

A12 Chelmsford to A120 widening scheme

TR010060

6.8 HABITATS REGULATIONS ASSESSMENT: NO SIGNIFICANT EFFECTS REPORT

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A12 Chelmsford to A120 widening scheme
Development Consent Order 202[]

**HABITATS REGULATIONS ASSESSMENT:
NO SIGNIFICANT EFFECTS REPORT**

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Executive summary

This report is a screening assessment for possible implications to European sites from the proposed A12 Chelmsford to A120 widening scheme (the proposed scheme), which is a Nationally Significant Infrastructure Project (NSIP).

The proposed scheme comprises improvements to the A12 between junction 19 (Boreham interchange) at TL 741094 and junction 25 (Marks Tey interchange) at TL 917238, a distance of approximately 24km, or 15 miles.

The purpose of Habitats Regulations Assessment (HRA) Stage 1 screening is to assess the potential of the proposed scheme to have likely significant effects on sites designated under the Conservation of Habitats and Species Regulations 2017 (as amended) and other designations that are considered as a matter of policy.

The HRA Stage 1 screening exercise has shown that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans and projects. Therefore, this report is presented as a No Significant Effects Report (NSER) and forms part of the application for a Development Consent Order (DCO).

1 Introduction

1.1 Introduction to the proposed scheme

1.1.1 National Highways Limited (formerly Highways England Company Limited) is the developer of the proposed scheme. National Highways is a government-owned company which plans, designs, builds, operates and maintains England's motorways and major A-roads, known as the strategic road network.

1.1.2 The A12 Chelmsford to A120 widening scheme (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 to existing non-vehicular routes along the A12. Figure 1 provides a location plan for the proposed scheme.

1.2 The consenting regime

1.2.1 The proposed scheme meets the criteria to be considered as a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008. As the proposed scheme is an NSIP, National Highways is required to make an application for a Development Consent Order (DCO) to the Planning Inspectorate.

1.2.2 The Overseeing Organisation is National Highways and the competent authority is the Secretary of State for Transport. Costain, in partnership with Jacobs, has been appointed by National Highways to undertake the engineering design and environmental assessment for the DCO application.

1.3 Requirement for a Habitats Regulations Assessment

1.3.1 The Conservation of Habitats and Species Regulations 2017 (as amended)¹ (the Habitats Regulations) set out the process that must be followed where a proposed development may affect a European site of nature conservation importance. The process, which is known as Habitats Regulations Assessment (HRA), comprises between one and five stages depending on the findings at the end of the preceding stage. European sites include Special Areas of Conservation (SACs), which host rare, endangered and vulnerable habitats and species of European importance; Special Protection Areas (SPAs), which support significant populations of wild birds of European importance and their habitats; and European Offshore Marine Sites. Together SACs, SPAs and European Offshore Marine Sites make up the national site network. In England, as a matter of government policy, Ramsar sites (identified under the Ramsar

¹ Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

Convention), proposed SACs, potential SPAs and areas secured as sites compensating for damage to a European site are subject to the same protections as SACs and SPAs.

1.3.2 In accordance with the Design Manual for Roads and Bridges (DMRB) LA 115 (Highways England, 2020b) the precautionary principle is required to be applied where there is uncertainty or where harmful effects can be assumed in absence of evidence to the contrary. This is defined in DMRB LA 115 as meaning that the conservation objectives of European sites should prevail where there is uncertainty, or that harmful effects would be assumed in the absence of contrary evidence. Assessments must be objective and proportionate. Any residual impact on a qualifying feature, which in the view of National Highways is greater than negligible, would be considered to be potentially significant.

1.3.3 Where a proposed development is not directly connected with or necessary to the management of a European site, the Habitats Regulations state that it is necessary for the competent authority (in this case the Secretary of State for Transport) to consider if it is likely to have a significant effect on any European sites, either individually or in combination with other plans or projects. This is the first stage in the HRA process and is commonly called 'screening'. Where such an effect cannot be excluded, a development is required to be subject to appropriate assessment of its implications for a European site in view of the site's conservation objectives. This is the second stage in the HRA process, but will be undertaken only if the outcome of the screening process is that likely significant effects on a European site cannot be excluded. Under the Habitats Regulations, an effect is "likely" if (in accordance with Highways England, 2020b):

- it cannot be excluded, in that it is capable of having an effect, on the basis of objective information
- it is likely to undermine the European site's conservation objectives

1.4 Purpose of the HRA Report

1.4.1 The responsibility for undertaking the HRA is that of the competent authority, which in the case of the proposed scheme is the Secretary of State for Transport. The HRA is informed by information provided by the Applicant for the DCO in this report, the purpose of which is to document and present sufficient information for the Secretary of State to determine whether the proposed scheme is likely to have significant effects on European sites.

1.4.2 An initial draft of this report was prepared to support Project Control Framework (PCF) Stage 2 (Options Selection stage) in December 2019, prior to the selection of the preferred route. The report has now been updated to reflect the current design and Order Limits for the proposed scheme following the selection of the preferred route (junctions 19–23 in October 2019, junctions 23–25 in August 2020) and an iterative design process resulting in the proposed scheme. This report was submitted to the relevant statutory environmental body, Natural England in this case, in order to agree the outcome of the screening and initial assessment.

1.4.3 Natural England responded in October 2021 to confirm they were in agreement with the Habitat Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans and projects.

1.5 Structure of this report

1.5.1 Given that the proposed scheme is not directly connected with or necessary to the management of a European site, this report considers the proximity of European sites in relation to the proposed scheme and those with potential pathways for impact.

1.5.2 The following 16 sites have been considered as part of the Stage 1 screening assessment:

- Abberton Reservoir SPA and Ramsar
- Alde-Ore Estuary SPA and Ramsar
- Blackwater Estuary (Mid-Essex Coast Phase 4) 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
- Essex Estuaries SAC
- Outer Thames Estuary SPA
- Stour and Orwell Estuaries SPA and Ramsar

1.5.3 This Stage 1 screening assessment takes the form of a No Significant Effects Report (NSER) and is structured as follows:

- Section 2: Description of the proposed scheme
- Section 3: Assessment methodology
- Section 4: Initial assessment
- Section 5: Initial assessment of potential impacts
- Section 6: In-combination assessment of potential impacts
- Section 7: Conclusion

1.5.4 Screening matrices and the Finding of No Significant Effects matrices are appended to this report.

2 Description of the proposed scheme

2.1 General background

- 2.1.1 The existing A12 between junctions 19 and 25 is predominantly a dual two-lane carriageway, with a limited length of dual three-lane carriageway between junctions 19 (Boreham interchange) and 20a (Hatfield Peverel South interchange). There are a number of direct accesses onto the carriageways, particularly between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange).
- 2.1.2 The proposed scheme involves widening the existing A12 to three lanes throughout in each direction, where it is not already three lanes. This would mainly involve online² widening of the carriageway, with offline³ bypasses created between junctions 22 and 23 (Rivenhall End Bypass) and between junctions 24 and 25 (Kelvedon to Marks Tey). This would be accompanied by junction improvements (junctions 19 and 25), construction of new junctions catering for traffic movements both north and southbound (junctions 21, 22 and 24), and removal of existing junctions (junctions 20a, 20b and 23).

2.2 Watercourse crossings

- 2.2.1 The proposed scheme would require new crossings of watercourses and alterations to existing culvert and bridge crossings. There are eight crossings of main rivers (see Table 2.1), six of which comprise existing crossings and two of which comprise new crossings on proposed offline sections of road. Four of the crossings would require minor realignments at the crossing points. Main river crossings are shown on the General Arrangement Plans [TR010060/APP/2.9]. Table 2.1 references the relevant sheets from these plans.

Table 2.1 Watercourse crossings

Watercourse	Description of crossing
Boreham Brook	This crossing is shown on sheet 2 of the General Arrangement Plans. Proposed scheme would involve slip road widening in this location. This would require widening the northbound and southbound highway embankment but would not involve altering or extending the existing A12 Boreham Brook culvert. Flood modelling shows the proposed scheme would have a negligible impact on flooding, and therefore no flood risk mitigation would be required.
River Ter	This crossing is shown on sheet 5 of the General Arrangement Plans. Proposed scheme would involve upgrading the A12 to three lanes per carriageway in this location. This widening would be achieved with no geometric change to the existing bridge structure or highway embankment. No flood risk mitigation would be required at this crossing.

² 'Online' works relate to highway development proposed along, or on the line of, an existing road, for example road widening.

³ 'Offline' works relate to highway development on land under non-highway use, for example a new dual carriageway constructed on agricultural land.

Watercourse	Description of crossing
River Brain	This crossing is shown on sheet 8 of the General Arrangement Plans. Proposed scheme would involve upgrading the highway to three lanes per carriageway in this location. This would require widening of the highway embankment on both sides by up to 14m and would require an extension of the existing bridge (by 7m and 5m to the east and west respectively) under the highway. Flood modelling shows the proposed scheme would have a negligible impact on flooding, and therefore no flood risk mitigation would be required.
Rivenhall Brook	This crossing is shown on sheet 11 of the General Arrangement Plans. Proposed scheme would involve a new crossing of the Rivenhall Brook. It is proposed that the Rivenhall Brook would be realigned, and that the new A12 crossing of the river would be through a 46m long culvert structure, located approximately 90m south-east of the existing A12 crossing of the river. A 22m long raised flood mitigation bund would be placed along the right bank of the watercourse immediately downstream of the new Rivenhall Brook culvert, to ensure the watercourse realignment would not result in any increased flooding to the western floodplain of the watercourse.
River Blackwater	This crossing is shown on sheet 12 of the General Arrangement Plans. Proposed scheme would involve upgrading the A12 to three lanes per carriageway in this location. This would require asymmetrical widening of the existing bridge structure (Ashmans Bridge) by approximately 10.1m to the south. As the A12 widening works clash with an existing PRow and Ashmans Farm Footbridge, it is proposed to realign this PRow approximately 75m to the south. The proposed relocated footbridge would include accessibility ramps at either end. Flood mitigation proposed for another watercourse (Watercourse 21 ⁴) includes a ditch draining flows into the River Blackwater along the southern side of the A12. This has been included in the flood modelling at this location. Flood modelling shows the proposed scheme would have negligible impact on flooding, and therefore no flood risk mitigation would be required.
Domsey Brook (West Crossing)	This crossing is shown on sheet 14 of the General Arrangement Plans. Proposed scheme would involve widening and realigning the existing A12 in this location. This would require extending the existing arch structure, which the Domsey Brook flows through under the existing A12, asymmetrically by approximately 34.6m to the south-east. A section of the watercourse immediately upstream of the crossing would be realigned. Flood modelling shows the proposed scheme would have negligible impact on flooding, and therefore no flood risk mitigation would be required.
Domsey Brook (East Crossing)	This crossing is shown on sheet 17 of the General Arrangement Plans. Proposed scheme would require a slight realignment of the Domsey Brook (to the north-east) and installation of a new crossing of the Domsey Brook through a 60m long culvert structure. Flood modelling shows the proposed scheme would have negligible impact on flooding, and therefore no flood risk mitigation would be required.

