal roads that connect Chelmsford and mentions that the road is heavily used. The traffic modelling undertaken to inform the evidence bases for the Local Plan highlighted that the road is at, or near to, capacity at peak times.

8.2.24 Strategic Policy S9 – Infrastructure Requirements sets out the priorities for infrastructure provision or improvements and states: '…*New highway infrastructure should help reduce congestion, link new development and provide connections in the strategic road network. These include but are not limited to…junction improvements on the A12 and other main roads to reduce congestion.*'

8.2.25 Paragraph 6.63 provides supporting text to Strategic Policy S9 and states:

'*A number of transport improvement schemes are proposed across Chelmsford, which will help relieve congestion or provide connections to new developments. The Local Plan safeguards or allocates suitable land for these schemes which are in addition to strategic highway improvements including on the A12 and A120.*'

Colchester Borough Council

8.2.26 Section 2.1 of the Colchester Core Strategy (Colchester Borough Council, 2014a) provides the 'Spatial Portrait' of the borough and highlights under its transportation section that the borough has been designated as a Regional

Transport Node. One of biggest challenges identified for the borough is road traffic growth and the dominance of the car as the main mode of travel. Significant congestion occurs at peak times within Colchester with the A12 being identified as a road heavily affected.

8.2.27 Section 4.1 provides the Spatial Strategy for the overall approach for the provision of new homes, jobs, infrastructure, and community facilities. It sets out that the council's Stanway Growth Area to the west and south-west of Colchester will be subject to significant development. Stanway is identified as a Strategic Employment Zone and provides approximately 16ha of employment land that will provide good access to the SRN (A12). Existing housing allocations will deliver approximately 1,000 homes by 2021. Furthermore, urban extensions to the west and south-west are intended to deliver 800 homes.

8.2.28 Policy TA4 – Roads and Traffic highlights that:

'*The Borough Council will work with partners to accommodate necessary car travel making the best use of the existing network and manage demand for road traffic... The Council will support improvements to the strategic road network (see Table TA4) to facilitate regional travel needs, particularly freight movements in the Haven Gateway, whilst minimising the impacts of traffic on the rural area network.*'

8.2.29 Table TA4 highlights proposed new transport infrastructure at the A120 Braintree to A12, A12 junction and capacity improvements, and A12 Route Management Strategy projects. The supporting text for Policy TA4 states:

'*At present deficiencies in the road network inhibit necessary car travel and public transport. In particular access to strategic roads from Colchester Town is limited, resulting in unnecessary trips and exacerbating congestion. The A12 junction, for example, will reduce traffic and freight impacts in urban areas and will also facilitate Park and Ride, keeping the 'right vehicles on the right roads'.*'

8.2.30 Table 6d in Section 6 of the Colchester Core Strategy identifies three A12 junctions (25, 26 and 29) to be improved. At the time the Core Strategy was published, these funds were yet to be secured.

8.2.31 Section 2 of the Colchester Local Plan (Colchester Borough Council, 2021b) is still in draft and focuses on development specifically in Colchester. Paragraph 14.94 mentions the Stanway Strategic Economic Area that is highlighted as an area for major economic growth due to its connection to the A12 via junction 26.

8.2.32 Policy WC1: Stanway Strategic Economic Area and Tollgate District Centre states:

'*Any proposals within the Stanway Strategic Economic Area will be required to provide good public transport, pedestrian and cycle links ensuring good connectivity within the area and Zones, to the neighbouring communities, and to and from the Town Centre. Development will be expected to contribute to the cost of infrastructure improvements as required, supported by up to date evidence in the Infrastructure Delivery Plan (IDP) or subsequent evidence which will be secured to an appropriate level by way of legal agreement or through CIL as required. Such infrastructure is likely to include improvement works to Junction 26 on the A12.*'

8.2.33 Paragraph 14.125 highlights that:

'*The transport in West Colchester is characterised by the A12 trunk road running east west carrying very high volumes of traffic, with access via junction 25 at Marks Tey (also giving a connection to the A120 westwards towards Braintree), junction 26 at Eight Ash Green giving access to Stanway and Tollgate. These two trunk road junctions suffer from significant peak hour queuing impacting on the village of Marks Tey and queuing back onto the A12 trunk road. The GEML runs parallel to the A12, with a station at Marks Tey with a branch line to Sudbury.*'

8.2.34 Policy WC5: Transport in West Colchester reinforces this and states:

'*Where it is demonstrated that proposals will impact on the highway network, contributions will be sought towards mitigation and improvements, including to the following projects;*

- *Improvements to the A12 Junctions 25 and 26 to provide measures which reduce queuing at junctions.'*

Braintree District Council

8.2.35 Paragraph 2.11 of the Braintree Core Strategy (Braintree District Council, 2011) recognises that the A12 between Braintree and Marks Tey remains congested and unimproved, leading to significant congestion, particularly in Braintree near to the Galleys Corner Roundabout. The level of traffic using the A12 in Braintree is above its capacity, with resulting serious peak-hour congestion, and there are substandard A12 slip roads within the district, including those at Rivenhall.

8.2.36 Paragraph 7.7 builds on this and adds: '*Braintree District Council, as the Local Planning Authority, has little direct control over the main transport networks because they are managed by…the Highways Agency…. To support the District's economy, the main road network (in particular the A12, A120 east of Braintree and A131 at Halstead) needs to be improved…*'

8.2.37 Braintree District Council's (2021b) emerging Section 2 Local Plan acknowledges in its Vision and Objectives that by 2033: '*The strategic transport routes of the A120, A12 and rail routes from Braintree and Witham have been improved allowing fast and reliable connections to London, London Stansted Airport, the east coast ports and other key regional centres.*'

8.2.38 Paragraph 6.168 of the emerging Section 2 Local Plan identifies the proposed scheme and anticipates it being delivered in the early plan period. Braintree District Council acknowledges that: '*It is expected to increase overall capacity and upgrade junctions to make the network safer and smooth traffic flow. The Council will work with National Highways to ensure that safe, convenient and suitable access to local roads is provided to meet the needs of Hatfield Peverel, Witham, Kelvedon and Feering.*'

8.2.39 This is supported by Policy LPP48: New Road Infrastructure, which states: '*The following schemes are proposed to support development allocated in the Local Plan… Provision of a new connection between Inworth Road and London Road….*'

Maldon District Council

8.2.40 The Maldon District Approved Local Development Plan 2014 – 2029 (Maldon District Council, 2017) does not contain any policies or text that express a need or support for the delivery of the proposed scheme.

Summary

8.2.41 Overall, it is clear that the majority of the host authorities recognise the current congestion issues the A12 currently faces and the need for improvement to support economic and housing growth in their areas. Therefore, it is considered that the policies in the host authorities' development plans provide support in principle for the proposed scheme.

8.3 Sustainable development

8.3.1 Both the NNNPS (DfT, 2014) and NPPF (Ministry of Housing, Communities and Local Government, 2021) seek to encourage development proposals to achieve a high level of sustainable development.

8.3.2 The NPPF (paragraph 8) states that there are three overarching objectives to achieving sustainable development – economic, social and environmental – all of which are interdependent.

8.3.3 Paragraph 5.202 of the NNNPS recognises that the impacts from transport infrastructure schemes can be economic, social and environmental, and that consideration and mitigation of these impacts is important in achieving sustainable development.

8.3.4 This is emphasised in paragraph 5.163 of the NNNPS which encourages the reuse of previous developed land but recognises that this might not be feasible for infrastructure such as roads, because of the fixed location of each end of such schemes and the various landforms and types the route will pass through. Upon completion, any temporary land-take will be restored to its previous status.

8.3.5 During the operational phase, the proposed scheme would fulfil the economic objective of sustainable development by providing improved and reliable road infrastructure required to build a strong, responsive and competitive economy. Economic growth would be supported through reducing congestion and improving journey times and reliability along the route to connecting towns and cities. This would assist the movement and transportation of goods and the workforce along the SRN.

8.3.6 In terms of the social objectives highlighted in the NNNPS and NPPF, the proposed scheme would increase the capacity of the existing A12 and reduce congestion, thereby reducing the need for drivers to use local roads. Specifically, the improvements to the junctions between junctions 19 and 25 would create better connectivity and an improved road network to serve the local community. By increasing capacity on the A12, there would be less need for drivers to seek alternative routes, which would reduce 'rat-running' through villages, thereby supporting strong, vibrant and integrated communities.

8.3.7 During the construction and operation of the proposed scheme, access to existing residential dwellings, farms and business will be maintained where feasible, and should diversions be required, these will be as a last resort and agreed with the relevant local planning authority. The proposed scheme has been designed to maintain, or where applicable, replace and enhance existing WCH routes. The integration of these elements into the design of the proposed scheme contributes towards the health, social and cultural wellbeing of communities in accordance with the social objective of sustainable development.

8.3.8 To accord with the environmental sustainability objectives, measures are proposed to be incorporated to avoid and mitigate adverse environmental effects, including the following:

- Careful integration into the surrounding landscape.
- Seeking to maximise biodiversity delivery, through change in biodiversity units including 25.01% for area-based habitat units; 36.06% for hedgerow units and 156.73% for river units[6].
- Avoid loss of ancient woodland and veteran trees where practicable.
- Minimise adverse noise and air quality impacts and, where adverse effects are predicted, mitigate impacts and where practicable improve conditions.
- Utilise sustainable drainage systems, including measures to adapt to changing climate and flood events.
- Avoid adverse effects on cultural heritage as far as possible and, where substantial harm is unavoidable, ensure its only necessary in achieving substantial public benefit that outweighs the harm.

8.3.9 Overall, the proposed scheme will meet the requirements of the economic, social and environmental objectives of sustainability as set out in both the NNNPS and the NPPF.

8.3.10 Further information on how the proposed scheme meets environmental policy objectives is provided in summary below, and further information is set out in the ES [TR010060/APP/6.1].

8.4 Noise and vibration

8.4.1 Paragraph 5.194 of the NNNPS (DfT, 2014) requires that the proposed scheme '*should demonstrate good design through optimisation of Scheme layout to minimise noise emissions and, where possible, the use of landscaping, bunds or noise barriers to reduce noise transmission.*'

[6] Further information on the biodiversity net gain assessment can be found in the Biodiversity Net Gain Report [TR010060/APP/6.3].

8.4.2 Paragraph 5.195 states that:

'*The Secretary of State should not grant development consent unless satisfied that the proposals will meet, the following aims, within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life from noise as a result of the new development;*
- *mitigate and minimise other adverse impacts on health and quality of life from noise from the new development;*
- *contribute to improvements to health and quality of life through the effective management and control of noise, where possible.*'

8.4.3 Paragraph 5.196 of the NNNPS states that, when determining an application, the SoS '*should consider whether requirements are needed which specify that the mitigation measures put forward by the applicant are put in place to ensure that the noise levels from the project do not exceed those described in the assessment or any other estimates on which the decision was based.*'

8.4.4 An assessment of both construction and operational road traffic noise has been undertaken within Chapter 12: Noise and vibration, of the ES [TR010060/APP/6.1]. The construction noise assessment considers how noise levels would vary throughout the construction phase at sensitive receptor locations, based on construction activities as well as construction vehicles on the road network. The operational assessment considered road traffic noise impacts in both the short-term (year of opening) and long-term (15 years after opening).

8.4.5 A change in how the effects of noise are classified in the ES following the statutory consultation led to a targeted consultation with those residents identified as being affected. This took place during over a six week period in February and March 20022. Further details can be found in the Consultation Report [TR010060/APP/5.1].

8.4.6 The main construction activities that would take place during the construction phase are site clearance, earthworks (including borrow pits), and regrading land for infrastructure such as new bridges and junctions, piling activities and ultimately road construction. These construction activities have the potential to result in temporary noise impacts at the receptors closest to the works.

8.4.7 A first iteration Environmental Management Plan (EMP) has been prepared, which contains the Register of Environmental Actions and Commitments (REAC) [TR010060/APP/6.5]. These include a set of best practice working methods for the control of construction noise and vibration to mitigate and minimise adverse impacts on health and quality of life from noise from the proposed scheme as required by paragraph 5.195 of the NNNPS. In order to minimise and mitigate noise impact during the construction of the proposed scheme, some of the mitigation measures include:

- Where concrete and asphalt batching plants are used within the junction 20b main compound, these would be placed as far from sensitive receptors as practicable.

- Where practicable, concrete batching plant, offices and welfare facilities would be strategically placed towards the north of the junction 22 main compound.
- The Principal Contractor would adhere to standard working hours (07:30–19:00 Monday to Friday and 07:30–18:00 on Saturday) as far as is reasonably practicable, except in the case of emergency or in respect of wording during summer months, off-peak working, night working hours and Sunday and Bank Holiday working.
- A full assessment of likely eligibility for sound insulation measures in accordance with the Noise Insulation Regulations 1975 (as amended 1988) would be undertaken for the proposed scheme.

8.4.8 Paragraph 5.195 also states that development should avoid significant adverse impacts on health and quality of life from noise as a result of the new development. However, likely significant adverse effects are expected at a number of locations, including those near junction 19 (at night-time), Hatfield Peverel (daytime and at night-time), the Witham bypass including the new junction 22 (at night-time), Rivenhall End (daytime), Easthorpe Green (daytime), London Road at Marks Tey (at night-time) and at Latney's Boarding Kennels, Cattery and Grooming Parlour (daytime).

8.4.9 During construction, the A12 would need to be temporarily closed and diversion routes put in place. It is estimated that this could occur for 500 nights over the four-year construction period. This would cause likely significant adverse effects at 266 houses within 25m of the planned diversion routes. As the construction programme is developed, the possibility of reducing the number of A12 closures will be explored.

8.4.10 There are predicted to be 806 dwellings and 18 other sensitive receptors that would experience a significant beneficial effect from a reduction in noise levels as a result of the operation of the proposed scheme. This supports paragraph 5.195 of the NNPS which states development should contribute to improvements to health and quality of life in relation to noise. These significant beneficial effects have been achieved through altering the route alignment (moving the A12 away from noise sensitive receptors), earth bunds, noise barriers, removal of the concrete surfacing and, in some locations, the use of surfacing with better noise reduction properties than a conventional low noise surface. Some of the predicted reductions in noise are over 10dB(A).

8.4.11 Significant adverse effects are predicated at 123 residential dwellings and four other sensitive receptors. Twenty-eight of the residential dwellings are along Main Road, Boreham, and a further 71 are along Kelvedon Road, through Messing and then Harborough Road. These are all due to an increase in traffic flow on these roads.

8.4.12 Of the 21 Noise Important Areas along or near to the proposed scheme, noise modelling has calculated an increase in noise in two of these areas (Boreham east and between Boreham and Hatfield Peverel). Noise levels would decrease at 13 Noise Important Areas. The remaining areas would remain the same as the current situation, except at Marks Tey, where some properties would have increased noise and some would have reduced noise.

8.4.13 In the early development of the proposed scheme, the route alignment was selected in order to avoid or minimise impacts on communities or individual receptors. As the design progressed, the reduction in noise emissions has been optimised with the consideration of noise barriers and low-noise surfacing, as described in Section 12.10 of chapter 12: Noise and Vibration of the ES [TR010060/APP/6.1].This complies with NNNPS paragraph 5.194, and match the relevant mitigation types set out by NNNPS paragraph 5.198, which also states that such measures should be proportionate and reasonable. Through the inclusion of the mitigation measures, the proposed scheme meets the second objective of NNNPS paragraph 5.195 and minimises impacts on receptors that experience traffic noise.

8.5 Air quality

8.5.1 Paragraph 5.3 of the NNNPS (DfT, 2014) acknowledges that schemes relating to road or rail can result in either adverse or beneficial impacts to local air quality. This is largely because, on large-scale schemes, emissions during construction and operation are somewhat unavoidable, but by reducing congestion schemes could reduce air quality impacts in the long-term. Paragraph 5.4 of the NNNPS also sets out that air quality legislation concerns health impacts as well as impacts to ecosystems. Paragraph 5.5 explains that the development of road schemes can create complex challenges with regard to air quality, as the effects can be far reaching over a larger area than just within the boundary of an individual scheme.

8.5.2 Paragraph 5.10 states that the SoS must consider air quality impacts near a scheme and the wider area that could be likely affected. It sets out that account must be taken of relevant statutory thresholds and that:

'*Where a project is likely to lead to a breach of the air quality thresholds, the applicant should work with the relevant authorities to secure appropriate mitigation measures with a view to ensuring so far as possible that those thresholds are not breached.*'

8.5.3 Paragraph 5.12 states that:

'*The Secretary of State must give air quality consideration substantial weight where, after taking into account mitigation, a project would lead to a significant air quality impact in relation to EIA and/or where they lead to a deterioration in air quality in a zone/agglomeration*.'

8.5.4 Continuing, paragraph 5.13 states that:

'*The Secretary of State should refuse consent where, after taking into account mitigation, the air quality impacts of the proposed scheme will:*

- *Result in a zone/agglomeration which is currently reported being compliant with the Air Quality Directive becoming non-compliant; or*
- *Affect the ability of a non-compliant area to achieve compliance within the most recent timescale reported to the European Commission at the time of the decision.*'

8.5.5 Paragraphs 105, 174(e) and 186 of the NPPF state that planning decisions should prevent new development from contributing to unacceptable levels of air pollution and, where possible, new development should help to improve air quality.

8.5.6 Chapter 6: Air quality, of the ES [TR010060/APP/6.1] assess the likely air quality impacts of the proposed scheme on human health and ecology receptors nearby and the wider area. It concludes that, with standard construction mitigation measures in place, there would not be significant air quality effects on residential properties or ecological receptors during construction.

8.5.7 There is one AQMA in the study area located at Lucy Lane North. The AQMA is located near to Junction 26 of the A12. Air quality modelling has shown that two human health receptors (one within the Lucy Lane North AQMA and one located off Halstead Road close to the A12) are predicted to exceed the nitrogen dioxide air quality limit due to an increase in construction traffic flows. However, the change in concentration at these receptors, owing to construction vehicle emissions in the peak construction year, was classed as an imperceptible and unlikely to affect human health.

8.5.8 Calculations for ecological sites during construction found that six veteran trees would have nitrogen levels that could affect them. However, the biodiversity assessment has looked at this impact and found the resulting effect on the veteran trees to be not significant. Further detail can be found in Chapter 9: Biodiversity, of the Environmental Statement [TR010060/APP/6.1].

8.5.9 The ES concludes that during operation of the proposed scheme, three residential properties could potentially exceed the NO_2 threshold in the opening year (2027) as a result of the operation of the proposed scheme, one by a medium amount and the other two by a small amount, in combination the impact at these individual receptors are below the guideline number of properties that would constitute a likely significant effect. In terms of particulates, the modelling predicts that the air quality limit for particulates would not be exceeded.

8.5.10 The assessment of nitrogen deposition on ecology receptors shows that, during operation of the proposed scheme, there would be nitrogen deposition impacts for 23 veteran trees and eight ecological sites. However, the biodiversity assessment has found that only one (Perry's Wood Local Wildlife Site (LWS) and ancient woodland) is likely to experience a significant adverse effect. Further details are provided in Chapter 9: Biodiversity, of the ES [TR010060/APP/6.1].

8.5.11 The assessment of operational traffic effects concluded that the proposed scheme would be unlikely to interfere with the UK's reported ability to meet the EU Limit Value for NO_2 in the shortest possible time.

8.5.12 Overall, the proposed scheme would accord with NNNPS policy in terms of air quality impacts on human health receptors. Although identified that the proposed scheme would have a significant impact on one ecological site during operation, it is considered the benefits of the proposed scheme significantly outweigh the harm to this receptor.

8.6 Cultural heritage

8.6.1 Paragraphs 5.120 to 5.125 of the NNNPS (DfT, 2014) explain that the historic environment comprises archaeology, historic buildings, structures and historic landscapes including parks and gardens. The elements of each of these that hold historic value can be considered to be 'heritage assets', the significance of which derives from their historic interest and setting. Depending on the level of significance, some historic assets may be designated. The SoS should consider the impacts on designated and non-designated heritage assets, on the basis of clear evidence that but by reducing congestion schemes could reduce air quality impacts in the long-term.

8.6.2 A summary of the cultural heritage baseline can be found in Table 7.8 of Chapter 7: Cultural Heritage of the ES [TR010060/APP/6.1].

8.6.3 Within 1km of the Order Limits of the proposed scheme, there are:

- eight scheduled monuments.
- 10 grade I listed buildings.
- 40 grade II* listed buildings.
- 375 grade II listed buildings.
- Four registered parks and gardens.

8.6.4 There are no world heritage sites, registered battlefields or protected military remains, or protected wrecks within the 1km study area. Further detail is provided in Chapter 7: Cultural Heritage of the ES [TR010060/APP/6.1].

8.6.5 As required by NNNPS paragraphs 5.126 and 5.127, Chapter 7: Cultural heritage of the ES [TR010060/APP/6.1] sets out an assessment of the likely effects of the proposed scheme on heritage assets, including a description of the significance of the heritage assets and details of archaeological desk-based and field investigations. The assessment is split across three different cultural heritage elements: archaeological remains, built heritage and historic landscapes.

8.6.6 Paragraph 5.131 of the NNNPS states that substantial harm to or loss of grade II listed buildings and grade II registered parks and gardens should be exceptional and that substantial harm to, or loss of, scheduled monuments, grade I and II* listed buildings and grade I and II* registered parks and gardens should be wholly exceptional. No physical impacts or setting impacts of substantial harm on designated cultural heritage assets have been identified in the cultural heritage assessment.

8.6.7 NNNPS paragraph 5.132 states that '*any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss*'. Significant effects on designated cultural heritage assets during the construction and operational phases have been identified and, where practicable, mitigation proposed. Where significant residual effects remain following mitigation, only effects of large or very large adverse significance are considered to equate to 'substantial' harm within the definition of the NNNPS.

8.6.8 Paragraph 5.134 of the NNNPS continues to state that, where the proposed scheme will lead to less than substantial harm to the significance of a designated heritage asset, this should be weighed up against the wider benefit to the public of the proposed scheme.

8.6.9 A total of 45 residual significant effects during construction, and six during operation, on designated and non-designated cultural heritage assets would remain after all forms of mitigation have been applied. These are presented in Table 7.14 of Chapter 7 Cultural Heritage of the ES [TR010060/APP/6.1]. No physical impacts or setting impacts of substantial harm on designated cultural heritage assets have been identified in the assessment. Further information is provided in Chapter 7: Cultural heritage, of the ES [TR010060/APP/6.1].

8.6.10 No significant effects or substantial harm have been identified on the historic landscape during construction or on archaeology and the historic landscape during operation of the proposed scheme. A summary of all effects, including those assessed not to be significant, is presented in Appendix 7.9 of the ES [TR010060/APP/6.3].

8.6.11 In accordance with paragraphs 5.132 and 5.134 of the NNNPS and paragraph 202 of the NPPF, the identified significant impacts must be weighed against the public benefit of the proposed scheme. Section 9 of this CftS sets out the planning balance, which weighs up the impacts of the benefits that the proposed scheme would bring once constructed.

8.7 Landscape and visual

8.7.1 The landscape and visual impacts of the proposed scheme during construction and operation are detailed in Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1]. In making the assessment, a range of factors have been considered, including visibility, conspicuousness, views, visual amenity, noise and light pollution, local amenity, tranquillity and nature conservation.

8.7.2 Paragraph 5.144 of the NNNPS (DfT, 2014) details that the applicant should '*undertake an assessment of any likely significant landscape and visual impacts in the environmental impact assessment and describe these in the environmental assessment.*' The Landscape and Visual Impact Assessment contained within the ES considers likely significant landscape and visual effects. The assessment of landscape effects has been made on the local landscape character areas defined within published assessments.

8.7.3 Paragraphs 5.145 to 5.146 of the NNNPS focus on the need for applicants to assess any significant effects during construction and operation. In particular, the assessment should assess impacts on '*landscape components and landscape character (including historic landscape characterisation)…*[and]*…include the visibility and conspicuousness of the project during construction and of the presence and operation of the project and potential impacts on views and visual amenity. This should include any noise and light pollution effects, including effects on local amenity, tranquillity, and nature conservation*.'

8.7.4 Paragraph 5.160 continues to outline that '*adverse landscape and visual effects may be minimised through appropriate siting of infrastructure, design (including choice of materials), and landscaping schemes, depending on the size and type of proposed project. Materials and designs for infrastructure should always be given careful consideration*.'

8.7.5 Section 8.11 of Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1] considers likely significant landscape effects during both construction and operation. The effect on the constituent landscape features and elements/components of the landscape character areas have been considered in combination as part of the effects on landscape character and not as individual receptors. Tables 8.14 and 8.15 of Chapter 8 of the ES [TR010060/APP/6.1] present which local landscape character areas and which viewpoints would incur significant effects respectively and outline what the overall significance of effects would be during construction and operation (year 1 and year 15).

8.7.6 Design considerations and landscape objectives have been defined as part of an overarching set of scheme-specific design principles presented within the Design and Access Statement [TR010060/APP/7.4]. These have been used to inform development of the proposed scheme design, including both the highway alignment and the Environmental Masterplan on Figure 2.1 of the ES [TR010060/APP/6.2].

8.7.7 To avoid or minimise harm to the landscape and views, embedded and standard mitigation measures have been developed as presented within Section 8.10 of Chapter 8 of the ES [TR010060/APP/6.1]. Embedded mitigation includes sensitive design and location of the proposed scheme elements (including careful positioning of junctions[7], borrow pits, water and flood infrastructure and construction compounds), limiting lighting to junctions and side roads and reducing light spill, and extensive use of planting to reduce impacts. Standard mitigation encompasses legislative requirements and industry good practice.

8.7.8 Residual effects on the landscape and visual amenity are considered as those assessed during operation in year 15 when mitigation planting would be established and therefore fully effective. Table 8.16 of Chapter 8 of the ES [TR010060/APP/6.1] provides a summary of significant residual landscape effects and significant residual visual effects along with a summary of mitigation measures and mitigation mechanisms. The full description of all effects (significant and not significant) is presented within Appendix 8.2 and Appendix 8.3 of the ES [TR010060/APP/6.3].

8.7.9 The overall long-term magnitude and residual significance of effects of the proposed scheme on local landscape character and visual amenity is considered to be moderate adverse and therefore significant. However, this would largely be confined to local LCAs of medium sensitivity that would be directly affected by major new infrastructure and restored borrow pits and 11 viewpoints out of the 36 representative viewpoints assessed. The residual effect on the wider landscape character, 25 of the 36 representative viewpoints assessed and longer distance views would not be significant.

[7] For example Junction 24 – see Consultation Report [TR10060/APP/5.1]

8.7.10 Overall, the proposed scheme has been assessed in accordance with the NNNPS requirements for landscape and visual. In line with the requirements of the NNNPS, to avoid or minimise harm to the landscape and views, embedded mitigation measures for this aspect have been developed as presented within Section 8.10 of Chapter 8: Landscape and visual, of the ES [TR010060/APP/6.1]. Therefore, it is considered that the proposed scheme complies with the NNNPS for landscape and visual.

8.8 Biodiversity

8.8.1 NNNPS (DfT, 2014) paragraph 5.22 states that:

'*Where the project is subject to EIA the applicant should ensure that the environmental statement clearly sets out any likely significant effects on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) on protected species and on habitats and other species identified as being of principal importance for the conservation of biodiversity and that the statement considers the full range of potential impacts on ecosystems*.'

8.8.2 Paragraph 5.25 of the NNNPS requires that development proposals '*should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives*'. The paragraph continues and states '*where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought*'.

8.8.3 Paragraph 5.36 of the NNNPS highlights that applicants should provide appropriate mitigation measures as an integral part of their scheme.

8.8.4 Paragraph 4.22 of the NNNPS states that:

'*Prior to granting a Development Consent Order, the Secretary of State must, under the Habitats Regulations, consider whether it is possible that the project could have a significant effect on the objectives of a European site, or on any site to which the same protection is applied as a matter of policy, either alone or in combination with other plans or projects*.'

8.8.5 Paragraph 5.31 of the NNNPS states that:

'*Sites of regional and local biodiversity and geological interest (which include Local Geological Sites, Local Nature Reserves (LNR) and Local Wildlife Sites (LWS) and Nature Improvement Areas) have a fundamental role to play in meeting overall national biodiversity targets, in contributing to the quality of life and the well-being of the community, and in supporting research and education. The SoS should give due consideration to such regional or local designations. However, given the need for new infrastructure, these designations should not be used in themselves to refuse development consent.*'

8.8.6 Chapter 9: Biodiversity of the ES [TR010060/APP/6.1] provides the ecological baseline, an evaluation of the nature conservation receptors relevant to the proposed scheme, and an assessment of significant effects on receptors after mitigation as a result of the proposed scheme.