⁴ All unnamed watercourses within the proposed scheme Order Limits have been assigned a number. A description of these watercourses is provided in Chapter 14: Road drainage and the water environment, of the Environmental Statement [TR010060/APP/6.1], and they are shown on Figure 14.1 of the Environmental Statement [TR010060/APP/6.2].

Watercourse	Description of crossing
Roman River	This crossing is shown on sheet 19 of the General Arrangement Plans. Proposed scheme would involve widening the existing A12 southbound highway embankment and extending the existing watercourse culvert (retaining existing cross-sectional dimensions) by approximately 12m. This would necessitate the realignment of a section of the Roman River south of the A12. The realigned channel would be designed to match the existing channel capacity. Flood modelling shows the proposed scheme would have negligible impact on flooding, and therefore no flood risk mitigation would be required.

2.2.2 In addition to the main river crossings, there would be 30 new culvert structures for ordinary watercourses and drainage channels, and improvements or extensions to around 10 existing culvert structures. There would also be additional new culverts for drainage channels, which are shown on the Drainage and Surface Water Plans [TR010060/APP/2.13].

2.2.3 Information on flood risk measures that form part of the proposed scheme description is provided in Chapter 14: Road drainage and the water environment, of the Environmental Statement [TR010060/APP/6.1], and the Flood Risk Assessment in Appendix 14.5 of the Environmental Statement [TR010060/APP/6.3]. Designs take into account climate change considerations as appropriate, as detailed in Section 1.6 of the Flood Risk Assessment.

2.3 Drainage design

Existing highway drainage

2.3.1 The primary drainage elements along the existing A12 between junctions 19 and 25 include the following surface water drainage edge collection features:

- Concrete surface water channels with catchpit gratings at regular intervals
- Kerb inlet gullies and traditional kerb/gully drainage
- Combined kerb drainage
- Filter drains

2.3.2 Concrete surface water channels are the most commonly used drainage edge collection feature along the existing A12 mainline outside of urban and residential areas. The surface water drainage arrangement of traditional kerb and gully drainage and kerb inlet gullies are the most commonly used drainage edge collection features along the existing A12 mainline through urban and residential areas. Combined kerb drainage is used for the kerb edges on bridge decks, along road edges for underbridges (e.g. where it has not been feasible to continue drainage methods such as concrete surface water channels and filter drains), lay-bys and at junction locations with other local roads.

2.3.3 The highway drainage networks serving the existing A12 generally have outfalls discharging to nearby field drains, open ditches, ordinary watercourses and main rivers depending on their proximity to the highway. Some of the existing minor side roads have no defined drainage system and rely on over-the-edge drainage into field ditches or runoff into adjacent land.

- 2.3.4 Drainage surveys did not identify any existing surface water attenuation features, such as attenuation ponds, underground attenuation tanks, flow control devices and pollution control measures.
- 2.3.5 The drainage surveys and as-built records did not confirm the presence of soakaways or other infiltration techniques other than a few localised soakaway chambers located along the A138 highway just north of junction 19. As a result, it has been assumed that the existing highway drainage is likely to discharge unattenuated and untreated into the nearby receiving waterbody types mentioned previously.

Proposed highway drainage

- 2.3.6 The proposed scheme highway drainage is designed such that, where practicable, existing surface water drainage and outfalls are retained. Proposed offline road sections would have new surface water collection and conveyance systems and new outfalls. Online sections with proposed widening works would also require new surface water collection and conveyance systems, and this would generally be a like-for-like replacement in terms of the type of drainage system, where practicable.
- 2.3.7 Where the proposed road is in cutting, the surface water runoff would generally be drained to combined surface and sub-surface filter drains located in the verges. Where the proposed road is on embankment and the width can be justified, the surface water runoff would be drained via concrete surface water channels and/or linear drain solutions (slot drains) located in the verges. Linear drain solutions (slot drains) would be provided for spatially constrained locations in the central reserve or adjacent to verges. The type of edge drainage collection system varies across the proposed scheme extent depending on the proposed highway geometry and the spatial constraints.
- 2.3.8 Where kerbs are required as part of the proposed highway design across the whole proposed scheme, the surface water runoff would be drained via roadside gullies or a combined kerb drainage system. A combined kerb drainage system is typically required where the longitudinal slope of the proposed highway is flat and would result in a large number of gullies at close spacing intervals. The existing and proposed bridge structures would be provided with adequately sized bridge deck drainage units with outlets connected to downstream carrier drains.
- 2.3.9 The proposed scheme would result in an increase in the amount of impermeable road surfacing, and therefore surface water runoff rates and volumes are likely to increase in the absence of additional attenuation storage measures. The surface water runoff rates are to be restricted to the existing site condition allowable discharge rates (for online road widening) or greenfield runoff rates (for new offline road sections) to mitigate the potential increased flood risk.
- 2.3.10 Attenuation storage would generally be provided in the first instance by attenuation ponds (where space is available), prior to discharge to nearby existing watercourses or existing drainage systems. For spatially constrained sites (e.g. road sections subject to online widening works), attenuation storage would be provided through the use of underground attenuation storage units or

oversized pipes and chambers depending on the space available. Where the proposed highway drainage system is depth constrained, attenuation storage would be achieved within shallow ditches or swales (linear grass covered depressions which lead surface water overland from the drained highway surface to an attenuation storage feature, receiving watercourse, or existing highway drainage system). Locations of proposed attenuation storage are shown on the Drainage and Surface Water Plans which are available in Volume 2 of the DCO application [TR010060/APP/2.13]).

- 2.3.11 The proposed highway drainage systems are being designed to provide attenuation storage such that surface water flooding for design events up to and including the 1 in 100 year event with an allowance for climate change would be contained within the proposed scheme boundaries and that the proposed scheme would remain safe for use during the aforementioned design event.
- 2.3.12 The feasibility of using different sustainable drainage system techniques (e.g. infiltration methods, filter drains and swales) has been investigated with the provisional ground investigation data currently available. The findings from the provisional ground investigation data indicate that the ground drainage conditions are generally poor to practically impervious across the proposed scheme. Although River Terrace, Glaciofluvial, Kesgrave Sand and Gravel Deposits are present throughout the proposed scheme, they can be highly variable and often contain a significant percentage of fines (i.e. clay and silt). The presence of clay and silt material within a coarser matrix (sands and gravels) can significantly reduce permeability and therefore make infiltration generally unfeasible. Therefore, the drainage design has been progressed (and assessed) on the assumption of 'no infiltration', which represents a realistic design outcome given the preliminary ground investigation undertaken and resulting data assessed to date. However, where no or limited/inconclusive provisional ground investigation data was available, or the locations of drainage assets have been subject to change, then supplementary ground investigations will be undertaken and assessed accordingly in the subsequent design stages as part of the proposed highway drainage design refinement (including the feasibility of using of infiltration techniques). National Highways would demonstrate that the use of the alternative measures would not lead to any materially new or materially different environmental effects compared to those reported in the Environmental Statement.
- 2.3.13 The level of water quality treatment required for routine highway surface water runoff to receiving water bodies varies along the route of the proposed scheme depending on the catchment size and the contributing paved area. Treatment levels and pollution control requirements have been assessed in accordance with DMRB LA 113 Road Drainage and the Water Environment (Highways England, 2020b) and the Highways England Water Risk Assessment Tool (HEWRAT). More information on the HEWRAT assessment can be found in Chapter 14: Road drainage and the water environment, of the Environmental Statement [TR010060/APP/6.1], and Appendix 14.1: Water quality assessment report [TR010060/APP/6.3].
- 2.3.14 Further information on the drainage strategy is provided in Appendix 14.6 of the Environmental Statement [TR010060/APP/6.3].

2.4 Lighting design

- 2.4.1 Lighting column locations are shown on the proposed scheme General Arrangement Plans [TR010060/APP/2.9]. A scheme-wide lighting assessment has been undertaken which determined that lighting would only be required at the junctions, and not on the mainline, along with handrail lighting on the bridges for walkers, cyclists and horse riders. Side roads would also have lighting on the approach to junctions. Overbridges and underbridges would not have lighting where the road itself is not planned to be lit.
- 2.4.2 Lighting would consist of a mix of 10–12m high columns with LED luminaires on the junctions, and 8m high columns on the sideroads.
- 2.4.3 The design has been carried out in accordance with the latest BS 5489 standard (British Standards Institution, 2020) and National Highways' specifications. The design would also take into consideration guidance notes from the Institution of Lighting Professionals, including Guidance Note 01/21: The Reduction of Obtrusive Light (2021) and Guidance Note 08/18: Bats and Artificial Lighting in the UK (2018).