8.8.7 Embedded mitigation measures will seek to employ best practice methods for dealing in particular with habitat loss, habitat fragmentation, disturbance and species mortality. Such measures will include siting of temporary and permanent works areas away from designated sites, notable habitats and resting places of protected and notable species, including bat roosts, barn owl nests, otter holts and couches, water vole burrows, badger setts, great crested newt ponds and core terrestrial habitat, as well as areas of terrestrial invertebrate interest, and habitats likely to support reptiles and species of principal importance. The Environmental Masterplan (Figure 2.1 of the ES [TR010060/APP/6.2]) shows the embedded mitigation that is proposed and that will be built into the proposed scheme design.

8.8.8 The Habitats Regulations Assessment Stage 1 Screening Report was submitted to Natural England for pre-application consultation in September 2021. A response was received from Natural England in October 2021 agreeing with the Stage 1 Habitats Regulations Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects.

8.8.9 The River Ter SSSI and Tiptree Heath SSSI were both scoped into the assessment which concluded that there would be no adverse impacts from the proposed scheme on either of them.

8.8.10 Two Local Nature Reserves (LNRs) – Whetmead LNR and Brockwell Meadows LNR are located within 2km of the proposed scheme. The Order Limits encroach approximately 100m across the western boundary of Whetmead LNR between junction 21 (Witham South interchange) and junction 22 (Colemans interchange); and Brockwell Meadows LNR is located approximately 55m west of the proposed scheme in Kelvedon between junction 23 (Kelvedon South interchange) and junction 24 (Kelvedon North interchange). 37 LWSs are located within 1km of the proposed scheme. There are also ancient woodlands, veteran trees and hedgerows close to or within the Order Limits, and ponds and watercourses within the study area.

8.8.11 Overall, the assessment concludes that, taking account of proposed mitigation, there would be no significant effects that would equate to significant harm to habitats and species during the construction phase of the proposed scheme.

8.8.12 There would be some temporary changes in air quality due to nitrogen deposition for one veteran tree, four potential veteran trees and one potential ancient tree, however the duration of the changes in nitrogen deposition would not adversely impact the health of the trees and so this is not significant. Biodiversity will be created, and where habitats are lost as a result of the proposed scheme, new habitats of equal or greater value will be created.

8.8.13 During operation of the proposed scheme, the ES concludes there would be one LWS and designated ancient woodland (known as Perry's Wood) that would experience significant adverse effects due to the exceedance of nitrogen deposition thresholds across more than 20% of the site. To offset the significant harm to Perry's Wood, it is proposed that an area of woodland habitat would be created with trees that reflect the species typical of Perry's Wood and other ancient woodlands in the area.

8.8.14 The proposed scheme has been designed to retain trees where practicable, for example the alignment was adjusted between junction 24 and junction 25 to avoid a verified veteran tree. The loss of the five potential veteran trees is unavoidable as detailed within Chapter 3: Assessment of alternatives [TR010060/APP/6.1]. Because veteran trees are irreplaceable habitats, the significant effect cannot be mitigated.

8.8.15 It may be possible to retain additional trees shown as 'at risk' on the Retained and Removed Vegetation Plans [TR010060/APP/2.14] and the construction team would seek to do this where possible.

8.8.16 The following enhancement measures are proposed:

- Provision of bat roosting boxes over and above the number required to mitigate losses.
- The creation of new bat habitation areas.
- The logs removed from vegetation clearance will be used as seating within land immediately west of the proposed scheme.
- Educational signage throughout Whetmead LNR/LWS will be provided.
- The number of bird nesting boxes provided will be over and above the number required to mitigate habitat losses.

8.8.17 In addition, there is the potential to enhance 45 hedgerows across the proposed scheme at detailed design. The aim would be to increase their overall condition for biodiversity purposes, improving diversity and connectivity across the landscape for the species they support. Proposed enhancements include infill tree and shrub planting where there are gaps in the canopy to improve continuity of vegetation, and the removal of invasive and neophyte species.

8.8.18 Iterations of the design for the proposed scheme have, where practicable, minimised and avoided biodiversity features, and provided mitigation and enhancement measures that are described within Chapter 9 Biodiversity of the ES [TR010060/APP/6.1]. The proposed scheme seeks to maximise biodiversity delivery. The proposed scheme complies with the NNNPS for biodiversity, and relevant policies within EN-1 and EN-4 (including the draft updated versions).

8.9 Road drainage and water environment

8.9.1 Section 5 of the NNNPS (DfT, 2014) considers the generic impacts of national networks on flood risk and water quality resources. A number of the paragraphs in the NPPF (Ministry of Housing, Communities and Local Government, 2021) follow the same approach and objectives to the NNNPS.

8.9.2 Paragraphs 5.91 to 5.97 of the NNNPS set out the requirements for a flood risk assessment (FRA) to accompany the application for a project in areas at risk of flooding. Paragraph 5.91 explains that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, although essential transport infrastructure is permissible in areas of high flood risk subject to the requirements of the Sequential and Exception Tests.

8.9.3 Paragraph 5.98 states that, when flood risk is a factor in determining an application, the SoS should be satisfied that, where relevant, the application is supported by an FRA and the NPPF's Sequential and Exception Tests have been applied. In addition, paragraph 5.99 states that '*when determining an application the Secretary of State should be satisfied that flood risk will not be increased elsewhere*'.

8.9.4 The proposed scheme is over 1ha in size and goes through Flood Zones 1 to 3. As such, an FRA (Appendix 14.5 of the ES [TR010060/APP/6.3]) has been undertaken in accordance with the above NNNPS paragraphs, the NPPF and local planning policy, and informs Chapter 14: Road drainage and the water environment of the ES [TR010060/APP/6.1].

8.9.5 The proposed scheme has been designed to minimise the risk of it flooding or causing flooding elsewhere by incorporating current design standards and future climate change allowances to improve its resilience, and through the use of measures to control and manage runoff. The FRA concludes that, following mitigation, there would be no significant adverse effects on flooding to or from the proposed scheme during construction or operation.

8.9.6 There would be three significant beneficial effects (ranging from moderate beneficial to very large beneficial) as a result of flood risk mitigation. This would result in a reduced risk of flooding on the A12, local roads and residential receptors compared to the existing situation during the proposed scheme's operation. Further detail on these effects and mitigation measures are contained within Chapter 14: Road drainage and the water environment of the ES [TR010060/APP/6.1] and the first iteration EMP [TR010060/APP/6.5].

8.9.7 Paragraphs 5.221 to 5.223 of the NNNPS require that the Applicant carries out an assessment of the impacts of the proposed scheme on water quality, water resources and the physical characteristics of the water environment, as part of an ES.

8.9.8 A desk-based assessment has been carried out, in addition to drainage surveys, aquatic surveys, ground investigation and flood risk modelling to understand the existing water environment. There would be no significant adverse effects to the road drainage and water environment during construction or operation of the proposed scheme due to the mitigation measures in place, such as:

Construction:

- Where practicable Ensuring material stockpiles and storage areas are not located less than 10m from adjacent watercourses ponds, boreholes, site drainage and not within Flood Zone 3 and overland flow paths. Where this cannot be achieved, stockpiles would be limited such that they can be moved upon receipt of any flood warning/adverse weather conditions or on site additional mitigation measures (such as bunds) would be implemented to provide an adequate barrier between the potential source of contaminated runoff and the receptor. Fuel, oil and chemicals would be stored in a safe and secure bund or other container from which they cannot leak, spill or be open to vandalism
- Where practicable, permanent works attenuation ponds would be constructed early in the programme, to minimise construction impacts on

groundwater and surface water quality within the proposed scheme footprint

- Working practices would be aligned with the Protect Groundwater and Prevent Groundwater Pollution guidance (Environment Agency, 2017).

Operation:

- Maintenance and management of the drainage network and assets. Details of these are presented in the Surface Water Drainage Strategy (Appendix 14.6 of the Environmental Statement [TR010060/APP/6.3]).
- Where reasonably practicable, standard operational hydromorphological mitigation regarding the design of drainage outfalls would comply with Construction Industry Research and Information Association (CIRIA) guidance. New outfalls to watercourses would be set back from the riverbank.

8.9.9 Further detail on mitigation measures are contained within Chapter 14: Road drainage and the water environment of the ES [TR010060/APP/6.1] and the first iteration EMP [TR010060/APP/6.5]. In summary, there would be no significant adverse effects as a result of the proposed scheme on the water environment during construction or operation. Further detail on assessments and mitigation measures are contained within Chapter 14: Road drainage and the water environment of the ES [TR010060/APP/6.1] and the first iteration EMP [TR010060/APP/6.5]. The proposed scheme complies with advice given in the NNNPS. Further detail on NNNPS compliance in relation to road drainage and the water environment is provided in Appendix A of this CftS.

8.10 Geology and soils

8.10.1 Section 5 of the NNNPS (DfT, 2014) defines the generic impacts that may arise from the development of national networks. These include impacts on water quality and resources, geotechnics and geology and soils. Chapter 10: Geology and soils, of the ES [TR010060/APP/6.1] has been prepared to identify the likely significant effects with respect to geology and soils resulting from the proposed scheme.

8.10.2 There is one designated geological SSSI – Marks Tey Brickpit – located north-west of junction 25, which is designated due to its geological features. Effects to the Marks Tey Brickpit SSSI are considered unlikely, as this lies 115m outside of the footprint of the proposed scheme. There could be linkages between the site and sources of contamination exposed during construction, such as from dust or leachate, but these would be avoided through standard mitigation measures. The ES Scoping Opinion considered such linkages unlikely to be significant (Planning Inspectorate, 2021a). Marks Tey Brickpit SSSI is therefore scoped out of the assessment in accordance with the Scoping Opinion.

8.10.3 Paragraphs 5.168 and 5.176 of the NNNPS detail that poorer quality agricultural land should be used when there is significant development, rather than higher quality areas, and the decision maker should give little weight to the loss of agricultural land in grades 3b, 4 and 5, except in areas (such as uplands) where

particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy.

8.10.4 As noted in Section 4, outside of built-up areas, the proposed scheme passes through rural areas of largely arable agricultural land that it is not possible to avoid given the linear nature of the scheme. The ES includes the identification of agricultural soils and Agricultural Land Classification – Provisional (England) of farmland that will be affected by the proposed scheme. During construction, approximately 460ha of agricultural land would be lost or permanently sealed by the proposed scheme, including over 332ha of land classed as the best and most versatile. In addition, 85ha of agricultural land would be temporarily acquired for construction. As the loss of 332ha of BMV agricultural land would be unavoidable, this has been assessed as having a very large adverse effect. The permanent loss of agricultural land occurring during construction would persist during operation but is not considered as an additional effect. National Highways has engaged with all affected landowners during the development of the scheme and amendments to the design have been made as required, including for example additional accesses to agricultural landholdings.

8.10.5 The effect on the agricultural land for the area of the Gas Main Diversion would be temporary during construction and would be restored prior to operation of the proposed scheme.

8.10.6 Effects on soil quality would range from slight adverse to moderate adverse significance, taking into account various mitigation measures such as good practice soil management measures for the restoration of agricultural land affected by temporary works. The REAC in the first iteration EMP [TR010060/APP/6.5] includes a requirement for the second iteration EMP to include and adhere to a Soil Handling Management Plan.

8.10.7 Paragraph 4.49 of the NNNPS focuses on planning pollution control systems and details its role in protecting and improving the natural environment, public health and safety, and amenity.

8.10.8 Made Ground, infilled materials, and natural soils underlying the proposed scheme may have been potentially contaminated by historical and current land use activities. Disturbance of potentially contaminated soils during construction may create new pathways for exposure of construction workers and adjacent land users around the proposed scheme.

8.10.9 The Ground Investigation (GI) and assessment of the ground gas monitoring data indicates a low potential for ground gases associated with the existing historical London Road landfill at junction 25 to migrate to residential properties close to the proposed scheme. Further GI of the historical Whetmead LNR Witham landfill is being undertaken at the time of writing this report to further delineate the landfill waste and assess potential risks to human health receptors.

8.10.10 Due to design changes, further ground investigations are being scoped across the proposed scheme to further refine ground conditions and aid in the design process. The ground investigations will be undertaken at a later stage, and the data from the ground investigations will be used to support the detailed design of the proposed scheme.

8.10.11 The NNNPS emphasises that infrastructure development can have adverse effects on the water environment, including groundwater and inland surface water, that may impact the water environment. There may also be an increased risk of spills and leaks of pollutants to the water environment during construction.

8.10.12 There are records of six historical landfills within 250m of the Order Limits. In addition, there are some historic mineral extraction sites, some of which have been infilled with waste materials. These are potential sources of contamination. Further potentially contaminated land uses include decommissioned railway infrastructure, sewage works, rifle ranges, a malthouse and gasometer, current and former industrial areas and fuel stations. Groundwater samples have been collected across the proposed scheme, including from the proposed borrow pit locations.

8.10.13 Assessment of the samples indicate that there are various contaminants in the groundwater beneath the assessed area in locations shown in Figure 10.1 of the ES [TR010060/APP/6.1]. There is potential for these contaminants to move into local surface and groundwater if disturbed.

8.10.14 Adopting the proposed standard mitigation measures will reduce the effects of construction on surface and groundwaters. These include pollution prevention to prevent mobilisation of soil contaminants to surface waters and Detailed Quantitive Risk Assessments for the management and potential treatment of dewatering at major excavations. Additional mitigation would include groundwater and surface water monitoring programme.

8.10.15 Once the proposed scheme is operational, Chapter 10 of the ES concludes there would be no significant effects in relation to geology and soils, human health, and groundwater and surface water from land contamination. During detailed design, a water quality monitoring programme will be developed for agreement with the Environment Agency and Lead Local Flood Authority.

8.10.16 Overall, the requirements of the NNNPS relevant to geology and soils are met by the completion of the Land Quality Risk Assessment (Appendix 10.1 of the ES [TR010060/APP/6.3]) and by considering the loss of best and most versatile (BMV) agricultural soils through completion of an Agricultural Land Classification survey (Appendix 10.2 of the ES [TR010060/APP/6.3]).

8.11 Material assets and waste

8.11.1 The NNNPS at paragraph 4.29 states that good design should be applied to national network projects to produce sustainable infrastructure that is amongst other things, efficient in the in the use of natural resources.

8.11.2 Paragraphs 5.41 of the NNNPS (DfT, 2014) states:

‘*Large infrastructure projects may generate hazardous and non-hazardous waste during the construction and operation. The Environment Agency’s environmental permitting regime incorporates operational waste management requirements for certain activities. When an applicant applies to the Environment Agency for an environmental permit, the Agency will require the application to demonstrate that processes are in place to meet all relevant permit requirements.’*

8.11.3 Measures for obtaining and complying with all necessary permits, consents and licences relevant to material assets and waste, are detailed in section 11.10 of Chapter 11: Material Assets and Waste of the ES [TR010060/APP/6.1]. A summary of the current status of negotiations with the Environment Agency on environmental permits, including operational waste management requirements, that the Applicant is not seeking to disapply through the DCO is provided in Appendix A of the Consents, Licences and Agreements Position Statement [TR010060/APP/3.3].

8.11.4 In addition to this, paragraph 5.42 sets out that:

'The applicant should set out the arrangements that are proposed for managing any waste produced. The arrangements described should include information on the proposed waste recovery and disposal system for all waste generated by the development. The applicant should seek to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental outcome.'

8.11.5 In term of the use of minerals,the NNNPS states at paragraph 5.169 that '*Applicants should safeguard any mineral resources on the proposed site as far as possible*' and '*where a proposed development has an impact on a Mineral Safeguarding Area (MSA), the Secretary of State should ensure that the applicant has put forward appropriate mitigation measures to safeguard mineral resources.'* (paragraph 5.182).

8.11.6 In terms the national policy statements in relation to the Gas Main Diversion, a review of the relevant requirements of EN-1 and EN-4 (including the draft updated versions), relating to likely significant effects of the gas main diversion works, identified that the requirements are not materially different to those set out in the NNNPS.

8.11.7 While EN-1 (Department of Energy and Climate Change, 2011a) requires an assessment of the impact of the waste arising from energy developments on the capacity of waste management facilities to deal with other waste arising in the area for at least five years of operation, it has been assumed that no significant materials consumption or waste generation is likely to be realised during this period. It has also been assumed that any sterilisation impacts to mineral safeguarding sites would have been mitigated as far as practicable during the design and construction of the gas main diversion. Operational impacts have therefore been scoped out of the assessment on the basis that no likely significant effects would be realised

8.11.8 Further detail is provided in Chapter 11 of the ES [TR010060/APP/6.1].

8.11.9 The conformity of the proposed scheme to the NNNPS waste and mineral policies is addressed below.

Waste

8.11.10 The overall aim of the proposed scheme is to minimise the volume of waste produced and the volume of waste sent for disposal unless it can be demonstrated that the alternative is the best overall environmental outcome to accord with NNNPS policy.

8.11.11 In accordance with paragraph 4.29 of the NNNPS, the proposed scheme is embedded with good design to ensure the efficient use of natural resources. Embedded mitigation incorporated into the design of the proposed scheme to reduce material and waste consumption includes:

- Optimising the cut-fill balance to reduce material requirements and waste.
- The location and extent of carriageway widening.
- The alignment of the new offline carriageway.
- Utilisation of existing pavement to eliminate as far as practicable full reconstruction of existing pavement.
- Proposed use of borrow pits.

8.11.12 Specific examples of design refinements to minimise mineral and waste consumption made at the options section and preliminary design stages are detailed in Chapter 11 of the ES [TR010060/APP/6.1].

8.11.13 The proposed scheme is anticipated to result in substantial quantities of surplus materials and wastes during construction. In terms of the arrangements proposed for managing waste (paragraph 5.42 of the NNNPS), the proposed scheme is designed to accord with the principles of the waste hierarchy in line with the Department for Environment, Food and Rural Affairs' (2018) Resources and Waste Strategy to minimise the potential of waste and to encourage waste to be reused or recycled. In addition to this, some of the mitigation measures detailed below, will help to implement material resource efficiency. For example, an initial SWMP has been prepared as part of the first iteration of the EMP [TR010060/APP/6.5] to plan, implement, monitor and review waste minimisation and management throughout the design and construction of the proposed scheme. The SWMP will be a live document, updated at varying points during design and construction. It would be used to quantify waste arisings and facilitate the identification and implementation of waste prevention at the detailed design stage, and the reuse, recycling and other recovery opportunities during the construction phase. The waste hierarchy would be followed as a priority order to achieve the best overall environmental outcome, and minimise waste generation and disposal to landfill in line with the prevailing national policy targets.

8.11.14 The proposed scheme design will continue to be influenced, as the preliminary design is progressed to detailed design, by environmental factors to avoid or reduce the effects from the consumption of materials assets and disposal of waste where practicable.

8.11.15 Proposed standard mitigation measures include the following:

- Implementing Design for Resource Efficiency Principles to identify, prioritise and select appropriate opportunities to improve project resource efficiency and design out waste.

- The implementing of a Sustainable Procurement Plan to set out a framework to increase the procurement and use of sustainably and responsibly sourced construction materials.
- The implementation of a Site Waste Management Plan (SWMP) to suit the requirements of the proposed scheme, to implement, monitor and review waste minimisation. The SWMP will be a live document and will be updated during the various stages of the design and construction phase of the proposed scheme.
- Complying with waste 'Duty of Care' requirements and taking all reasonable seps to ensure that surplus materials and waste are stored, treated, transferred, consigned, transported, reused, recovered, or disposed of safely.
- Reducing any attendant effects from storing and processing material assets and waste, ensuring that construction site compounds and onsite storage, stockpiling and processing areas are designed to reduce impacts to those designated environmental sites and sensitive environmental receptors identified in other aspect chapters of the Environmental Statement.
- Obtaining and complying with all necessary waste carrier registrations, environmental permits, planning permissions, mobile plant deployments or waste exemptions in relation to the storage, sorting, treatment, use, disposal and transportation of waste.
- Ensuring that waste is stored, treated, reused, recycled, recovered or disposed of as close as practicable to the point of origin during the construction phase.
- Investigating the potential of importing certain bulk construction materials by rail, using the rail head terminals located at either end of the proposed scheme in Chelmsford and Marks Tey, where it is environmentally and economically feasible to do so.

8.11.16 Standard mitigation is included in the REAC which is within the first iteration of the EMP [TR010060/APP/6.5].

8.11.17 Waste would be reduced according to circular economy principles, in which resources are kept in use for as long as possible, where maximum value is extracted from these resources while in use, and where assets, components, products and materials are recovered and regenerated at end of life as products and materials that maintain rather than degrade resource value. The underlying assumption is that using less material results in lower attendant environmental impacts compared to virgin materials.

8.11.18 Good practice benchmarks, rather than standard or best practice benchmarks, have been selected in order to provide a reasonable and realistic worst case assessment scenario.

8.11.19 Following these measures would reduce the use of new/virgin materials and increase the use of reused, recycled and responsibly sourced materials in the proposed scheme.

8.11.20 By implementing 'good practice' during construction, the proposed scheme could generate approximately 1,488,924t (or 372,231tpa) of construction and demolition waste (54%, 43% and 3% of this likely to be classified as inert, non-hazardous and hazardous waste respectively), with approximately 1,396,089t (or 94%) of total construction and demolition waste considered to be recoverable and therefore diverted from landfill.

8.11.21 This is considered to accord with the waste hierarchy and the objectives of minimising waste generation and maximising material reuse, recycling and recovery and therefore meet the policy objective in paragraph 5.42 of the NNNPS.

8.11.22 Overall, Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] concludes that there would likely be sufficient landfill capacity available in the East of England region and the Essex sub-region to accept the forecast quantity of waste for offsite disposal to landfill.

Waste infrastructure assessment

8.11.23 The Order Limits of the proposed scheme passes through a number of WCA, namely BullsLodge Inert Recycling, Boreham Recycling Centre, Drovers Recycling Centre, Winsford WayWaste Transfer Station, Witham House Hold Waste Recycling Centre and Witham Water Recycling Centre.

8.11.24 Although not a requirement of the NNNPS, Policy 2 of the Essex and Southend-on-Sea Waste Local Plan 2017 requires that any non-waste proposals located within a WCA must be supported by a Waste Infrastructure Assessment (WIA) to ensure that existing and allocated waste sites and infrastructure are protected from inappropriate neighbouring developments that may prejudice their continuing efficient operation. Policy 2 defines WCAs as extending up to 250m from the boundary of the existing or allocated waste infrastructure, and up to 400m from existing or allocated Water Recycling Centres.

8.11.25 A WIA is contained in Appendix 11.3 of the ES [TR010060/APP/6.3]. The WIA is required to assess the impact of the safeguarded waste infrastructure upon the proposed scheme and vice versa arising through noise, dust, odour, traffic, visual or light and to identify proposed environmental management measures to reduce any impact.

8.11.26 Given the locations of the safeguarded waste infrastructure sites (ie within industrial estates and industrial parks) and the nature of the proposed scheme, it is considered unlikely that the safeguarded waste management infrastructure sites would be impacted by the proposed scheme or vice versa (through noise, dust, odour, visual or light) that would prejudice the efficient operation of these sites in line with their extant planning permissions.

8.11.27 Indirect impacts (or proximal sterilisation) are more commonly associated with more sensitive land uses such as residential developments that could limit the operation of these sites.

8.11.28 For those infrastructure sites situated within close proximity to junction 19 (Boreham Interchange), it would be reasonable to expect some disruption in accessing them during the construction phase of works. An Outline Construction Traffic Management Plan (CTMP) has been prepared and submitted with the DCO application [TR010060/APP/7.7]. This provides detailed traffic management proposals for each phase of the work. Material assets

8.11.29 The proposed scheme is anticipated to require a large quantity of both primary materials and manufactured construction products during construction. Some of these materials would originate offsite, purchased as primary construction products, but some would arise onsite, particularly from the use of borrow pits, but also excavated soils, crushed concrete or recycled asphalt planings, or recycled materials brought in from offsite, possibly from other projects or industries The largest quantity of materials to be used would be earthworks materials, aggregates for road foundations, asphalt aggregates and drainage and duct aggregates.

8.11.30 It is assumed that all these materials, except for the site won material from borrow pits and earthworks, would be imported to site as they are unlikely to be available in the borrow pits or earthworks excavations across the proposed scheme. The location of the four borrow pits proposed are within the Order Limits shown in Figure 2.3 of the ES [TR010060/APP/6.2].

8.11.31 Paragraph 8.11.11 outlines how the proposed scheme accords with paragraph 4.29 of the NNNPS, in terms of embedded good design to reduce material and waste consumption. Section 11.10 of Chapter 11 of the ES [TR010060/APP/6.1] provides futher detail on this.

8.11.32 The decision whether to use primary or secondary or recycled aggregates, or a combination of both, would be made by the Principal Contractor. By implementing good practice during construction, the proposed scheme could incorporate approximately 60% recycled aggregate content (by weight) (equating to approximately 3,022,797t). This excludes site-won earthworks materials that are not considered an imported aggregate.

8.11.33 It is anticipated that the proposed scheme would incorporate reused and recycled aggregate at levels in line with the East of England regional target of 31%.

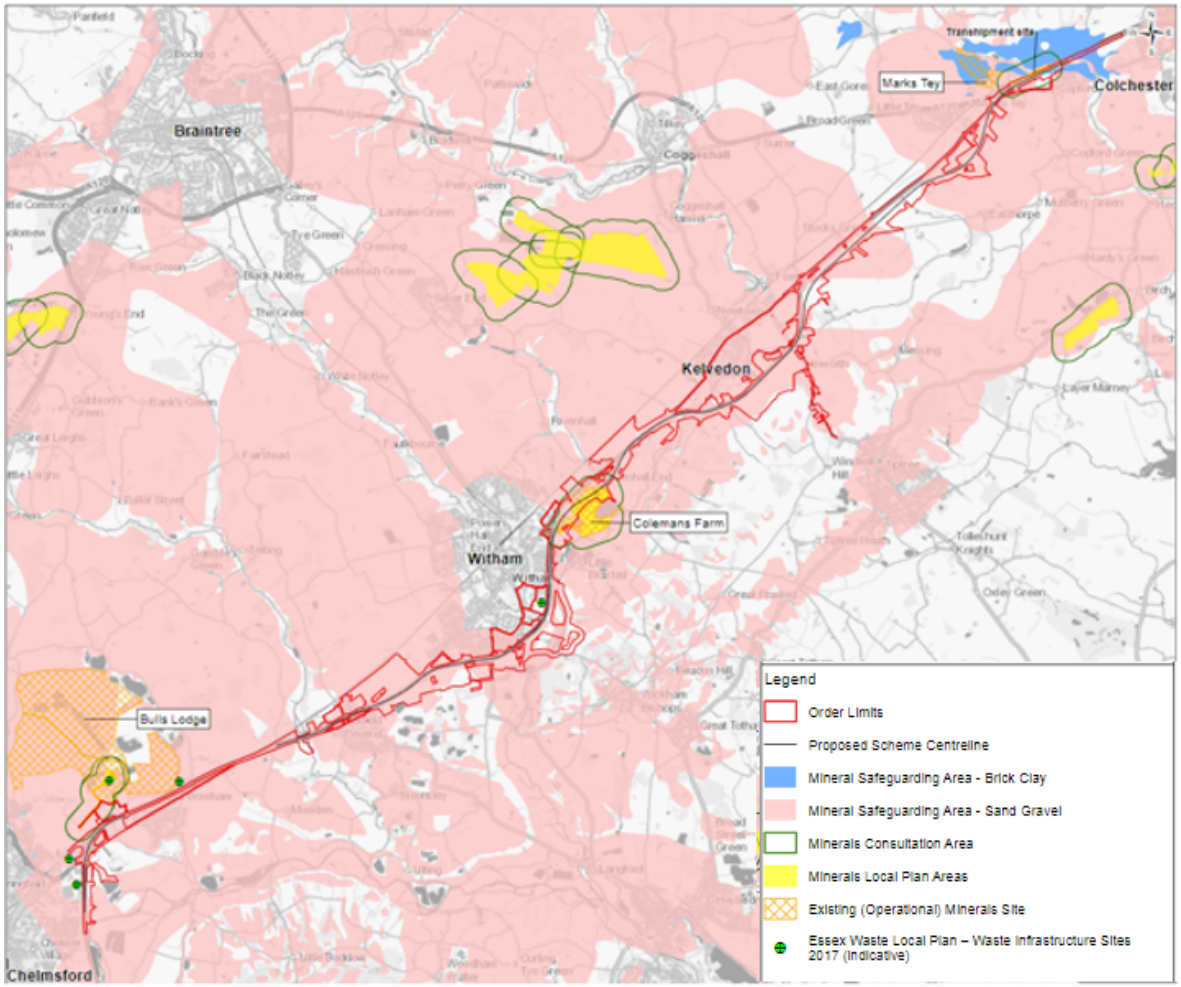
8.11.34 Overall, Chapter 11: Material assets and waste, of the ES [TR010060/APP/6.1] concludes that that the impacts on material assets and waste of constructing the proposed scheme are not likely to be significant after mitigation. Therefore, the proposed scheme is considered to accord with NNNPS policy.