2.5 Gas main diversion

- 2.5.1 An existing high-pressure gas main (the asset referred to as Little Braxted to Springfield - AIA2), owned and operated by Cadent Gas Limited (Cadent), runs parallel to the A12 between Olivers Bridge (B1018 Maldon Road) and Colemans Bridge (B1389). The gas main would be affected by the proposed scheme and would therefore need to be diverted (the 'gas main diversion').
- 2.5.2 To the east of Witham, the existing gas main runs north–south on the southern side of the A12. The section of gas main that would need to be diverted starts west of Maldon Road and runs adjacent to the A12 before feeding into an existing Cadent above ground installation called Little Braxted Pressure Reduction Station, south-west of Little Braxted (south of junction 22).
- 2.5.3 The works to widen the A12 as part of the proposed scheme would cause two principal pinch-points that would require diversion of the existing gas main into a new corridor. The two pinch-points are:
- where the gas main passes between the A12 and existing housing and church by Maldon Road
 - where the gas main passes between the A12 and Whetmead Local Nature Reserve, which contains a historic landfill and therefore is potentially contaminated
- 2.5.4 The route of the proposed gas main diversion corridor is shown as Work No. U69 on the Utility Diversion Works Plans [TR010060/APP/2.2.2]. The corridor diverts from the existing gas main at approximately national grid reference TL 821130, west of Maldon Road (B1018). It diverts south-east, away from the A12 and around Maldon Road, and then returns north-east to run alongside the existing A12 mainline. It then diverts east away from the A12 again, crossing the River Blackwater to go around Whetmead Local Nature Reserve, avoiding the potential contaminated land, before continuing north towards the A12. It re-

joins the existing gas main at approximately national grid reference TL 830144, south-west of Little Braxted.

- 2.5.5 As discussed in Chapters 1 and 5 of the Environmental Statement [TR010060/APP/6.1], the gas main diversion could result in likely significant environmental effects, and is therefore a NSIP in its own right (but included within the proposed scheme DCO application, and therefore is assessed as part of the proposed scheme).
- 2.5.6 Besides the Little Braxted to Springfield - AIA2, there are four further diversions required for the high-pressure gas mains as identified in Chapter 2: The proposed scheme, of the Environmental Statement [TR010060/APP/6.1]. These four other diversions are not a Nationally Significant Infrastructure Project, as they would not give rise to significant environmental effects.
- 2.5.7 Other utilities existing on the proposed scheme that would require diversion include potable water mains, storm drains and sewers, overhead and buried electricity cables, overhead and buried communication cables and gas pipes of a lower pressure rating.
- 2.5.8 Discussions are ongoing with statutory undertakers to agree diversions. Potential diversion routes have been included within the proposed scheme Order Limits. Environmental impacts associated with utility diversions have been assessed and reported within the Environmental Statement.

2.6 Construction phase

- 2.6.1 Construction is currently scheduled to start in 2024. The proposed scheme would take approximately four years to construct, with an assumed opening year of 2027.
- 2.6.2 The proposed scheme would be a substantial construction project requiring two main construction compounds, three satellite compounds, and additional laydown areas. Borrow pits would be used at four locations within the Order Limits to source the required fill material for the proposed scheme.
- 2.6.3 An Environmental Masterplan has been produced which shows the proposed scheme design and areas within the Order Limits reserved for environmental mitigation. This is included in Figure 2.1 of the Environmental Statement [TR010060/APP/6.2].
- 2.6.4 The Environmental Masterplan shows both embedded and additional mitigation measures as integral elements of the proposed scheme design where these are known to be effective and deliverable.
- 2.6.5 The first iteration Environmental Management Plan (EMP) [TR010060/APP/6.5] outlines appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air, noise and water) and water management control measures. Standard good practice measures in the EMP have been informed by guidance such as the Construction Industry Research and Information Association's (CIRIA's) (2015) Environmental Good Practice on Site Guide. Avoidance or alleviation measures contained within the EMP would be implemented throughout the construction of the proposed scheme with specific measures installed where required. These measures are

required to avoid nuisance and to ensure wider legislative compliance and so are reported as part of the proposed scheme description (as per Highways England, 2020b).

- 2.6.6 The first iteration EMP includes the Register of Environmental Actions and Commitments (REAC), which details all measures to manage environmental effects during construction and operation. The first iteration EMP will be updated into a more detailed second iteration EMP prior to construction. The second iteration EMP will include more specific controls for the construction phase.

Discharge

- 2.6.7 During the construction phase, standard good practice measures will be implemented to prevent surface water runoff containing suspended sediment or pollutants reaching watercourses through overland flow in rainfall events. All necessary consents will be obtained and works managed to ensure watercourses are not polluted by the construction of the proposed scheme.
- 2.6.8 Standard design good practice to avoid impacts on watercourses and standard industry good practice will be applied during the construction phase. These standard practices are summarised in Chapter 14: Road drainage and the water environment, of the Environmental Statement [TR010060/APP/6.1] and are not proposed as protective measures against impacts on European sites.
- 2.6.9 Standard measures are also included in the first iteration of the EMP [TR010060/APP/6.5]. These ensure legal compliance and adherence to good practice guidance.

Pollution – emissions

- 2.6.10 As per DMRB LA 105 Air Quality (Highways England, 2019), roads were included in the affected road network (ARN) where certain criteria were met, as set out in Chapter 6: Air quality, of the Environmental Statement [TR010060/APP/6.1]. Standard measures that form part of the proposed scheme description will be implemented as a matter of course due to legislative requirements and standard sector practices. Standard measures are included in the first iteration of the EMP [TR010060/APP/6.5]. The second iteration of the EMP will adopt good practice measures to control fugitive dust (and hence avoid or reduce potential impacts) in compliance with DMRB LA 105. Measures will include the dampening down of surfaces, planning the site layout so that machinery and dust-causing activities occur as far from receptors as practicable, erecting screens or barriers around the dust-causing activities or the site boundary and the minimising, covering or dampening down of stockpiles to prevent entrainment by wind.

Noise and vibration

- 2.6.11 Standard measures will be implemented as part of the proposed scheme description as a matter of course due to legislative requirements or standard sector practices. These are set out in the first iteration of the EMP [TR010060/APP/6.5]. The second iteration EMP will include the relevant construction noise criteria and any proposed monitoring during construction.

- 2.6.12 The use of Best Practicable Means will be implemented during construction. This is standard sector practice in accordance with BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (British Standards Institution, 2014a) and BS 5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration (British Standards Institution, 2014b).

3 Assessment methodology

- 3.1.1 For the purpose of this assessment, the HRA methodology has followed DMRB guidance for highway schemes, supplemented by guidance from the Planning Inspectorate and Department for Environment, Food and Rural Affairs (Defra), as detailed in Table 3.1.

Table 3.1 HRA guidance

Guidance	Screening assessment matrices
DMRB LA 115 Habitats Regulations Assessment, Revision 1 (Highways England, 2020b)	As required by DMRB LA 115, the screening stage of HRA is reported within an HRA report which includes completed screening matrices for European sites which meet the screening criteria (see Appendix B of this report).
Habitats Regulation Assessment Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects. Version 8. (Planning Inspectorate, 2017)	Indicative representations of the effects on the different qualifying criteria for the European sites (i.e. the Screening Matrices in Appendix A of Advice Note Ten) are appended to this HRA report (see Appendix C of this report). This is a requirement as part of the DCO process.
Habitats regulations assessments: protecting a European site: How a competent authority must decide if a plan or project proposal that affects a European site can go ahead (Defra, 2021)	No specific matrices required.

- 3.1.2 The HRA assessment methodology comprises up to five stages of assessment, as set out in Table 3.2.

Table 3.2 Stages of HRA (table adapted from DMRB LA 115)

Stage	Description
1. Screening	Determining whether the project is likely to have significant effects on European site(s) alone or in combination with other plans or projects. Where the project adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures should be reported as part of the project description.
2. Informing the appropriate assessment	Where screening identifies likely or uncertain effects, a more detailed assessment is required of the effects on the integrity of the European site(s). Mitigation measures to avoid or minimise effects are described. Where HRAs progress beyond screening, sufficient evidence shall be demonstrated to support all conclusions beyond reasonable scientific doubt. The information must be presented for consultation with the relevant statutory environmental body.

Stage	Description
3. Assessment of alternative solutions	<p>Formal assessment and reporting of alternative solutions shall be undertaken where the appropriate assessment:</p> <ul style="list-style-type: none"> • concludes that there are adverse impacts of greater than negligible magnitude or • contains insufficient information on any impact <p>Further assessment shall be undertaken, and an alternative solutions matrix produced.</p>
4. Imperative reasons of overriding public interest (IROPI)	<p>Where it has been determined that adverse impacts remain and that no alternative solutions exist, it will be necessary to determine whether there are any IROPI relating to social or economic reasons, human health, public safety or benefits of primary importance to the environment sufficient to override the harm to the European site(s). Where a priority habitat or species is affected, the reasons are restricted to human health, public safety or benefits of primary importance to the environment. However, if the Secretary of State considers that there are social and economic reasons that may constitute IROPI for the priority habitat, then they must first obtain the opinion of the Secretary of State for Environment, Food and Rural Affairs.</p>
5. Assessment of compensatory measures	<p>Where it is determined that there are IROPI, the Overseeing Organisation must inform the competent authority. For the project to proceed, it will be necessary to design, implement, manage and monitor compensatory measures. The compensatory measures should fully compensate for the adverse effects on the integrity of the European site(s) and ensure that the overall coherence of the national site network is protected.</p>

3.2 Screening

- 3.2.1 The first part of the assessment, screening (Stage 1), is undertaken where it has first been established that a proposal is not directly connected with or necessary for the conservation management of a European site and that the proposal is a 'project' for the purposes of the Habitats Regulations. The purpose of the screening stage is to determine whether the proposal is likely to have a significant effect on a European site, either alone or in combination with other proposals. The majority of highway projects are considered unlikely to be connected with the management of a European site(s), because conservation management of a European site is not the purpose of most highways projects. Stage 2 of the HRA process is only required where the outcome of Stage 1 is that likely significant effects cannot be excluded. Stages 3 – 5 are relevant only where the Stage 2 appropriate assessment concludes that there the possibility of adverse effects on the integrity of a European site cannot be excluded.
- 3.2.2 The screening process involves consideration of the proximity of European sites to the proposed project works; the features of the potentially affected European sites, including primary reasons for selection and the conservation status of the qualifying interests; and the vulnerability of the European site(s) and conservation objectives. The process takes into consideration the nature of the project works, project design and the cumulative impacts that could arise from the project in combination with other plans and projects.

- 3.2.3 Prior to April 2018, and the ruling in *People Over Wind*⁵, it was widely accepted that the screening stage could incorporate mitigation measures that formed part of the proposed project. Such mitigation measures included those measures commonly used in environmental management plans. If such measures could exclude the risk of harm, then there was no need to proceed to Stage 2 and appropriate assessment. The Court of Justice of the European Union ruled that measures intended to avoid or reduce the harmful effects of a project on a European site could not be taken into consideration at the screening stage. However, good practice measures required to avoid nuisance or to ensure wider legislative compliance that are part of the project description but are not specifically intended to avoid or reduce harm to a European site, are considered as part of screening.
- 3.2.4 In accordance with the *Holohan v An Bord Pleanála (C-461/17)* ruling (November 2018), 'the Holohan ruling', consideration of likely significant effects should include the implications of the project for non-listed species within the European site as well as habitats and species outside the European site where the implications are liable to affect the conservation objectives of the site.

3.3 Identification of potential effects

- 3.3.1 DMRB LA 115 (Highways England, 2020b) states that the screening stage of HRA shall be completed for all European sites where the route corridor or project meets any of the following criteria:
- is <2km from any Special Area of Conservation (SAC), candidate SAC (cSAC), potential SAC (pSAC), Special Protection Area (SPA), potential SPA (pSPA) or Ramsar site
 - is <30km from any SAC, cSAC or pSAC where bats are one of the qualifying interests
 - crosses or lies adjacent to, upstream of, or downstream of a watercourse which is designated in part or wholly as a European site
 - has a potential hydrological or hydrogeological linkage to a European site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers assessment of European sites in accordance with DMRB LA 113 (Highways England, 2020a)
 - has an ARN which triggers the criteria for assessment of European sites within DMRB LA 105 (Highways England, 2019)
- 3.3.2 Additional European sites should be subject to screening where the existence of ecological connectivity between projects and European sites is identified beyond the screening criteria.
- 3.3.3 In this assessment, flight paths or feeding or roosting areas of birds that may be found using habitats outside the boundaries of a SPA/Ramsar have been considered. The European sites under consideration were limited to those within 20km where wildfowl and waders are a qualifying feature. This is

⁵ Court of Justice of the European Union, Case C – 323/17 *People Over Wind*, 12th April 2018.

considered a precautionary distance given the average mean-maximum foraging ranges for the majority of species (Scottish Natural Heritage, 2016; Thaxter *et al.*, 2012; Cramp and Simmons, 1977; Lack, 1986). Gulls can forage over much greater distances (e.g. lesser-black backed gulls have a recorded mean-maximum foraging range of 141km during the breeding season (Thaxter *et al.*, 2012)), so the assessment considered all the east coast SPAs in the region which have gulls as a qualifying species, the furthest of which is Alde-Ore Estuary at 42.8km. More distant sites were not considered due to the very low likelihood of there being any functional linkage.

- 3.3.4 Additionally, in England, HRA screening matrices are completed for route corridors or projects, in addition to the assumptions within DMRB LA 115 (Highways England, 2020b), where they are within relevant Site of Special Scientific Interest impact risk zones (IRZs) identified in the Multi-Agency Government Information for the Countryside (MAGIC) v3.0 (Natural England, 2022a).
- 3.3.5 Consideration of hydrological connectivity between the proposed scheme and European sites covers flood risk, hydrology, water quality, geomorphology and implications for compliance with the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.
- 3.3.6 Localised air quality impacts from highway schemes are considered most likely to occur within 200m of major roads. Assessment of designated sites is only undertaken for any designated sites located within 200m of the ARN, in accordance with DMRB LA 105 Air Quality (Highways England, 2019), as no likely significant effects can be concluded alone beyond 200m. It is acknowledged that, while effects of air quality changes on European sites more than 200m from major roads would be considerably smaller, effects could occur at a wider geographical (regional) level in combination with air quality effects from other plans and projects. However, the potential to risk having a significant effect on a European site on its own or in combination with other proposals diminishes rapidly with distance from the ARN.
- 3.3.7 The assessment of likely significant effects has been completed for the proposed scheme alone and in-combination with other plans and projects (see Section 6 of this report). The in-combination effects assessment was determined based on a review of the relevant district and borough council websites for details on policies and current planning applications. In order for an in-combination effect assessment to be necessary or relevant, any plan or project (including the proposed scheme being assessed here) would have to have a level of adverse impact that risks having a significant effect on a European site on its own or in combination with other proposals. If, for any effect pathway, the assessment concludes either no effect or a *de minimis* (negligible or inconsequential) effect, it is considered that the proposed scheme does not risk having a significant effect on a European site, either alone or in-combination with other proposals, irrespective of what other plans and projects would contribute. Guidance on Habitats Regulations (Tyldesley and Chapman, 2013) states that no in-combination assessment is necessary where a plan or project has no effect at all on a European site. This guidance also advises that the in-combination assessment should be carefully scoped to relate only to the

effects of plans or projects that could add cumulatively to the effects of the subject plan or project in ways likely significantly to affect the site(s).

- 3.3.8 Decommissioning is not considered within the assessment for the proposed scheme as highway schemes are designed to have a material lifespan of between 20 and 40 years before major maintenance and upgrading is required. It is considered highly unlikely that the proposed scheme would be decommissioned after this time, as the road is likely to have become an integral part of the infrastructure in the area. Decommissioning is therefore not an integral planned element of the proposed scheme and therefore not subject to HRA.

3.4 Consultation

- 3.4.1 This report was submitted to the relevant statutory environmental body, Natural England in this case, in order to agree the outcome of the screening and initial assessment. Natural England responded in October 2021 (see Appendix E of this report) to confirm they were in agreement with the Habitat Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans and projects.

4 Initial assessment

4.1 Proximity to European sites

- 4.1.1 Information regarding the location and reasons for designation of European sites has been collected via the online database MAGIC (Natural England, 2022a), and from the Natural England (2022b) Access to Evidence websites to identify sites in accordance with DMRB LA 115 (Highways England, 2020b) (as outlined in Section 3 of this report). The outcomes of the desk study search are summarised below in Table 4.1. The locations of European sites in proximity to the proposed scheme are shown on Figure 2.
- 4.1.2 As the proposed scheme meets criteria 3 and 6, it is subject to further screening for likely significant effects.

Table 4.1 European sites identified that meet the screening criteria

Criteria (as identified in DMRB LA 115)	Criterion met by the proposed scheme?
1. is <2km from any Special Area of Conservation (SAC), candidate SAC (cSAC), potential SAC (pSAC), Special Protection Area (SPA), potential SPA (pSPA) or Ramsar site.	No – Nearest European site is approximately 5.4km from the proposed scheme.
2. is <30km from any SAC, cSAC or pSAC where bats are one of the qualifying interests.	No – There are no European sites within 30km of proposed scheme with bats as one of the qualifying features.
3. crosses or lies adjacent to, upstream of, or downstream of a watercourse which is designated part or wholly as a European site.	Yes – The proposed scheme would cross a watercourse upstream of European sites (see Figure 3): <ul style="list-style-type: none"> • Essex Estuaries SAC (10.7km downstream of the proposed crossing) • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar (10.7km downstream of the proposed crossing) • Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar (16km downstream of the proposed crossing)
4. has a potential hydrological or hydrogeological linkage to a European site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers assessment in DMRB LA 113 (Highways England, 2020a).	Yes – Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar and Essex Estuaries SAC support GWDTE (Environment Agency, 2020). Both sites are 6.0km distant and are hydrologically linked by Boreham Brook and River Blackwater (10.7km length of watercourse, see Figure 3).

Criteria (as identified in DMRB LA 115)	Criterion met by the proposed scheme?
5. has an ARN which triggers the criteria for assessment of European sites within DMRB LA 105 Air Quality (Highways England, 2019).	No – No European sites within 200m of the ARN. Nearest site to the ARN is Abberton Reservoir SPA/Ramsar site which is approx. 2.6km from the ARN (see Figure 4).
6. the existence of ecological connectivity between projects and European sites is identified beyond the screening criteria.	Yes – There is potential for habitats within or adjacent to the proposed scheme to be used as feeding grounds or temporary roosting sites by qualifying bird species travelling to, or from, European sites (see 20km buffer on Figure 2): <ul style="list-style-type: none"> • Abberton Reservoir SPA/Ramsar • Alde-Ore Estuary SPA/Ramsar • Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar • Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar • Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA/Ramsar • Dengie (Mid-Essex Coast Phase 1) SPA/Ramsar • Outer Thames Estuary SPA • Stour and Orwell Estuaries SPA/Ramsar
7. within relevant Site of Special Scientific Interest IRZs	No – No additional European sites identified using IRZs.