Mineral resource assessment

8.11.35 The proposed scheme will affect a Mineral Safeguarding Area (MSA) for sand and gravel and to a lesser extent the safeguarded area for brick clay and a Mineral Consultation Area (Colemans Farm Quarry), as designated in the Essex Minerals Local Plan and Policies Map (2014). Under policy S8 of the Essex Minerals Local Plan 2014, development proposals within an MSA should be supported by a Mineral Resource Assessment (MRA). This section summarises the main conclusions of the MRA and assesses conformity with planning policy. The full MRA can be found in Appendix 11.1 of the ES

[TR010060/APP/6.3]. Plate 8.1 below highlights the Mineral Safeguarding Area and Mineral Consultation Areas near the proposed scheme.

Plate 8.1 Mineral Safeguarding Areas and Mineral Consultation Areas near the proposed scheme



8.11.36 The NNNPS sets out policies in relation to the safeguarding of mineral resources (paragraphs 5.169 and 5.182). These paragraphs outline that applicants should safeguard any mineral resources on the proposed site as far as possible. Where a proposed development has an impact on a MSA, the SoS should ensure that the applicant has put forward appropriate mitigation measures to safeguard mineral resources.

8.11.37 Any new permanent sterilisation is considered to be substantial by area in the context of the sand and gravel MSA and brick clay MSA in which the proposed scheme would be constructed (approximately 411ha and 2ha respectively). Of the 411ha of potentially impacted sand and gravel, the Gas Main Diversion is likely to account for approximately 7ha of sterilisation. The brick clay MSA would not be impacted by the Gas Main Diversion.

8.11.38 The proposed scheme has been designed to reduce the potential impacts associated with the consumption of material assets. During options selection, some of the key design refinements to limit impact on minerals included:

- Junction 22 (Colemans interchange): revising the mainline alignment to reduce the impact on Colemans Farm Quarry, and modifying the vertical alignment to reduce earthworks and fill material requirements.
- Junction 22: agreeing a number of measures with the Colemans Farm Quarry operator to mitigate any impacts to the consented quarry operations caused by the construction of the proposed scheme.

8.11.39 The MRA (Appendix 11.1 of the ES [TR010060/APP/6.3]) has been prepared to establish the existence, or otherwise, of a mineral resource capable of having economic importance within the Order Limits. Where the proposed scheme has the potential to result in the sterilisation of mineral resources, the environmental, social and economic viability of prior extraction has been considered. The gross tonnage of safeguarded sand and gravel resources situated beneath the permanent land take of the proposed scheme is approximately 16.805 million tonnes (Mt). However, 6.684Mt lie beneath the existing alignment of the A12. Therefore, the net quantity of sand and gravel sterilised by the proposed scheme amounts to 10.121Mt. The gross tonnage of brick clay resources beneath the permanent land take is 0.822Mt. The existing A12 already sterilises 1.027Mt. The proposed scheme effectively sterilises 0.401Mt.

8.11.40 The MRA outlines that the Greater Essex Local Aggregate Assessment 2021 (Essex County Council, 2021) (reflecting the position at the end of 2020) reported permitted sand and gravel reserves to be 33.59 Mt, which based on the 10 year sales gives a landbank of 10.3 years and exceeds the seven year landbank requirement required by the NPPF (paragraph 213, f). As of 31 December 2021, there were four pending planning permissions across Greater Essex that if approved would add a further 9.5Mt of sand and gravel further increasing the landbank.

8.11.41 The MRA states that it is not considered that the proposed scheme would significantly affect mineral/aggregate reserves, due to the sufficient supply.

8.11.42 Although the safeguarded sand and gravel and brick clay resources are of national and local importance, the conclusion of the MRA is that the principle of prior extraction is neither practical nor environmentally feasible. As such, the need for the proposed scheme outweighs the safeguarding of the sand and gravel and brick clay.

8.11.43 Given the context of the proposed scheme in delivering the necessary infrastructure to enable future housing development, relieve traffic congestion on the existing A12 corridor and providing a strategic link for Essex and across the wider east and southeast of England, the benefits it would provide outweigh the impact it would have on mineral sterilisation.

Mineral infrastructure assessment

8.11.44 The Order Limits of the proposed scheme passes through a number of Mineral Consultation Areas (MCAs) for existing and allocated mineral sites and infrastructure, namely Bulls Lodge Quarry, Colemans Farm Quarry, Marks Tey Brick Clay Quarry, Marks Tey rail sidings and Bulls Lodge coated stone plant.

8.11.45 Although not a requirement of the NNNPS, Policy S2 (Strategic priorities for minerals development) of the Essex Minerals Local Plan 2014 requires safeguarding mineral resources of national and local importance, mineral transhipment sites, Strategic Aggregate Recycling facilities and coated roadstone plants, so that non-minerals development does not sterilise or compromise mineral resources and mineral supply facilities.

8.11.46 Policy S8 (Safeguarding mineral resources and mineral reserves) of the Essex Minerals Local Plan 2014 requires that a non-mineral proposal located within a MCA must be supported by a MIA to ensure that existing and allocated mineral sites and infrastructure are protected from inappropriate neighbouring developments that may prejudice their continuing efficient operation. Policy S8 of the Minerals Local Plan defines MCAs as extending up to 250m from the boundary of a minerals infrastructure site or allocation for the same.

8.11.47 At Colemans Farm Quarry, the development of the proposed scheme would have a fundamental effect on the operation of the quarry as the proposed scheme has the potential to sterilise some of the consented mineral resources in the northern part of the quarry extraction area that would be contrary to national policy and the policy content of the Essex Minerals Local Plan.

8.11.48 The proposed measures for Colemans Farm Quarry, ie the submission of three planning applications for the re-phasing of the mineral extraction operations (prior extraction) and restoration of the land along the alignment of the proposed scheme, if approved, will avoid the sterilisation of mineral reserves and reduce the operational and financial impact on the operation to an acceptable level. However, this will only be achieved if the removal of the minerals and restoration of the areas within the Order Limits can be achieved without delaying the proposed scheme, otherwise the minerals would have to remain in-situ.

8.11.49 At Bulls Lodge Quarry, one of the haul roads for the proposed scheme temporarily intersects the safeguarded site access for the operational mineral site and coated stone plant. Although these sites are likely to encounter some disruption to the access/egress during the construction phase of works associated with junction 19 (Boreham Interchange), traffic management plans would be prepared to keep disruption to a minimum.

8.11.50 Apart from Colemans Farm Quarry, it is considered unlikely that the proposed scheme would give rise to any impact through loss of capacity or by constraining the operation of the remaining facilities.

8.11.51 Further information can be found in the MIA submitted in support of this DCO (Appendix 11.2 of Chapter 11 of the ES [TR010060/APP/6.3]).

Overall, the material assets and waste assessment concludes that the impacts on material assets and waste of constructing the proposed scheme would result in non-significant effects, taking into account the various mitigation measures that would be employed. The design and assessment of the proposed scheme has had regard to, and is compliant with, the NNNPS, EN-1 and EN-4 objectives for this aspect. Subject to appropriate mitigation measures to promote and increase resource efficiency during the construction of the proposed scheme, it is assessed that the proposed scheme adheres to the NNNPS, EN-1 and EN-4 requirements relevant to material assets and waste.

8.12 Population and human health

8.12.1 Paragraph 3.19 of the NNNPS (DfT, 2014) identifies the Government's commitment to creating a more accessible and inclusive network that provides a range of opportunities and choices for people to connect with jobs and services, as well as socially.

8.12.2 Paragraph 3.21 places emphasis on the applicant to comply with the Equalities Act 2010 and states: '*Applicants are reminded of their duty to promote equality and to consider the needs of disabled people as part of their normal practice. Applicants are expected to comply with any obligations under the Equalities Act 2010.*'

8.12.3 Paragraph 3.22 also states*:* '*Severance can be a problem in some locations. Where appropriate applicants should seek to deliver improvements that reduce community severance and improve accessibility.*'

8.12.4 Paragraph 5.166 of the NNNPS states that '*Existing open space, sports and recreational buildings and land should not be developed unless the land is surplus to requirements or the loss would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location.*'

8.12.5 Paragraph 4.82 states that '*The applicant should identify measures to avoid, reduce or compensate for adverse health impacts as appropriate. These impacts may affect people simultaneously, so the applicant, and the Secretary of State (in determining an application for development consent) should consider the cumulative impact on health.*'

8.12.6 Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] sets out the assessment of the impacts of the proposed scheme on population and human health. A separate Equalities Impact Assessment [TR010060/APP/7.5] has been undertaken to identify likely impacts on people with relevant protected characteristics in accordance with the Equality Act 2010.

Walking, cycling and horse riding

8.12.7 An objective of the proposed scheme is to improve accessibility for WCH and public transport users. During construction, many PRoWs and other routes used by WCH would be disrupted, particularly those used to cross the Bury Lane and Station Road bridges in Hatfield Peverel, which will require closure for approximately six months to allow for demolition and rebuild. A phased approach would be taken to the demolition and bridge replacement to ensure north–south access across the A12 is maintained for Hatfield Peverel residents.

8.12.8 Disruption would also be caused by demolition of other bridges, including Threshelford Bridge while the construction of a replacement structure takes place. Shared use footways and cycleways alongside the A12 between Hatfield Peverel and Witham, and through junction 25 at Marks Tey, would also be affected. National Cycle Route 16 would also be impacted by works at junction 22. Disruption is likely to be temporary or short-term, depending on the scale of works in those areas.

8.12.9 The Applicant would provide safe and segregated diversions for WCH where practicable, for routes affected by the construction works.

8.12.10 The design of the proposed scheme includes new, improved and replacement provision for WCH, which would help support and provide continued opportunities for active travel and access to outdoor recreation. Separate links for these groups would be provided to help cyclists to bypass junctions and slip roads, including National Cycle Route 16 that crosses the A12 at junction 22. The design of the proposed scheme would also address some issues of past severance of PRoWs.

8.12.11 During operation, the proposed scheme would be likely to have significant beneficial effects for the following communities:

- Boreham, due to a new Payne's Lane Bridge (suitable for WCH) that would reconnect bridleways north and south of the A12 allowing access to other PRoWs.
- Kelvedon, Feering and Inworth, due to a new Sniveller's Lane Bridge (for walkers and cyclists), enhanced shared use walking/cycling route along the B1024, and other improvements to PRoWs, improving overall access.
- Marks Tey, Copford and Easthorpe, due to linking proposed new shared use walking/cycling routes to existing PRoWs, improving connectivity, and improvements to existing pedestrian crossings in Marks Tey to accommodate cyclists.

8.12.12 The WCH provision that makes up the proposed scheme is presented in the table below.

Table 8.3 Proposed scheme WCH provision

WCH Provision	PRoW Footpath (m)	PRoW Bridleway (m)	Cycleway (m)	Footway (m)	Permissive Path (m)
New	4,765	490	10,747	3,291	
Improved			2,330	3,507	
Upgraded from footway			1,260		
Existing / Diverted (PRoW)	2,772	0	224	26	
Total	7,537	490	15,175	6,824	390
Net Gain (m)*	4,765	490	12,007	3,291	
Net Gain % of total	63%	100%	79%	48%	
**Net Gain comprises new provision and upgraded from footway.*					

8.12.13 Overall, new and replacement walking and cycling routes provided by the proposed scheme would offer an improved standard of accessibility and safety that would bring advantages for people who do not, or cannot, use a car and help reduce inequalities relating to accessibility.

Community land and assets

8.12.14 Construction of the proposed scheme would affect access and/or use of community assets at the following locations:

- Hatfield Peverel: Station Road Bridge and Bury Road Bridge demolition and replacement would have impact on connectivity across the A12 from north to south affecting access to community assets including the railway station and PRoWs (north of the A12) and pubs, schools, shops, a doctors' surgery, and a church (south of the A12).
- Witham and Rivenhall End: The widespread scale of potential disruption has the potential to discourage the use of some community assets due to the inconvenience caused. This includes:
  - Access to the Church of the Latter Day Saints as a result of temporary occupation of the car park during construction.
  - Small loss of open space at Whetmead LNR and temporary access diversions.
  - Impact on the amenity and recreational use of Benton Hall Golf and Country Club during the installation of the gas main diversion there may be.
  - Impacts on access to other community assets via roads affected by construction activity.
- Kelvedon, Feering and Inworth:
  - A change in access to the Essex County Fire and Rescue Service Headquarters. Although this is a sensitive asset, the changes are not considered to impact on the ability of the asset to serve communities.
  - Minor encroachment onto the grounds at All Saints Church in Inworth as a result from localised widening works, which may impact on the use of the church for funerals.
- Marks Tey, Copford and Easthorpe:
  - Impacts on access to four of the five community facilities within or adjacent to the Order Limits as a result of the potential disruption and access to facilities due to the scale and duration of the proposed works.

8.12.15 Mitigation measures to manage the disruption on community facilities include maintaining access for users of community assets where physical land-take of asset is not required, reinstating land temporarily acquired to its former use unless otherwise agreed with landowners, and appointing a Community Relations Manager to address business concerns. Where permanent loss of open space would occur, the loss will be replaced by equivalent or better provision in terms of quantity and quality in a suitable location.

8.12.16 Specific mitigation for Station Road Bridge and Bury Road Bridge access to Hatfield Perevel Station, phased demolition and an associated temporary pedestrian bridge replacement would ensure north–south access is maintained for Hatfield Peverel residents during construction. The proposed scheme would also provide a temporary car park for railway station users during the construction of a permanent replacement.

8.12.17 The operational phase of the proposed scheme would not result in any further impacts on community land and assets.

Human health

8.12.18 The Population and Health assessment in Chapter 13 of the ES considers human health related impacts associated with noise, air quality and other environmental pollutants, road traffic collisions, active travel, community severance and social networks, access to services, facilities, employment, education and skills, access to greenspace and outdoor recreation and health inequalities as well as protective factors for mental wellbeing. A separate Mental Wellbeing Impact Assessment has been undertaken and is included in Appendix 13.4 of the Environmental Statement [TR010060/APP/6.3]. Relevant findings have fed into the Population and Health assessment where applicable.

8.12.19 Paragraph 5.195 of the NNNPS states that development should avoid significant adverse impacts on health and quality of life from noise as a result of the new development. During construction, there would be some temporary inconvenience and disruption to some residents in Hatfield Peverel, near Witham bypass, Rivenhall End, Easthorpe, and Marks Tey from noise associated with construction, including from construction traffic. A summary of significant construction noise impacts and their locations is provided in Table 13.24 of the ES.

8.12.20 In addition it is estimated there would be 500 night closures of the A12 to allow for construction activity. As noted in Section 8.4 above, these closures would cause adverse significant noise effects within 25m of the planned diversion route for traffic at 266 dwellings at or close to the communities of Springfield, Great Leighs, Great Notley, Bradwell and Marks Tey. This may have a significant effect on mental wellbeing and sleep disturbance for some residents. Those particularly susceptible would be homeworkers, shift workers, parents and young children, retired people or those with long-term illness or disability and their carers, all of whom are more likely to be at home. There is a commitment in the first iteration of the EMP [TR010060/APP/6.5] to the development of a Noise and Vibration Management Plan and to reduce the number of required night-time closures, which would help to reduce the overall impact on sleep disturbance.

8.12.21 Also during construction, it is likely that there would be a significant temporary negative effect on the levels of active travel in the area due to disruption of walking and cycling routes, particularly the east-west shared-use cycle track, leading to weight gain and reduced mental wellbeing. Mitigation would include the provision of well-signed diversion routes around construction areas to limit delays to activel travel commuters. Proposed temporary diversion routes and

closures are out in the Outline Construction Traffic Management Plan [TR010060/APP/7.7].

8.12.22 The Applicant would engage with communities before and during construction, to allow residents to raise any concerns and for them to be addressed where possible. Community engagement measures have been included in the first iteration EMP [TR010060/APP/6.5].

8.12.23 During operation there are a greater number of dwellings that would experience as significant positive effect from a reduction in noise levels than those predicted to experience significant adverse effects. As set out in Section 8.4 above this has been achieved through route alignment and the adoption of mitigation measures including noise barriers and low noise surfacing. However, a negative effect on sleep disturbance is assessed as significant for some residents during operation.

8.12.24 From the information available, it is difficult to ascertain whether more people would be positively affected by improved access to the countryside and outdoor recreation than are negatively affected by the landscape and visual impacts on local residents during operation of the proposed scheme. The ES concludes that the overall population health effect arising from the impact on access to greenspace and outdoor recreation is uncertain. However, it is considered significant for the purposes of decision making due to the degree of local concern over impacts on landscape.

8.12.25 No significant effects on health are assessed in relation to road traffic collisions, community severance and social networks, access to facilities, services, employment education and skills, health inequalities or protective factors for mental wellbeing during construction or operation.

8.13 Land and property

8.13.1 Paragraph 5.165 of the NNNPS (DfT, 2014) states:

'*The applicant should identify existing and proposed land uses near the project, any effects of replacing an existing development or use of the site with the proposed project or preventing a development or use on a neighbouring site from continuing. Applicants should also assess any effects of precluding a new development or use proposed in the development plan. The assessment should be proportionate.'*

8.13.2 Chapter 13: Population and human health, of the ES [TR010060/APP/6.1] includes an assessment of land use and accessibility. This identifies existing land uses that would be prevented from continuing, temporarily or permanently.

Residential and commercial

8.13.3 The design of the proposed scheme has avoided land-take from existing residential, business, community and agricultural assets as far as practicable.

8.13.4 However, some land and property will be impacted by temporary and/or permanent land-take. Residential land use would be significantly adversely affected in the communities of Hatfield Pereval and Witham and Rivenhall End. Direct land take from 10 residential properties would be required at Hatfield

Peverel, of which five houses would be permanently acquired, and one temporarily acquired. Over 400 properties (including some currently under construction) would experience temporary impacts on access associated with the replacements of Bury Lane Bridge and Station Road Bridge. Twelve houses in Witham and Rivenhall End would lose some land to the proposed scheme, of which two would be demolished, and another eight of these properties would experience partial or a substantial permanent loss of garden area to facilitate construction activities.

8.13.5 Impacts on some businesses at Witham, Rivenhall End, Kelvedon, Feering and Inworth and Marks Tey would be likely to significantly affect the function of those businesses. This would include a civil engineering business (Barconn Ltd, in Feering); Colmans Farm Quarry and aggregate business (Witham); the site of the Marks Tey car boot sale; a recording studio at Wishingwell Farm (on the outskirts of Marks Tey) and impacts on the use of Prested Hall (Feering) as a wedding venue, hotel and health club.

8.13.6 Where construction of the proposed scheme would cause temporary disruption of access or severance to residential properties, commercial businesses, community land and assets, and agricultural holdings, Further detail on these properties can be found in the Statement of Reasons [TR010060/APP/4.1]. Proposed mitigation measures, such as phased works, would ensure that access is still possible to land and properties. While the day-to-day inconvenience would occur, it is not considered that the overall residential and business viability would be compromised.

Agricultural land

8.13.7 Seventeen agricultural landholdings across Chelmsford, Witham, Rivenhall End, Kelvedon, Feering and Marks Tey are likely to be significantly affected by the proposed scheme in terms of temporary or permanent land-take and/or changes in access. Approximately 395ha of arable farmland would be permanently lost. The proposed scheme would impact about 3% of the cereal farm businesses in Essex and approximately 0.5% of agricultural land use.

8.13.8 Proposed mitigation measures to manage these impacts on agricultural landholdings include the appointment of an Agricultural Liaison Officer prior to the construction of the proposed scheme for ongoing engagement with landholders, tenants and their agents.

Development land

8.13.9 As set out in Section 4.3, planning applications, planning permissions and local plan site allocations have been reviewed and compiled in a committed development log. Table 8.4 includes all major committed developments and site allocations, wholly or partially within the Order Limits, which will be impacted by the proposed scheme, along with associated mitigation measures.

Table 8.4 Committed developments wholly or partially within Order Limits

Local authority	Site	Application/allocation details	Status	Relationship to the proposed scheme	Impacts and mitigation
Chelmsford City Council	Greater Beaulieu Park, White Hart Lane, Springfield, Chelmsford	Outline application for mixed use development including up to 3,600 dwellings, business park, retail, hotel, leisure, education and community facilities, in addition to associated works and landscaping. 09/01314/EIA	Permission granted	The Order Limits of the proposed scheme are partially within the red-line boundary of the Greater Beaulieu development. Developer currently improving A12 junction 19 and surrounding local roads. New train station and new station care park proposed near junction 19.	Land required by the proposed scheme to deliver a PRoW bridge (Paynes Lane) north of GEML is subject to a compulsory purchase order. The bridge alignment and ramps are being challenged as it will require land allocated for a business park. The Applicant has discussed with the LPA and the developer (Countryside Zest) the constraints around the site, and the objectives and standards that the proposed bridge will need to comply with. Different designs have been reviewed and the current proposal is considered to be the most balanced layout to deliver the bridge requirements, connect to PRoW and Beaulieu Park Station in accordance with LTN1/20.
Braintree District Council	Hatfield Bury Farm, Bury Lane, Hatfield Peverel	Demolition of existing farm building and 4 no. houses and erection of 50 no. dwellings with associated parking, landscaping, estate roads, public open-space, associated external works and access from Bury Lane. 19/01803/FUL	Permission granted	Development temporarily impacted by the construction of the proposed scheme.	Access routes to residents and emergency vehicles would be restricted during construction of Bury Lane Bridge and Station Road Bridge. Proposals to make the cul-de-sac a temporary through route have been discussed with the developer. These proposals have also be discussed with the LPA in regard to a potential change of condition to the consented scheme.

Local authority	Site	Application/allocation details	Status	Relationship to the proposed scheme	Impacts and mitigation
Braintree District Council	Land at Station Road, Hatfield Peverel	Residential development for up to 145 dwellings with public open space, vehicular access, and associated infrastructure. 16/02096/OUT	Permission granted	Development partially affected by the proposed scheme's construction route through the development	Access to properties and business via Bury Lane bridge and Station Road bridge would be restricted during the construction of those. Alternative access has been discussed with the developer to make the cul-de-sac a temporary through route. The proposed scheme has engaged with the community and recently held a Hatfield Peverel community event to advise on a package of mitigation measures that will enable local residents and commuters to gain access to the north and south of the village. The mitigation includes for the construction of a temporary pedestrian bridge next to Station Road (via Swan Close), the construction of a temporary car park in the fields east of the railway station, provision of a shuttle bus (between the station, temporary car park and the Hatfield car park, via Wellington Bridge) and the temporary through route between Bury Farm and Hatfield Grove (Bellway developments). Further Information can be found on the OCTMP [TR010060/APP/7.7]. A planning application to vary condition 5 of the planning permission is being promoted by Bellway with full support of the Applicant to change the design of the pedestrian access between Bury farm and Hatfield

Local authority	Site	Application/allocation details	Status	Relationship to the proposed scheme	Impacts and mitigation
					Grove estates to enable a temporary vehicle through road and for emergency access.
Braintree District Council	Land north of Woodend Farm, Witham	Application for Outline Planning Permission with all matters reserved Up to 400 residential dwellings and day nursery with all associated access, servicing, parking, drainage infrastructure, landscaping, open space and utilities infrastructure. 19/01896/OUT	Pending decision	Development partially affected by the A12 tie-in between proposed junction 21 and B1389. The development would create a new roundabout and pedestrian connection.	National Highways, has liaised with the developer of the site and local authority to reduce the amount of land required by the proposed scheme and shared engineering drawings to ensure the correct tie-in between projects.
Braintree District Council	Land south of Maltings Lane, (Gershwin Boulevard)	Residential development for approximately 268 dwellings, business park, primary school, neighbourhood centre, community facilities, open space, landscaping and ancillary infrastructure. 06/01143/OUT	Permission granted	Mixed use development that borders the A12 along its southern extent. Land required for construction of the proposed scheme comprises areas proposed for business, open space and landscaping.	Construction of retaining wall, drainage and ecological areas would require small areas of land with permission for a business unit. However, the land required should not impact the footprint of the proposed business unit. Further to the north-east of Gershwin Boulevard, a site compound is proposed for vehicle recovery. The site is only required temporarily but would prevent the development of that site for the time being. Between Gershwin Boulevard and the proposed scheme, an area of open space would be lost for the construction of

Local authority	Site	Application/allocation details	Status	Relationship to the proposed scheme	Impacts and mitigation
					embankments, drainage and a new alignment to PRoW 121_95. This open space area is subject to replacement land, further details can be found on the Replacement Land Statement [TR010060/APP/7.9].
Braintree District Council	Land north of Eastways Business Park, Witham	Outline permission for the extension of Eastways Business Park, comprising the demolition of an existing dwelling (21/00031/OUT) and the future development of general industry, storage and distribution, and light industrial buildings with associated service yards, HGV and car provision, and new service road. 20/00128/OUT and 21/00031/OUT	Approved	The Order Limits of the proposed scheme are partially within the red-line boundary of this outline permission.	The proposed scheme would permanently require small areas of land to build the junction 22 northern roundabout embankment and associated drainage. This is an area of landscaping of the proposed scheme on the approved development site. There is also a utilities diversion that crosses this development site. The location of the proposed utilities corridor was agreed with the landowner/developer.
Essex County Council	Quarry at Colemans Farm, Braxted Road, Rivenhall End	Consultation on the continuation of mineral extraction with re-phasing of the working and restoration, changes to the approved restoration concepts and management plans; and	Pending decision – A12 supports the application	Proposed scheme requires construction of a new junction 22 and realignment of the A12 on quarry land.	Discussions with the applicant have been extensive, and National Highways and the applicant are currently negotiating an agreement to ensure the co-existence of both schemes. This application is yet to be approved but would allow the quarry to accelerate extraction and allow infill of the area to enable the proposed scheme.

Local authority	Site	Application/allocation details	Status	Relationship to the proposed scheme	Impacts and mitigation
		the establishment of an inert materials recycling facility, in advance of the proposed A12 road widening infrastructure project. ESS/98/21/BTE			
Braintree District Council	Land north-east of Inworth Road, Feering	Application for 162 dwellings. Part of the Feering allocation 233, in the emerging Braintree District Local Plan 2033, which is a residential allocation for approximately 750 dwellings (Crown Land).	Approved	The Order Limits of the proposed scheme are partially within the wider site allocation	The proposed scheme would need to agree the purchase of some land from the Crown Estate to enable the redesign of the junction B1023 Inworth Road / B1024 Feering Hill ('Gore Pit'), and associated drainage, but also allow for access to Prested Hall and Crown Land to the east of the A12 via a new Threshelfords Accommodation Bridge and WCH route. On the land east of the A12, drainage and ecological mitigation is proposed along the accommodation road.
Braintree District Council	Kelvedon Park, Rivenhall	Kelvedon Park Employment Allocation (RIVE 364, the Emerging Braintree District Local Plan 2033), the current site of the Essex Fire and Rescue Centre	N/A	Part of the emerging Local Plan	The Order Limits accommodate this allocation to enable the realignment of the A12 and creation of a new access road and tie in with the existing site entry.

8.14 Climate

8.14.1 Paragraph 5.18 of the NNNPS (DfT, 2014) notes that the Government has an overarching national carbon reduction strategy (The Carbon Plan (HM Government, 2011)), which sets out how the Government intends to meet its carbon budgets. The NNNPS acknowledges that a road project in isolation will be very unlikely to affect the ability of the Government to meet its carbon reduction plan targets. However, applicants for road schemes should provide evidence of the carbon impact of the project and an assessment against the Government's carbon budgets.

8.14.2 Paragraph 4.37 of the NNNPS states that '*climate change mitigation is essential to minimise the most dangerous impacts of climate change*'. Paragraph 4.38 goes on to explain that '*new development should be planned to avoid increased vulnerability to the range of impacts arising from climate change*'.

8.14.3 Paragraph 4.40 states that applicants '*must consider the impacts of climate change when planning location, design, build and operation. Any accompanying Environmental Statement should set out how the proposal will take account of the projected impacts of climate change*'.