4.2 Identification of European sites potentially affected by the proposed scheme

4.2.1 Based on the criteria for screening European sites (see Table 4.1), the following European sites have been identified for consideration in this assessment:

- Abberton Reservoir SPA/Ramsar, 5.4km south-east of the closest point of the proposed scheme south-(criterion 6, Table 4.1)
- Alde-Ore Estuary SPA/Ramsar, 42.8km north-east (criterion 6, Table 4.1)
- Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, 6.0km south-east (criteria 3, 4 and 6, Table 4.1)
- Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar, 9.7km east (criteria 3 and 6, Table 4.1)
- Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA/Ramsar, 11.7km south-east (criterion 6, Table 4.1)
- Dengie (Mid-Essex Coast Phase 1) SPA/Ramsar, 14.1km south-east (criterion 6, Table 4.1)

- Essex Estuaries SAC, 6.0km south-east (criteria 3 and 4, Table 4.1)
- Outer Thames Estuary SPA, 16.3km east (criterion 6, Table 4.1)
- Stour and Orwell Estuaries SPA/Ramsar, 14.2km north-east (criterion 6, Table 4.1)

- 4.2.2 Wintering and breeding bird surveys conducted by Jacobs in 2017 and 2020 (Appendix 9.5: Breeding Bird Survey Report, and Appendix 9.12: Winter Bird Survey Report, of the Environmental Statement [TR010060/APP/6.3]) comprised a 500m survey area around the proposed scheme and recorded 12 species which are qualifying features of the local (largely estuarine) SPA network (Joint Nature Conservation Committee (JNCC), 2019). The 500m survey area was based on the likely zone of influence of the proposed scheme and its potential to cause disturbance and displacement of birds. These 12 species, and the European sites for which they are qualifying features, are listed in Table 4.2. The predominant habitat in the survey area is arable farmland, with some hedgerows and mixed deciduous woodland (Figure 9.2 of the Environmental Statement [TR010060/APP/6.2]).
- 4.2.3 Nine species of waterfowl that are qualifying features of SPAs and Ramsar sites were recorded during wintering bird surveys, the most numerous of which were coot, tufted duck and cormorant. These species were recorded primarily at Coleman's Reservoir and from the waterbodies near Hatfield Peverel and Little Braxted (Figure 5). The largest numbers of these three species (280 coot, 60 tufted duck and 37 cormorant) were all observed at Coleman's Reservoir, with similar (although lower) numbers recorded at the same location over two separate winter periods. Coleman's Reservoir is located 9.6km from the nearest SPA for which the species are qualifying features, namely Abberton Reservoir SPA/Ramsar, and about 29km from the Stour and Orwell Estuaries SPA/Ramsar, for which cormorant is part of the assemblage (the assemblage is a qualifying feature of the SPA and listed as a Ramsar criterion).
- 4.2.4 The peak counts of coot and tufted duck represent 2.2% and 3.2% of the Abberton Reservoir SPA population sizes respectively (12,602 coot and 1,864 tufted duck). However, it is considered unlikely that coot and tufted duck recorded at Coleman's Reservoir are part of the Abberton Reservoir SPA population. Coleman's Reservoir and the proposed scheme are not within the IRZ for Abberton Reservoir SSSI with respect to roads and other similar transport infrastructure. Both coot and tufted duck will only travel far from a 'home' lake during winter if that lake's food resources are significantly depleted, or the lake freezes or is heavily disturbed. Therefore, both species are likely to remain at the home/roost waterbody or within a few kilometres of that location. Coleman's Reservoir is 9.6km from Abberton Reservoir SPA, and there are numerous waterbodies potentially suitable to support coot and tufted duck located closer to Abberton Reservoir than Coleman's Reservoir (Figure 5). If birds were to be displaced from Abberton Reservoir, they would likely move to the nearest available alternative waterbody. The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period and the distance of the site from the SPA network indicate that regular interchange of birds between the reservoir and the SPA

network is very unlikely, and consequently that the habitats within the study area of the proposed scheme are not considered to be functionally linked to the SPA network.

- 4.2.5 Golden plover and lapwing were recorded in small groups loafing and foraging in fields mainly along the Boreham to Witham stretch of the proposed scheme. The most numerous of these were lapwing, with 16 registrations of small flocks in fields (maximum of 50 birds recorded) and flying over (maximum of 160 birds). There were seven registrations of golden plover, scattered across the area surveyed, with small flocks in fields (maximum of 17 birds recorded) or flying over (maximum of 50 birds recorded). There was a single record of curlew. The numbers of golden plover and lapwing are very small compared with the tens of thousands of birds that pass through Essex during winter (Wood, 2007), and birds were not recorded consistently in particular areas between survey visits or winters.
- 4.2.6 Breeding bird surveys recorded only very low numbers of species listed as qualifying features of SPA sites (breeding) within the study area, namely nine cormorant (Abberton Reservoir SPA) and 11 lesser black-backed gull (Alde-Ore Estuary SPA).
- 4.2.7 A review of records from a 1km search area from the Essex Wildlife Trust Biological Records Centre did not identify any records of species that were qualifying species of European sites.

Table 4.2 Qualifying features recorded within the proposed scheme study area

Qualifying feature species recorded on Jacobs surveys	European sites for which species is a qualifying feature	Approximate distance of European site from proposed scheme
Eurasian coot <i>Fulica atra</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east
Golden plover <i>Pluvialis apricaria</i>	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar (non-breeding) (JNCC, 2008c)	6.0km south-east
Great cormorant <i>Phalacrocorax carbo</i>	Abberton Reservoir SPA (breeding)	5.4km south-east
	Stour and Orwell Estuaries SPA (as part of non-breeding assemblage)	14.2km north-east
Great-crested grebe <i>Podiceps cristatus</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east
	Stour and Orwell Estuaries SPA (as part of non-breeding assemblage)	14.2km north-east
Mute swan <i>Cygnus olor</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east
	Stour and Orwell Estuaries SPA (as part of non-breeding assemblage)	14.2km north-east
Tufted duck <i>Aythya fuligula</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east

Qualifying feature species recorded on Jacobs surveys	European sites for which species is a qualifying feature	Approximate distance of European site from proposed scheme
Eurasian curlew <i>Numenius arquata</i>	Stour and Orwell Estuaries SPA (as part of non-breeding assemblage)	14.2km north-east
Northern lapwing <i>Vanellus vanellus</i>	Stour and Orwell Estuaries SPA (as part of non-breeding assemblage)	14.2km north-east
Lesser black-backed gull <i>Larus fuscus</i>	Alde-Ore Estuary SPA (breeding)	42.8km north-east
	Alde-Ore Estuary Ramsar (breeding)	42.8km north-east
Common pochard <i>Aythya ferina</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east
	Abberton Reservoir Ramsar (non-breeding)	5.4km south-east
	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA (breeding)	6.0km south-east
	Colne Estuary (Mid-Essex Coast Phase 2) SPA (breeding)	9.7km east
Northern shoveler <i>Anas clypeata</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east
	Abberton Reservoir Ramsar (non-breeding)	5.4km south-east
Eurasian wigeon <i>Mareca penelope</i>	Abberton Reservoir SPA (non-breeding)	5.4km south-east
	Abberton Reservoir Ramsar (non-breeding)	5.4km south-east
	Stour and Orwell Estuaries SPA (as part of non-breeding assemblage)	14.2km north-east

4.3 Characteristics of the European site designations to be assessed

4.3.1 This section gives an overview of the European sites considered as part of this assessment. Details of qualifying features, site vulnerability (threats, pressures and activities with negative impacts on the site) and the conservation objectives against which impacts are assessed are given in the DMRB Screening Matrices in Appendix B of this report.

Abberton Reservoir Ramsar and SPA

4.3.2 Abberton Reservoir is a large storage reservoir built in a long shallow valley. It is the largest freshwater body in Essex and is one of the most important reservoirs in Britain for wildfowl. It is less than 8km from the coast and its primary role is as a roost for the local estuarine wildfowl population. The reservoir is designated Ramsar and SPA, as described in the DMRB Screening Matrices in Appendix B of this report.

Alde-Ore Estuary Ramsar and SPA

- 4.3.3 The Alde-Ore Estuary is located on the Suffolk coast in eastern England. It comprises the estuarine complex of the rivers Alde, Butley and Ore, including Havergate Island and Orfordness. There is a variety of habitats including intertidal mudflats, saltmarsh, vegetated shingle (including the second-largest and best-preserved area in Britain at Orfordness), saline lagoons and semi-intensified grazing marsh. The Orfordness/Shingle Street landform is geomorphologically unique within the UK in combining a shingle spit with a cusped foreland. The diversity of wetland habitat types is of particular significance to the birds occurring on the site as these provide a range of opportunities for feeding, roosting and nesting within the site complex. At different times of the year, the site supports notable assemblages of wetland birds including seabirds, wildfowl and waders. As well as being an important wintering area for waterbirds, the Alde-Ore Estuary provides important breeding habitat for several species of seabird, wader and raptor. During the breeding season, gulls and terns feed substantially outside the SPA/Ramsar. The estuary is designated Ramsar and SPA, as described in the DMRB Screening Matrices in Appendix B of this report.

Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar and SPA

- 4.3.4 The Blackwater Estuary is the largest estuary in Essex north of the Thames and is one of the largest estuarine complexes in East Anglia. Its mudflats, fringed by saltmarsh on the upper shores, support internationally and nationally important numbers of overwintering waterfowl. Shingle and shell banks and offshore islands are also a feature of the tidal flats. The surrounding terrestrial habitats; the sea wall, ancient grazing marsh and its associated fleet and ditch systems and semi-improved grassland are also of high conservation interest. This rich mosaic of habitats supports an outstanding assemblage of nationally scarce plants and a nationally important assemblage of rare invertebrates. The diversity of estuarine habitats results in the sites being of importance for a wide range of overwintering water birds, including raptors, geese, ducks and waders. The site is also important in summer for breeding terns. The site supports at least 16 British Red Data Book species of invertebrates and 94 notable and local species of fauna and flora. The estuary is designated SPA and Ramsar, as detailed in the DMRB Screening Matrices in Appendix B of this report.

Colne Estuary (Mid-Essex Coast Phase 2) Ramsar and SPA

- 4.3.5 The Colne Estuary is a comparatively short and branching estuary, with five tidal arms that flow into the main channel of the River Colne. The estuary has a narrow intertidal zone predominantly composed of flats of fine silt with mudflat communities typical of south-eastern English estuaries. The site is subject to Ramsar and SPA designations as described in the DMRB Screening Matrices in Appendix B of this report.

Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar and SPA

- 4.3.6 The Rivers Crouch and Roach are situated in South Essex. The River Crouch occupies a shallow valley between two ridges of London Clay, while the River Roach is set predominantly between areas of brick earth and loams with patches of sand and gravel. The intertidal zone along the Rivers Crouch and Roach is 'squeezed' between the sea walls of both banks and the river channel. This leaves a relatively narrow strip of tidal mud unlike other estuaries in the county, which, nonetheless, is used by significant numbers of birds. Additional interest is provided by the aquatic and terrestrial invertebrates and by an outstanding assemblage of nationally scarce plants. Crouch and Roach Estuaries has been designated Ramsar and SPA, as described in the DMRB Screening Matrices in Appendix B of this report.

Dengie (Mid-Essex Coast Phase 1) Ramsar and SPA

- 4.3.7 Dengie is a large and remote area of tidal mudflats and saltmarshes at the eastern end of the Dengie peninsula, between the adjacent Blackwater and Crouch estuaries. The saltmarsh is the largest continuous example of its type in Essex. Foreshore, saltmarsh and beaches support an outstanding assemblage of rare coastal flora. The site is subject to Ramsar and SPA designations, as described in the DMRB Screening Matrices in Appendix B of this report.

Essex Estuaries SAC

- 4.3.8 Essex Estuaries is a typical, undeveloped, coastal plain estuarine system with associated open coast mudflats and sandbanks. The site comprises the major estuaries of the Colne, Blackwater, Crouch and Roach rivers. Essex Estuaries contains a very wide range of characteristic marine and estuarine sediment communities and some diverse and unusual marine communities in the lower reaches, including rich sponge communities on mixed, tide-swept substrates. Subtidal areas have a very rich invertebrate fauna, including the reef-building worm *Sabellaria spinulosa*, the brittlestar *Ophiothrix fragilis*, crustaceans and ascidians (sea squirts). The site is designated as SAC, as described in the DMRB Screening Matrices in Appendix B of this report.

Outer Thames Estuary SPA

- 4.3.9 The Outer Thames Estuary SPA is located on the east coast of England and extends into the North Sea. The site comprises areas of shallow and deeper water, high tidal current streams and a range of mobile mud, sand, silt and gravely sediments extending into the marine environment, incorporating areas of sand banks often exposed at low tide. Intertidal mud and sand flats are found further towards the coast and within creeks and inlets inland down the Blyth Estuary and the Crouch and Roach Estuaries. The diversity of marine habitats and associated species is reflected in existing statutory protected area designations, some of which overlap or abut the SPA (Natural England, 2017). The site is designated as SPA, as described in the DMRB Screening Matrices in Appendix B of this report.

Stour and Orwell Estuaries Ramsar and SPA

- 4.3.10 The Stour and Orwell Estuaries is a wetland of international importance, comprising extensive mudflats, low cliffs, saltmarsh and small areas of vegetated shingle on the lower reaches. It provides habitats for an important assemblage of wetland birds in the non-breeding season and supports internationally important numbers of wintering and passage wildfowl and waders. The site also holds several nationally scarce plants and British Red Data Book invertebrates. The site is designated Ramsar and SPA, as described in the DMRB Screening Matrices in Appendix B of this report.

5 Initial assessment of potential impacts

5.1 Introduction

- 5.1.1 This section considers whether the proposed scheme would or would not have a likely significant adverse effect on the qualifying features of the European sites identified in Section 4 of this report, either alone or in combination with other plans or projects, taking into account the proposed scheme description provided in Section 2 of this report.
- 5.1.2 None of the European sites identified as requiring screening are within 2km of the proposed scheme. However, potential hydrological linkages have been identified and there is potential for habitats to be affected that are used by birds that may be part of SPA populations.

5.2 Potential effects of the proposed scheme

Reduction of habitat area

- 5.2.1 There would be no land taken from any of the European sites or from adjacent land.
- 5.2.2 There are no pathways by which reduction of habitat could occur as an indirect result of the proposed scheme. Essex Estuaries SAC and the non-bird Ramsar qualifying criteria (saltmarsh, plant and invertebrate species) of the Alde-Ore Estuary, Blackwater Estuary (Mid-Essex Coast Phase 4), Colne Estuary (Mid-Essex Coast Phase 2), Crouch and Roach Estuaries (Mid-Essex Coast Phase 3), Dengie (Mid-Essex Coast Phase 1) and Stour and Orwell Estuaries Ramsar sites are all more than 5km from the proposed scheme, and there are no pathways to likely significant effects.
- 5.2.3 There is potential for the arable, grassland, open water and river corridor habitats affected by construction of the proposed scheme footprint to be used by mobile SPA-qualifying bird species. No species that are qualifying features of the following European sites were recorded during surveys, and therefore there are **no likely significant effects** as a result of habitat loss on the following sites: Colne Estuary (Mid-Essex Coast Phase 2) Ramsar, Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA/Ramsar, Dengie (Mid-Essex Coast Phase 1) SPA/Ramsar, Stour and Orwell Estuaries Ramsar and Outer Thames Estuary SPA.
- 5.2.4 Qualifying features of Abberton Reservoir SPA/Ramsar, Alde-Ore Estuary SPA/Ramsar, Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2) SPA, and Stour and Orwell Estuaries SPA were recorded during surveys (Table 4.2). Most of these species are waterfowl using the wetland habitats near the site, which would not be directly affected by habitat loss. Therefore, there is no pathway for impact as a result of habitat loss on Abberton Reservoir SPA/Ramsar or Colne Estuary (Mid-Essex Coast Phase 2) SPA. The only pathway for impact due to habitat loss is for those species using terrestrial habitats that would be lost as a result of the proposed scheme. Habitat loss has the potential to impact birds by reducing

foraging and roosting opportunities commuting to or from wintering or breeding grounds, reducing the fitness of individuals.

- 5.2.5 Most of the habitat anticipated to be lost as a result of the proposed scheme is arable land. The only qualifying species of European sites that were recorded using arable land during the winter were curlew, lapwing and golden plover (Appendix 9.12: Winter Bird Survey Report, of the Environmental Statement [TR010060/APP/6.3]). Breeding lapwing were recorded at Hole Farm (Appendix 9.5: Breeding Bird Survey Report of the Environmental Statement [TR010060/APP/6.3]). Although curlew, lapwing and golden plover have been recorded using arable habitats for loafing and foraging, numbers are small and there is plentiful arable habitat in the surrounding landscape (Section 4.2 of this report). Curlew and lapwing are part of the non-breeding assemblage that is a qualifying feature of Stour and Orwell Estuaries SPA, which is approximately 14km distant. Only one individual curlew was recorded during the wintering bird surveys. Lapwing was more numerous, with 16 registrations of small flocks in fields (maximum of 50 birds recorded) and flying over (maximum of 160 birds). There were seven registrations of golden plover during the wintering bird surveys, scattered across the area surveyed, with small flocks in fields (maximum of 17 birds recorded) or flying over (maximum of 50 birds recorded). Golden plover is identified on the Ramsar Information Sheet for Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar for future consideration under criterion 6 of the Ramsar designation (species/populations occurring at levels of international importance). Blackwater Estuary is approximately 6km from the proposed scheme at its closest point. These wader species were recorded in low numbers and not in the same areas between survey visits or winters (Appendix 9.12: Winter Bird Survey Report, of the Environmental Statement [TR010060/APP/6.3]). The proposed scheme is not within the IRZs with respect to roads and other similar transport infrastructure for Blackwater Estuary SSSI or Stour and Orwell SSSI. Therefore, there is no evidence to suggest that the arable habitats near the proposed scheme are functional habitat for any of the SPA or Ramsar designations. Therefore, there is **no likely significant effect** on Stour and Orwell Estuaries SPA or on Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar as a result of habitat loss.

- 5.2.6 Lesser black-backed gull is a qualifying feature of Alde-Ore Estuary SPA and Ramsar site, which is approximately 43km from the closest point of the proposed scheme. Given the distance, alternative habitat availability and small number recorded (maximum of 10 in the second winter survey), there is **no likely significant effect** of the proposed scheme as a result of habitat loss on Alde-Ore Estuary SPA or Ramsar site.

Disturbance

- 5.2.7 The qualifying features of the Essex Estuaries SAC and the non-bird Ramsar qualifying criteria (saltmarsh, plant and invertebrate species) of the Alde-Ore Estuary, Blackwater Estuary (Mid-Essex Coast Phase 4), Colne Estuary (Mid-Essex Coast Phase 2), Crouch and Roach Estuaries (Mid-Essex Coast Phase 3), Dengie (Mid-Essex Coast Phase 1) and Stour and Orwell Estuaries Ramsar sites are not vulnerable to disturbance, so an assessment of disturbance effects is not applicable.

- 5.2.8 There is potential for the arable, grassland, open water and river corridor habitats affected by construction of the proposed scheme footprint to be used by mobile SPA-qualifying bird species. No species that are qualifying features of the following European sites were recorded during surveys, and therefore there are **no likely significant effects** as a result of disturbance on the following sites: Colne Estuary (Mid-Essex Coast Phase 2) Ramsar, Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA/Ramsar, Dengie (Mid-Essex Coast Phase 1) SPA/Ramsar, Stour and Orwell Estuaries Ramsar and Outer Thames Estuary SPA.
- 5.2.9 Therefore, there is only potential for disturbance to affect the qualifying features of Abberton Reservoir SPA/Ramsar, Alde-Ore Estuary SPA/Ramsar, Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2) SPA and Stour and Orwell Estuaries SPA.
- 5.2.10 The landscape near the proposed scheme is dominated by arable land, where the SPA-qualifying species curlew, lapwing, golden plover and lesser black-backed gull have been recorded. The localised disturbance associated with the construction and operation of the proposed scheme would affect only a small proportion of this habitat when considered in the context of the total resource available. Furthermore, the proposed scheme is not within the IRZs for any of the SSSIs associated with the SPA and Ramsar sites under consideration and therefore is very unlikely to be functionally linked. The proposed scheme is predominately a widening scheme, so any birds that currently use these habitats would have become somewhat habituated to the visual and acoustic stimuli associated with an operating dual carriageway.
- 5.2.11 During construction, it is anticipated that the qualifying species that could potentially be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances. Therefore, there is **no likely significant effect** as a result of disturbance on Stour and Orwell Estuaries SPA (curlew and lapwing), Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar (golden plover) or Alde-Ore Estuary SPA/Ramsar (lesser black-backed gull).
- 5.2.12 The waterfowl using Coleman's Reservoir, including coot, tufted duck and cormorant, are qualifying features of Abberton Reservoir SPA, which at its closest point is approximately 5.4km from the proposed scheme but 9.6km distant from Coleman's Reservoir. Cormorant is also a qualifying feature (as part of the non-breeding assemblage) of Stour and Orwell Estuaries SPA (14.2km at the closest point to the proposed scheme but 28.6km from Coleman's Reservoir). Common pochard, which was recorded in very low numbers, is a qualifying feature of Abberton Reservoir SPA and Ramsar as a non-breeding population. Breeding pochard is a qualifying feature of Colne Estuary (Mid-Essex Coast Phase 2) SPA (9.7km at the closest point to the proposed scheme, but 16.5km distant from Coleman's Reservoir) and Blackwater Estuary (Mid-Essex Coast Phase 4) SPA (6.0km at the closest point to the proposed scheme, 8.4km distant from Coleman's Reservoir). None of the

IRZs of the SSSIs which coincide with these sites overlap with the proposed scheme or with Coleman's Reservoir.

- 5.2.13 The numbers of all qualifying species recorded on Coleman's Reservoir and other waterbodies near the proposed scheme are small relative to the population estimates of these species for the SPA and Ramsar sites and are unlikely to form part of the SPA populations (Table 5.1 and Section 4.2 of this report). Furthermore, these waterbodies would not be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, with the main carriageway of the proposed scheme approximately 200m to the north of the reservoir, and minor access road works along part of the eastern edge of the reservoir. A buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees of approximately 15–20m in depth, around the entire perimeter of the reservoir. Typically, for most waterfowl species in winter, noise and visual effects beyond 300m (less for many species) are considered to be of low magnitude and unlikely to elicit a reaction from birds. Therefore, there is **no likely significant effect** as a result of disturbance on Abberton Reservoir SPA and Ramsar, Blackwater Estuary (Mid-Essex Coast Phase 4) SPA, Colne Estuary (Mid-Essex Coast Phase 2) SPA or Stour and Orwell Estuaries SPA.

Table 5.1 SPA qualifying features recorded on Coleman's Reservoir, winter 2017-2018, compared with population estimates at SPA and Ramsar sites⁶⁷⁸

Qualifying feature	Peak numbers recorded in survey	Abberton Reservoir SPA	Abberton Reservoir Ramsar	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar	Stour and Orwell Estuaries SPA	Stour and Orwell Estuaries Ramsar	Colne Estuary (Mid-Essex Coast Phase 2) SPA	Colne Estuary Ramsar
Distance from Coleman's Reservoir		9.6km	9.6km	8.4km	8.4km	28.6km	28.6km	16.5km	16.5km
Eurasian coot <i>Fulica atra</i>	280	12,602	-	-	-	-	-	-	-
Great cormorant <i>Phalacrocorax carbo</i>	37	490	-	-	-	232	-	-	-
Great-crested grebe <i>Podiceps cristatus</i>	-	132	-	-	-	-	-	-	-
Mute swan <i>Cygnus olor</i>	-	496	-	-	-	239	-	-	-
Tufted duck <i>Aythya fuligula</i>	60	1,864	-	-	-	-	-	-	-

⁶ Coleman's Reservoir data is from wintering bird surveys carried out by Jacobs (Appendix 9.12: Winter Bird Survey Report, of the Environmental Statement [TR010060/APP/6.3]).

⁷ SPA population data is obtained from SPA citations accessed via <https://jncc.gov.uk/our-work/list-of-spas/#england>

⁸ Ramsar population data is obtained from Ramsar information sheets, accessed via <https://hub.jncc.gov.uk/assets/bc9b0905-fb63-4786-8e90-5f7851bb417d?page=2392>

Qualifying feature	Peak numbers recorded in survey	Abberton Reservoir SPA	Abberton Reservoir Ramsar	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar	Stour and Orwell Estuaries SPA	Stour and Orwell Estuaries Ramsar	Colne Estuary (Mid-Essex Coast Phase 2) SPA	Colne Estuary Ramsar
Distance from Coleman's Reservoir		9.6km	9.6km	8.4km	8.4km	28.6km	28.6km	16.5km	16.5km
Common pochard <i>Aythya ferina</i>	2	1,901	-	15 breeding pairs	-	-	-	15 breeding pairs	-
Northern shoveler <i>Anas clypeata</i>	2	654	-	-	-	-	-	-	-
Eurasian wigeon <i>Mareca penelope</i>	10	2,888	-	-	-	-	-	-	-

Fragmentation of species and habitat

- 5.2.14 There would be no habitat fragmentation within any European site as a result of the proposed scheme.
- 5.2.15 No pathways to effects are considered to exist for the Essex Estuaries SAC and the non-bird Ramsar qualifying criteria (saltmarsh, plant and invertebrate species) of the Alde-Ore Estuary, Blackwater Estuary (Mid-Essex Coast Phase 4), Colne Estuary (Mid-Essex Coast Phase 2), Crouch and Roach Estuaries (Mid-Essex Coast Phase 3), Dengie (Mid-Essex Coast Phase 1) and Stour and Orwell Estuaries Ramsar sites, via fragmentation of habitat.
- 5.2.16 Habitat used by mobile bird qualifying features during the breeding season, on migration or over-winter could conceivably be fragmented if birds with functional links to SPA and Ramsar sites make use of areas within the zone of influence of the proposed scheme. No species that are qualifying features of the following European sites were recorded during surveys, and therefore there are no pathways for likely significant effects as a result of fragmentation on the following sites: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA/Ramsar, Dengie (Mid-Essex Coast Phase 1) SPA/Ramsar and Outer Thames Estuary SPA. Therefore, there is only potential for fragmentation to affect the qualifying features of Abberton Reservoir SPA/Ramsar, Alde-Ore Estuary SPA/Ramsar, Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar, and Stour and Orwell Estuaries SPA/Ramsar. The existing A12 is a current source of habitat fragmentation in this area, so the online widening and the adjacent offline segments of the proposed scheme would result in negligible additional habitat fragmentation.

Reduction in species density/loss of individuals

- 5.2.17 No pathways to effects are considered to exist for the Essex Estuaries SAC and the non-bird Ramsar qualifying criteria (saltmarsh, plant and invertebrate species) of the Alde-Ore Estuary, Blackwater Estuary (Mid-Essex Coast Phase 4), Colne Estuary (Mid-Essex Coast Phase 2), Crouch and Roach Estuaries (Mid-Essex Coast Phase 3), Dengie (Mid-Essex Coast Phase 1) and Stour and Orwell Estuaries Ramsar sites, via reduction in species density due to the distance of these sites from the proposed scheme.
- 5.2.18 During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure. Any increase in traffic collisions would therefore be negligible in the context of the existing highway. Therefore, there is **no likely significant effect** as a result of reduction of species density/loss of individuals on European sites.

Resource requirements

- 5.2.19 The proposed scheme would require no resources from any European site or land adjacent to any European site; therefore, this effect pathway has been screened out.

Emissions to air

- 5.2.20 DMRB LA 105 (Highways England, 2019) recommends that air quality impact assessments need only be undertaken for the likelihood of significant air quality effects on designated sites within 200m of the ARN. There are no European sites within 200m of the ARN. The nearest European site to the ARN is Abberton Reservoir SPA/Ramsar at about 2.6km from the ARN (see Figure 4). Effects as a result of air emissions from construction would therefore be absent or negligible.

Changes in hydrology

- 5.2.21 There is no hydrological connectivity between the proposed scheme and Abberton Reservoir SPA/Ramsar, Alde-Ore Estuary SPA/Ramsar, Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA/Ramsar, Dengie (Mid-Essex Coast Phase 1) SPA/Ramsar, Outer Thames Estuary SPA and Stour and Orwell Estuaries SPA/Ramsar (see Figure 3).
- 5.2.22 The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook, the Rivenhall Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the study area. These watercourses have downstream hydrological connectivity with the Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar and Essex Estuaries SAC. Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar and Essex Estuaries SAC support GWDTE.
- 5.2.23 The study area for potential hydrological impacts is a 1km buffer around the order limits (Chapter 14: Road drainage and the water environment, of the Environmental Statement [TR010060/APP/6.1]), as this is considered to include all receptors that could reasonably be affected by direct impacts from the proposed scheme. The closest watercourse crossing is approximately 10.7km upstream from Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar and the Essex Estuaries SAC (as the designations coincide). The closest watercourse crossing is approximately 16km upstream of the Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar. Given the size of the estuaries (4,403ha and 2,720ha is designated as SPA for Blackwater Estuary and Colne Estuary respectively) and the distance downstream, any pollution incidents that may occur (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats or species which are criteria for SAC or Ramsar designation or the foraging habitats of the SPA qualifying features. The zone of influence for groundwater impacts is estimated to be a maximum of 1km (Chapter 14: Road drainage and the water environment, of the Environmental Statement [TR010060/APP/6.1]) and so no impacts are predicted on GWDTE in European sites.
- 5.2.24 During construction, good practice for pollution prevention, approved drainage designs and water management, such as using new attenuation ponds to store surface runoff and emergency response procedures for spillages, would be implemented as part of the EMP (see Section 2 of this report). As such, there would be no change to the water environment upstream that could cause likely significant effects to the qualifying features of the Blackwater Estuary (Mid-

Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2)
SPA/Ramsar or Essex Estuaries SAC.