8.14.4 Chapter 15: Climate of the ES [TR010060/APP/6.1] provides an assessment of how the proposed scheme would impact on the ability of the UK Government to meet its carbon reduction targets as well as an assessment of the vulnerability of the proposed scheme to climate change.

Carbon emissions

8.14.5 The ES identifies the following construction related activities that would result in greenhouse gas emissions (GHG):

- Embodied GHG emissions associated with the required raw materials.
- Transport of materials to the construction site.
- Transport of waste from the construction site and subsequent treatment.
- Transport of construction workers, onsite staff and visitors to and from the construction site.
- Operation of construction plant and onsite activities (construction process stage.
- Onsite consumption of fuel, electricity and water (construction process stage.
- GHG emissions mobilised by vegetation losses and soil disturbance.

8.14.6 During operation of the proposed scheme, the following are likely to affect greenhouse gas emissions:

- Maintenance, repair, replacement and refurbishment of the proposed scheme assets over its operational life.

- Operational energy use by proposed scheme lighting.
- The use of the proposed scheme by end users and the effect the proposed scheme is predicted to have on traffic flows across the wider road network.
- GHG emissions mobilised by ongoing changes in land use and forestry due to the presence of the proposed scheme.

8.14.7 To manage the impact of greenhouse gas emissions during the construction and operational phases, embedded and standard mitigation measures are proposed that are detailed in Chapter 15: Climate, of the ES [TR010060/APP.6.1].

8.14.8 The climate change assessment has considered the worst case scenario, which does not fully take into account the most recent projections for the uptake of electric cars and the associated potential reduction of future greenhouse gas emissions.

8.14.9 The estimated changes in greenhouse gas emissions as a result of the proposed scheme are negligible in comparison to relevant UK carbon budgets and are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets.

Vulnerability to climate change

8.14.10 Chapter 15: Climate, of the ES [TR010060/APP/6.1] also provides an assessment of the proposed scheme's vulnerability to climate change. Climate modelling indicates that further increases in temperature and rainfall, as well as extreme weather events, are like to occur between 2020 and 2049. This could affect the construction of the proposed scheme, for example as a result of flood related damage and heat damage to construction equipment and workers' health. Standard mitigation would be applied to accord with legislative standards and sector practices and would include the implementation of good construction practice, such as determining appropriate locations for temporary structures and facilities, and the storage of materials in the event of extreme weather that may impact the delivery of materials.

8.14.11 Embedded mitigation built into the design of the proposed scheme would include highway and pavement drainage and the planting of trees and shrubs to manage excessive surface water runoff. However, during operation the increased temperature and rainfall and extreme weather events could causes delays and damage to the road and associated structures, which could result in closures and delays as well as increased repair costs. Further details on potential climate change hazards and opportunities, potential climate change related impacts and affected assets and receptors are presented in Appendix 15.2 of the ES [TR010060/APP/6.3].

8.14.12 Taking account of the embedded and standard mitigation measures proposed, the overall vulnerability of the proposed scheme to climate change is not considered to be significant and therefore accords with the NNNPS.

9 Planning balance and conclusions

9.1.1 The analysis of planning policy above provides an assessment of the proposed scheme's compliance with relevant planning policy, including the NNNPS (DfT, 2014). It confirms that there is a compelling and crucial need for the proposed scheme, as supported by both national policy through the NNNPS and RIS2 (DfT, 2020).

9.1.2 The NNNPS and RIS2 strongly support the delivery of national networks that meet the country's long-term needs, while helping to facilitate a prosperous and competitive economy and improving the quality of life for all. The NNNPS states that there is a critical need to improve national networks.

9.1.3 Currently, traffic on the A12 between Chelmsford and Colchester (junction 19 to junction 25) is extremely high for a two-lane dual carriageway and is close to or exceeds the maximum recommended limit for a new road of that type. The high volumes of traffic are such that the A12 is close to capacity on numerous sections between these junctions.

9.1.4 As the A12 has gotten closer to its capacity, queues and delays have become more regular and severe, and are expected to continue to increase in the future. Road users experience increased journey times, as well as journey times that are difficult to predict from day to day. All sections of the A12 between junction 19 and junction 25 are in the worst performing 10% of links on National Highways' network in the East of England in terms of Vehicle Hours Delay (Highways Agency, 2014).

9.1.5 Traffic modelling shows that, without intervention, congestion, journey times, delays and accidents currently experienced on the route would increase in future years, as would 'rat-running' on local roads. The proposed scheme is expected to reduce congestion related delay, improve journey time reliability, and increase the overall transport capacity of the A12. The proposed scheme would also improve road safety and reduce environmental impact, which is in line with DfT strategic objectives and RIS2 strategic outcomes.

9.1.6 The economic benefits the proposed scheme can bring are also acknowledged in Section 6 of this CftS. The improved connections to nearby local roads and the wider SRN will improve connections for users, therefore having wider economic benefits.

9.1.7 An assessment of the environmental effects of the proposed scheme has been carried out and documented within the ES and summarised within the Non-Technical Summary [TR010060/APP/6.4]. As noted in Chapter 17: Summary, of the ES [TR010060/APP/6.1], there are a number of significant residual effects that are expected as a result of the proposed scheme.

9.1.8 Mitigation measures are proposed, and the full set of mitigation measures are provided within the REAC, which is in the first iteration EMP [TR010060/APP/6.5] and which supports the Application. Requirement 4 of the draft DCO [TR010060/APP/3.1] secures the preparation of a construction focused second iteration EMP, which must align with the submitted first iteration EMP [TR010060/APP/6.5] and that must reflect the mitigation measures set out in the REAC. These mitigation measures would reduce the adverse effects of

the proposed scheme and have been developed utilising best practice measures, liaising with representatives from relevant local planning authorities and through engagement with affected landowners.

9.1.9 Overall, it has been demonstrated through the submission documents that the proposed scheme would achieve the objectives listed in Table 1.1 of this CftS. This CftS has considered the compliance of the proposed scheme with relevant planning policy. There is significant policy support for the proposed scheme in the NNNPS, which forms the primary basis against which the proposed scheme must be assessed. The NNNPS places a strong emphasis on the need to improve and integrate the strategic highway network, and the proposed scheme would deliver against this national objective. There is also support in principle for the proposed scheme in local development plans.

9.1.10 While it has not been possible to avoid all impacts, when considered against the 'assessment principles' and 'generic impacts' from the NNNPS, the benefits of the proposed scheme have been shown to outweigh the impacts, as described in Section 8 of this CftS and in the NNNPS Accordance Table provided in Appendix A. In addition, Appendix B and C sets out the compliance of the high-pressure gas main diversion element of the proposed scheme with the Overarching National Policy Statement for Energy (EN-1) and the National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4) (Department of Energy and Climate Change, 2011a; 2011b). Currently the Energy NPS are being reviewed by parliament and draft version have been issued for consultation, Appendix D and E provide the accordance table for the draft EN-1 and EN-4 respectively. This document and its appendices provide a detailed assessment of the proposed scheme's compliance with the relevant NPSs and demonstrate compliance.

9.1.11 The Planning Act 2008 requires that applications for development consent be decided in accordance with relevant NPS (section 104(3)) except to the extent that the adverse impact of the proposed scheme would outweigh its benefits (section 104(7)). It is not considered that there are any adverse effects that would outweigh the benefits of the proposed scheme. Therefore, it is considered that development consent should be granted.

Acronyms

Acronyms	Term
AADT	Annual Average Daily Traffic
AQMA	Air Quality Management Area
ARN	Affected Road Network
BCR	Benefit to Cost Ratio
BMV	Best and most versatile
CBBGC	Colchester Braintree Borders Garden Community
CftS	Case for the Scheme
ComMA	Combined Modelling and Appraisal Report
DCO	Development Consent Order
DfT	Department for Transport
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EN-1	National Policy Statement for Energy
EN-4	National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines
ES	Environmental Statement
FRA	Flood Risk Assessment
GEML	Great Eastern Main Line
IP	Inter-peak
LNR	Local Nature Reserve
LWS	Local Wildlife Site
MCA	Mineral Consultation Area
MSA	Mineral Safeguarding Area
MRA	Mineral Resource Assessment
NNNPS	National Networks National Policy Statement
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project

Acronyms	Term
PIA	Personal Injury Accident
PRA	Preferred Route Announcement
PRoW	Public right of way
REAC	Register of Environmental Actions and Commitments
RIS1	Road Investment Strategy 1
RIS2	Road Investment Strategy 2
SAC	Special Area of Conservation
SoS	Secretary of State
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
SWMP	Site Waste Management Plan
WCH	Walkers, cyclists and horse riders

Glossary

Term	Definition
Advice note	The Planning Inspectorate has published a series of advice notes that are intended to inform applicants, consultees, the public and others about a range of process matters in relation to the Planning Act 2008.
Aggregate	An umbrella term for bulk raw particulate materials used in infrastructure construction
Agricultural Land Classification	The Agricultural Land Classification system forms part of the planning system in England and Wales. It classifies agricultural land into five categories according to versatility and suitability for growing crops.
Application Document	A document submitted to the Planning Inspectorate as part of the application for development consent.
Benefit to Cost Ratio	The ratio of benefits to costs
Borrow pit	A pit resulting from the excavation of material for use in construction
Bridleway	A route along which the general public has rights to travel on foot or horseback. Cyclists may use a bridleway but are obliged to give way to other users on foot or horseback.
Construction	Activity on and/or offsite required to implement the Proposed Scheme. The construction phase is considered to commence with the first activity on site (eg creation of site access), and ends with demobilisation.
Construction compound	A compound used during construction for the storage of material, assembly of components or for other construction related activities.
Department for Business, Energy and Industrial Strategy	A department of the UK government, with responsibility for business, industrial strategy, and science and innovation with energy and climate change policy.
Department for Communities and Local Government	The former name of the Ministry of Housing, Communities and Local Government (MHCLG).
Department for Transport	The government department responsible (alongside agencies and partners) for the English transport network and a limited number of transport matters in Scotland, Wales and Northern Ireland that have not been devolved.
Department of Energy and Climate Change	The UK Government department formerly responsible for (among other things) energy and climate change issues, including the security of the UK's energy supplies. These functions have now been transferred to BEIS.
Development	Any proposal that results in a change to the landuse, landscape and/or visual environment.

Term	Definition
Development Consent Order	Introduced by the Planning Act in 2008, a DCO is the means of obtaining permission for developments categorised as Nationally Significant Infrastructure Proposed Schemes (NSIP).
Development Consent Order Application	The Proposed Scheme Application Documents, collectively known as the 'DCO application'.
Do-Minimum	The scenario that represents the situation that would occur without the project in operation, which includes permitted developments.
Do-Something	The scenario that represents the situation that would occur with the project in operation, which includes permitted developments.
Embedded mitigation	Design principles and features integrated into the proposed scheme design to reduce adverse environmental effects
Equality Act 2010	The Equality Act 2010 legally protects people from discrimination in the workplace and in wider society. Protected characteristics under the Equality Act 2010 are age, disability, gender reassignment, race, religion or belief, sex, sexual orientation, marriage and civil partnership, and pregnancy and maternity.
Examination	Statutory process in where the Secretary of State will appoint an Inspector to carry out an independent examination
Examining Authority	The Examining Authority is appointed by the Secretary of State to examine an application for a Development Consent Order and make a recommendation.
Gross Domestic Product	Total value of all goods and services produced within an economy in one year
Ground Investigation	Several levels of investigation from desk-based research to onsite sampling to evaluate challenges related to soil/ground.
Habitats Regulation Assessment	A HRA refers to the several distinct stages of assessment which must be undertaken in accordance with the Conservation of Habitats and Species Regulations 2017 (as amended) if a plan or project may affect the protected features of a habitats site, before a decision can be made on whether to authorise it.
Landscape Character Areas	These are single unique areas which are the discrete geographical areas of a particular landscape type. (GLVIA3)
Land use	The purpose that land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry.
Land take	The temporary acquisition or permanent loss of land as a result of the construction and/or operation of the Proposed Scheme.
Limits of deviation	The tolerances, both laterally and vertically, that any parts of the Proposed Scheme can be constructed from the lines and situations shown on the Works Plans (Application Document 2.6) and the levels

Term	Definition
	shown on the Engineering Section Drawings (Application Document 2.9).
Local planning authority	The LPA is the planning department of a council body (district, borough, county, National Park or Greater London Authority), who carry out planning functions for a particular area'.
Local Road Network	The Local Road Network is that portion of the road network for which a local highway authority is responsible.
Minerals Consultation Area	Geographical area, based on a mineral safeguarding area, where the district or borough council should consult the mineral planning authority for any proposals for non-minerals development.
Minerals Safeguarding Area	An area designated by Minerals Planning Authorities which covers known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development.
Mineral Resource Assessment	Where development is proposed within a Minerals Consultation Area, the local planning authority may require a Mineral Resource Assessment to be submitted in support of a planning application, to consider the quality and quantity of minerals beneath the site as well as the effect on mineral resources beyond the confines of the site.
Ministry of Housing, Communities and Local Government	Ministerial department supported by 12 agencies and public bodies, responsible for driving housing supply, increasing home ownership, boosting local growth and supporting communities with public services
National Character Area	A National Character Area is a natural subdivision of England based on a combination of landscape, biodiversity, geodiversity and economic activity. There are 159 National Character Areas and they follow natural, rather than administrative, boundaries.
National Cycle Network	A series of traffic-free paths and quiet, on-road cycling and walking routes that connect to every major town and city. These routes are promoted for both recreational and active travel purposes.
National Cycle Route	A cycle route part of the National Cycle Network created by Sustrans to encourage cycling throughout Britain.
National Infrastructure Delivery Plan	Document published by the UK Government, setting out its strategy for meeting the infrastructure needs of the UK economy.
National Planning Policy Framework	The National Planning Policy Framework was published in March 2012 by the UK's Department of Communities and Local Government, consolidating over two dozen previously issued documents called Planning Policy Statements (PPS) and Planning Policy Guidance Notes (PPG) for use in England. The NPPF was updated in February 2019 by the Ministry of Housing, Communities and Local Government.
National Policy Statement for Electricity Networks Infrastructure (EN-5)	Sets out the needs for the Government's policy for delivery of major energy infrastructure and provides the primary basis for decisions taken by the Infrastructure Planning Commission (IPC) on applications it receives for electricity networks infrastructure.

Term	Definition
National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4)	Sets out the need for the Government's policy for delivery of major energy infrastructure and provides the primary basis for decisions by the Infrastructure Planning Commission (IPC) on applications it receives for gas supply infrastructure and gas and oil pipelines.
National Policy Statement for National Networks	The NPSNN sets out the need for, and Government's policies to deliver, development of Nationally Significant Infrastructure Proposed Schemes on the national road and rail networks in England. It provides planning guidance for promoters of Nationally Significant Infrastructure Proposed Schemes on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State.
Noise Important Areas	Areas identified with respect to noise from major roads and from roads within agglomerations where the 1% of the population that are affected by the highest noise levels from major roads are located according to the results of the strategic noise mapping.
Operation	Describes the operational phase of a completed development and is considered to commence at the end of the construction phase, after demobilisation.
Order Limits	The Order Limits are the outermost extent of the Proposed Scheme indicated on the Plans by a red line. This is the Limit of Land to be Acquired or Used (LLAU) by the Proposed Scheme. This is the area in which the DCO would apply.
Overarching National Policy Statement for Energy (EN-1)	Sets out the need for the Government's policy for delivery of major energy infrastructure. This Overarching National Policy Statement for Energy (EN-1) is part of a suite NPSs issued initially issued by the Secretary of State for Energy and Climate Change (now the Department for Business, Energy and Industrial Strategy). There are further five technology-specific NPS for the energy sector.
Particulate Matter	Particulate matter (PM) is everything in the air that is not a gas and therefore consists of a huge variety of chemical compounds and materials, some of which can be toxic. Particulate matter is classified according to its size and this classification is used in concentration measurements. For example, PM_{10} is the concentration of particles that are less than or equal to 10 µm in diameter; similarly $PM_{2.5}$ describes the concentration of particles that are less than or equal to 2.5 µm in diameter.
Planning Act 2008	The primary legislation that establishes the legal framework for applying for, examining and determining Development Consent Order applications for Nationally Significant Infrastructure Proposed Schemes.
Preferred Route Announcement	Preferred Route Announcement by government of the preferred route for a new road or crossing.
Present Value	Present value (PV) is the current value of a future sum of money or stream of cash flows given a specified rate of return.

Term	Definition
Public Right of Way	A right to cross land owned by another person is known as a 'right of way'. If this is a right exercisable by the public at large, it is a 'public right of way'.
Representative Viewpoints	Representative selection of viewpoints where large numbers of viewpoints cannot all be included individually. Representative viewpoints were selected based on a range of factors including their high sensitivity, their location at recognised and important viewpoints or on scenic routes and their proximity to the Proposed Scheme and the likely change in existing view.
RIS 2 Period	Road Investment Strategy, financial years 2020/21 to 2024/25
RIS 3 Period	Road Investment Strategy, financial years 2025/26 to 2029/30
Scoping Opinion	The relevant authority's formal view on the issues an Environmental Statement should address. For the Proposed Scheme, the Scoping Opinion was given by the Planning Inspectorate on behalf of the Secretary of State.
Scoping Report	A report produced before the Environmental Statement to outline the key issues associated with a Proposed Scheme and assist the relevant regulator in providing a Scoping Opinion.
Screening	The formal process undertaken to determine whether the process of Environmental Impact Assessment (EIA) is required and so whether the applicant is required to provide an Environmental Statement in accordance with the EIA Regulations.
Secretary of State	The Secretary of State has overall responsibility for the policies of the Department for Transport.
Severance	Severance is used to refer to a change in ease of access for walkers, cyclists and horse riders due to, for example, a change in travel distance or travel time or a change in traffic levels on a route that makes it harder for walkers, cyclists and horse riders to cross. A reference to severance does not necessarily imply a route is closed to access.
Side road	A side road is a road that crosses or enters a trunk road scheme.
Significance of effect	The level or importance of effects, generally determined by considering together the sensitivity of the receptor with the magnitude of impact.
Southbound	Direction of travel
Sustainable Drainage Systems	Sustainable drainage systems are a natural approach to managing drainage in and around properties and other developments. They work by slowing and holding back the water that runs off from a site, allowing natural processes to break down pollutants.

References

Braintree District Council (2005). Local Plan Review. Available at: https://www.braintree.gov.uk/planning-building-control/local-plan-review/1. Accessed March 2022.

Braintree District Council (2011). Braintree District Council Local Development Framework Core Strategy. Available at: https://www.braintree.gov.uk/planning-building-control/core-strategy-proposals-map/1. Accessed March 2022.

Braintree District Council (2021a). Braintree District Local Plan 2013-2033 Section 1. North Essex Authorities' Shared Strategic Section 1 Plan. Available at: https://www.braintree.gov.uk/homepage/199/local-plan-2013-2033-section-1. Accessed May 2022.

Braintree District Council (2021b). Local Plan Section 2: Main Modifications for Consultation. Available at: https://braintree-consult.objective.co.uk/portal/newlocalplan/lps2ps/lps2mm?tab=files. Accessed May 2022.

Chelmsford City Council (2020). Chelmsford Local Plan – Our Planning Strategy 2013 to 2036. Available at: https://www.chelmsford.gov.uk/planning-and-building-control/planning-policy-and-local-plan/adopted-local-plan/. Accessed March 2022.

Colchester Borough Council (2010). Colchester Local Development Framework Site Allocations.

Colchester Borough Council (2014a). Local Development Framework – Core Strategy (adopted December 2008; selected policies revised July 2014). Available at: https://www.colchester.gov.uk/local-plan/the-local-plan/. Accessed January 2022.

Colchester Borough Council (2014b). Local Development Framework: Core Strategy (selected policies revised July 2014). Available at: https://www.colchester.gov.uk/local-plan/the-local-plan/. Accessed March 2022.

Colchester Borough Council (2021a). Colchester Borough Local Plan 2013-3022 Section 1. North Essex Authorities' Shared Strategic Section 1 Plan. Available at: https://cbccrmdata.blob.core.windows.net/noteattachment/CBC-Local-Plan-North-Essex-Authorities-Shared-Strategic-Section-1-Post%20Committee%20Colchester%2028th%20Jan%2021.pdf. Accessed May 2022.

Colchester Borough Council (2021b). Section 2 Colchester Publication Draft Local Plan: Tracked Changes Version Including Main and Additional Modifications –October 2021. Available at: https://cbccrmdata.blob.core.windows.net/noteattachment/Track%20changes%20Modified%20Section%202%20Local%20Plan%20October%202021.pdf. Accessed May 2022.

Department for Business, Energy and Industrial Strategy (2021a). Draft Overarching National Policy Statement for Energy (EN-1). Available at: https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements. Accessed May 2022.

Department for Business, Energy and Industrial Strategy (2021b). Draft National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4). Available at: https://www.gov.uk/government/consultations/planning-for-new-energy-infrastructure-review-of-energy-national-policy-statements. Accessed May 2022.

Department for Environment, Food and Rural Affairs (2018). Our Waste, Our Resources: A Strategy for England. Available at: https://www.gov.uk/government/publications/resources-and-waste-strategy-for-england. Accessed April 2022.

Department for Environment, Food and Rural Affairs (2021). Emissions Factors Toolkit (v11). Available at: https://laqm.defra.gov.uk/air-quality/air-quality-assessment/emissions-factors-toolkit/. Accessed March 2022.

Department for Transport (2014). National Policy Statement for National Networks. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-national-networks. Accessed May 2022.

Department for Transport (2015a). Road Investment Strategy: for the 2015/16 – 2019/20 Road Period. Available at: https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period. Accessed May 2022.

Department for Transport (2015b). Highways England: Licence. Available at: https://www.gov.uk/government/publications/strategic-highways-company-licence. Accessed March 2022.

Department for Transport (2018). Sea Passenger Statistics: All Routes 2017 (Final). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/754201/sea-passenger-statistics-all-routes-final-2017.pdf. Accessed May 2022.

Department for Transport (2020). Road Investment Strategy 2: 2020–2025. Available at: https://www.gov.uk/government/publications/road-investment-strategy-2-ris2-2020-to-2025. Accessed May 2022.

Department for Transport (2021). Decarbonising Transport: A Better, Greener Britain. Available at: https://www.gov.uk/government/publications/transport-decarbonisation-plan. Accessed April 2022.

Department for Transport (YYYY). Early Assessment and Sifting Tool.

Department of Energy and Climate Change (2011a). Overarching National Policy Statement for Energy (EN-1). Available at: https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure. Accessed May 2022.

Department of Energy and Climate Change (2011b). National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4). Available at: https://www.gov.uk/government/publications/national-policy-statements-for-energy-infrastructure. Accessed May 2022.

Essex County Council (2011). Essex Transport Strategy: the Local Transport Plan for Essex. Available at: https://www.essexhighways.org/highway-schemes-and-developments/local-transport-plan. Accessed April 2022.

Essex County Council (2021) Greater Essex Local Aggregate Assessment 2021 Available at; https://www.essex.gov.uk/minerals-waste-planning-policy/minerals-local-plan. Accessed June 2021.

Essex Economic Commission (2018). Enterprising Essex: Meeting the Challenge. Final Report of the Essex Economic Commission. Available at: https://www.essexgrowth.co.uk/media/1036/eec-final-report-march-2018.pdf. Accessed May 2022.

Highways Agency (2014). East of England Route Strategy Evidence Report. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/364207/East_of_England.pdf. Accessed May 2022.

Highways England (2016). A12 Chelmsford to A120 widening: Options Assessment Report. Available at: https://highwaysengland.citizenspace.com/he/a12-chelmsford-to-a120-widening-scheme/supporting_documents/A12%20Chelmsford%20to%20A120%20%20Options%20Assessment%20Report%20OAR.pdf. Accessed May 2022.

Highways England (2017a). East of England Route Strategy. Available at: https://www.gov.uk/guidance/future-investment-in-englands-motorways-and-major-roads#route-strategies-march-2017. Accessed April 2022.

Highways England (2017b). A12 Chelmsford to A120 widening: Scheme Assessment Report. Available at: https://highwaysengland.citizenspace.com/he/a12-chelmsford-to-a120-widening-scheme-23-to-25/results/a12chelmsfordtoa120widening-schemeassessmentreport.pdf. Accessed April 2022.

Highways England (2019). Design Manual for Roads and Bridges, LA 110 Material assets and waste. Revision 0. Available at: https://www.standardsforhighways.co.uk/dmrb/search/6a19a7d4-2596-490d-b17b-4c9e570339e9. Accessed May 2022.

Highways England (2020a). A12 Chelmsford to A120 Widening Scheme: Environmental Scoping Report. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010060/TR010060-000006-A12%20-%20Environmental%20Scoping%20Report.pdf. Accessed February 2022.

Highways England (2020b). Strategic Business Plan 2020-2025. Available at: https://www.gov.uk/government/publications/highways-england-strategic-business-plan-2020-2025. Accessed February 2022.

Highways England (2020c). Delivery Plan 2020-2025. Available at: https://www.gov.uk/government/publications/highways-england-delivery-plan-2020-2025. Accessed February 2022.

Highways England (2020d). A12 Chelmsford to A120 widening: Scheme Assessment Report Addendum. Available at: https://highwaysengland.citizenspace.com/he/a12-chelmsford-to-a120-widening-scheme-23-to-25/results/a12chelmsfordtoa120widening-schemeassessmentreportaddendum.pdf. Accessed May 2022.

Highways England (2020e). Design Manual for Roads and Bridges, GD 300 Requirements for new and upgraded all-purpose trunk roads (expressways). Available at: https://www.standardsforhighways.co.uk/dmrb/search/1223f3d1-5dd8-4afd-a2e8-0367f70b8652. Accessed May 2022.

Highways England (2021). A12 Chelmsford to A120 widening scheme: Preliminary Environmental Information Report. Available at: https://highwaysengland.citizenspace.com/he/a12chelmsford-to-a120-widening-consultation-june21/supporting_documents/A12%20Chelmsford%20to%20A120%20Widening%20Scheme%20Preliminary%20Design%20Preliminary%20Environmental%20Information%20Report%20PEIR%20June%202021.pdf. Accessed May 2022.

HM Government (2011). The Carbon Plan: Delivering our low carbon future. Available at: https://www.gov.uk/government/publications/the-carbon-plan-reducing-greenhouse-gas-emissions--2. Accessed May 2022.

HM Government (2020). Energy White Paper: Powering our Net Zero Future. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945899/201216_BEIS_EWP_Command_Paper_Accessible.pdf. Accessed May 2022.

HM Treasury (2021). Budget 2021. Available at: https://www.gov.uk/government/publications/budget-2021-documents. Accessed May 2022.

Infrastructure and Projects Authority (2016). National Infrastructure Delivery Plan 2016–2021. Available at: https://www.gov.uk/government/publications/national-infrastructure-delivery-plan-2016-to-2021. Accessed May 2022.

Maldon District Council (2017). Maldon District Approved Local Development Plan 2014 – 2029. Available at: https://www.maldon.gov.uk/downloads/file/14807/approved_maldon_district_local_development_plan_2014-2029. Accessed January 2022.

Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2. Accessed May 2022.

National Highways (2021). A12 Chelmsford to A120 widening scheme: Supplementary Consultation: Environmental Report. Available at: https://highwaysengland.citizenspace.com/he/a12chelmsford-to-a120-widening-consultation-nov21/supporting_documents/A12%20Chelmsford%20to%20A120%20Widening%20Supplementary%20Consultation%20Environment%20Report_November%204.pdf. Accessed May 2022.

Office for National Statistics (2020). 2018-based subnational population projections. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/localauthoritiesinenglandtable2 Accessed May 2022.

Planning Inspectorate (2015). Advice Note Two: The role of local authorities in the development consent process. Version 1. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/. Accessed May 2022.

Planning Inspectorate (2020). Advice Note Six: Preparation and Submission of Application Documents. Version 10. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/. Accessed May 2022.

Planning Inspectorate (2021a). Scoping Opinion: A12 Chelmsford to A120 Widening Scheme. Case Reference TR010060. Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010060/TR010060-000016-CHLM%20-%20Scoping%20Opinion.pdf. Accessed March 2022.

Planning Inspectorate (2021b). Register of projects. Available at: https://infrastructure.planninginspectorate.gov.uk/projects/register-of-applications/. Accessed September 2021.

Suffolk Coastal District Council (2018). Port of Felixstowe Growth and Development Needs Study – Final Report. Available at: https://www.eastsuffolk.gov.uk/assets/Planning/Suffolk-Coastal-Local-Plan/First-Draft-Local-Plan/Port-of-Felixstowe-Growth-and-Development-Needs-Study-July-2018.pdf. Accessed May 2022.