6 In-combination assessment of potential impacts

6.1 Effects considered

- 6.1.1 The potential for the effects of other plans and projects to combine with those associated with the proposed scheme and give rise to likely significant effects on any European sites has been assessed.
- 6.1.2 Having regard to the Planning Inspectorate's Advice note ten, information has been gathered from publicly available sources and appraised for the following types of development to identify the likelihood of in-combination likely significant effects occurring:
- projects currently under construction
 - permitted application(s) not yet implemented
 - submitted application(s) not yet determined
 - all refusals subject to appeal procedures not yet determined
 - projects on the National Infrastructure Planning's programme of projects
 - planned projects identified in published development plans (acknowledging the limited information and degree of uncertainty that typically exists with such plans)
- 6.1.3 Chapter 16 of the Environmental Statement [TR010060/PP/6.1] identifies and assesses cumulative effects of the proposed scheme. Table 16.1 in Appendix 16.1 of the Environmental Statement [TR010060/APP/6.3] sets out a long list of 319 projects compiled in accordance with the Planning Inspectorate's Advice Note Seventeen, comprising:
- projects under construction
 - permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented
 - submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined
 - projects on the Planning Inspectorate's Programme of Projects where a scoping report has been submitted
 - projects on the Planning Inspectorate's Programme of Projects where a scoping report has not been submitted
 - Projects identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the relevant proposals

- Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward

6.1.4 Consideration was then given to each of the identified projects to determine whether by virtue of their nature and scale of development and any overlap in temporal scope with the proposed scheme they could give rise to a significant effect in-combination. These projects are listed at Table 16.2 in Appendix 16.1 of the Environmental Statement [TR010060/APP/6.3]. From this list of projects consideration has been given to determine whether any of the projects in combination with the proposed scheme could:

- make effects more likely to occur (or occur at a greater level of significance)
- make insignificant effects significant
- generate new or different effects (that would not occur if the plans or projects proceeded alone)

6.1.5 Where the screening exercise concludes there to be no possibility for the proposed scheme to contribute to an in-combination effect from the pathways identified (when acting alone), or where the effects predicted are considered so weak that no significant contribution to any in-combination effects would occur, an in-combination assessment is not undertaken.

6.1.6 The initial assessment of potential impacts found that the following potential effects had no feasible pathway (were absent) as a result of the proposed scheme alone. Therefore, there is no risk of these effects acting in-combination with other plans and projects on any of the European sites identified.

- Reduction in habitat area
- Fragmentation of species and habitat
- Reduction in species density/ loss of individuals
- Resource requirements
- Emissions to air

Disturbance

6.1.7 The potential effects of disturbance as a result of the proposed scheme alone were considered to be negligible for the European sites identified. The proposed scheme is not within any relevant IRZ for the identified European sites meaning that the qualifying features recorded within the area potentially disturbed by the proposed scheme (including Coleman's Reservoir) are unlikely to contribute to the European site populations. The potential effects of disturbance on the various bird species were also considered negligible.

6.1.8 The SPA-qualifying species curlew, lapwing, golden plover and lesser black-backed gull have been recorded using arable land in the vicinity of the proposed scheme. Any disturbance associated with the construction and operation of the proposed scheme would affect only a small proportion of this habitat compared

with the total resource available. Individuals would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Given the lack of a clear pathway to any effect on the European sites, there is no likely significant effects due to disturbance in-combination with any projects or plans on Stour and Orwell Estuaries SPA (curlew and lapwing), Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar (golden plover) or Alde-Ore Estuary SPA / Ramsar (lesser black-backed gull).

- 6.1.9 Small numbers of waterfowl on Coleman's Reservoir are the same species that are qualifying features of Abberton Reservoir SPA and Ramsar, Stour and Orwell Estuaries SPA, Colne Estuary (Mid-Essex Coast Phase 2) SPA and Blackwater Estuary (Mid-Essex Coast Phase 4) SPA. However, it is unlikely that these birds form part of the populations of these European sites as none of the IRZs overlap with the proposed scheme or with Coleman's Reservoir. The effect of disturbance on birds using the reservoir is considered to be negligible as a result of the proposed scheme alone. Notwithstanding the limited risk of the proposed scheme contributing to an in-combination effect, the potential for other plans and projects to cause disturbance to the species that are qualifying features of European sites has been assessed in-combination with the proposed scheme.

Changes in hydrology

- 6.1.10 The proposed scheme has downstream hydrological connectivity with the Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar and Essex Estuaries SAC. Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar and Essex Estuaries SAC support GWDTE. The distance downstream from the closest watercourse crossing for the proposed scheme is 10.7km for the Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar and the Essex Estuaries SAC and 16km for the Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar. Given the size of the estuaries (4,403ha and 2,720ha designated as SPA for Blackwater Estuary and Colne Estuary respectively) and the distance downstream, any pollution incidents that may occur (even in the absence of standard measures) would be diluted to such an extent that there are no likely significant effects on any of the habitats or species which are criteria for SAC or Ramsar designations or the foraging habitats of the SPA qualifying features.
- 6.1.11 There would be no change to the water environment upstream as a result of the proposed scheme alone that could cause likely significant effects to the qualifying features of the Blackwater Estuary (Mid-Essex Coast Phase 4) SPA/Ramsar, Colne Estuary (Mid-Essex Coast Phase 2) SPA/Ramsar or Essex Estuaries SAC.
- 6.1.12 It has been concluded that the proposed scheme individually will not have a significant effect on any European sites. An assessment has also been undertaken to determine whether such an effect could arise in combination with other plans or projects.

6.2 Relevant plans and projects

- 6.2.1 The projects and relevant allocation in plans that have been assessed for potential in-combination effects are listed in Appendix A of this report. The reference numbers of the projects in Table A.1 of this appendix correspond with the numbering of the short list of projects considered in the cumulative effects assessment (Appendix 16.1 of the Environmental Statement [TR010060/APP/6.3]). In Chapter 16: Cumulative effects assessment, of the Environmental Statement [TR010060/APP/6.1] a long list of 'other existing development and/or approved development' was identified by determining the zone of influence (ZOI) for each environmental aspect and using this to form a study area within which to identify reasonably foreseeable development.
- 6.2.2 The short list of projects was created by determining which of the long-listed projects could give rise to significant effects in combination with the proposed scheme. Therefore, it seemed appropriate that the short list of projects was used for this in-combination effects assessment.
- 6.2.3 The allocations in the relevant plans are assessed in Table A.2 in Appendix A of this report. The locations of the short list of projects are indicated in Figure 16.1 of the Environmental Statement [TR010060/APP/6.2].

Local plans

- 6.2.4 The policies in the relevant local plans have been considered in relation to possible in-combination effects.
- 6.2.5 Braintree District Council undertook an HRA of sites identified in the Site Allocations and Development Management Plan within 20km of the District or linked by hydrological pathways (March 2014). The conclusion of the assessment was that none of the European sites are expected to experience adverse effects from proposals in the Site Allocations and Development Management Plan. Therefore no risks of a significant effect on a European site are considered likely in combination with the proposed scheme.
- 6.2.6 Colchester Borough Council carried out an HRA as part of a Sustainability Appraisal Scoping Report (July 2014). The screening opinion concluded that there will not be a significant effect on Natura 2000 sites and therefore an Appropriate Assessment is not required. However, the report acknowledged that there could be additional recreation pressure to European sites due to proposed housing developments, and that this would need to be mitigated. The report identified that most visitors to the European sites had travelled less than 5km to access them.
- 6.2.7 Maldon District Council Local Development Plan Sustainability Appraisal Report (January 2014), which incorporates the Habitats Regulations Assessment, concludes that Maldon LDP is not likely to have a significant effect on any European site either alone or in-combination. Although a number of individual policies were identified as potentially having a likely significant effect, it was determined that at the plan level, with the mitigation provided, there would be no damage or disturbance to the interest features of the international sites. Abberton Reservoir SPA and Ramsar site was scoped out of assessment as the

increase in visitor numbers from development in the District is not considered significant enough to impact a site that is already managed for visitor pressures.

- 6.2.8 Recreational disturbance of the Essex coast designations is a key issue due to an increase in housing developments within all local authority areas. Recreational impacts are addressed by the Essex Coast Recreational disturbance Avoidance and Mitigation Strategy (RAMS), which is run by twelve local councils, Essex County Council and Natural England and funded by contributions from all new residential dwellings within the Zones of Influence of the European sites. The proposed scheme does not have a pathway to impact through recreational disturbance and therefore there is no potential for likely significant in-combination effects.

Relevant projects

- 6.2.9 For many of the projects considered in Appendix A of this report, there are no shared pathways with the proposed scheme to disturbance of qualifying features of birds or hydrological changes. For those projects that were subject to Habitats Regulations Assessment, all concluded no likely significant effects or no adverse effect on site integrity alone and in-combination.
- 6.2.10 The proposals for extension and then restoration of the quarry at Coleman's Farm appear most likely to act in combination with the proposed scheme, as they are adjacent to one another and the Quarry at Colemans Farm lies adjacent to the western boundary of Coleman's Reservoir. There are potential shared pathways through disturbance of birds using Coleman's Reservoir and through hydrological changes that may affect the River Blackwater. Planning permission was granted for the continuation of use of land for mineral extraction and ancillary use under reference ESS/39/14/BTE. In respect of the most recent amendment to the planning permission, for which consent was granted in December 2019 under reference ESS/10/18/BTE, Essex County Council concluded that an appropriate assessment under Regulation 63 of The Conservation of Habitats and Species Regulations 2017 was not required. The proposed development and amendments to it were EIA developments and thus environmental statements were submitted in respect of the original and amendment applications. It is noted that the potential for disturbance of birds using the reservoir was not identified and assessed as a likely significant effect, which suggests that it was not considered that proposals at Colemans Farm Quarry would not give rise, via disturbance of birds using Coleman's Reservoir, to likely significant effects on Abberton Reservoir SPA and Ramsar, or on the other more distant estuarine sites.
- 6.2.11 The Environmental Statement for the quarry extension assesses impacts on the River Blackwater as a result of dewatering to be of minor significance. There is no assessment of potential effects on the estuarine European sites further downstream. The length of watercourse between both projects and the Blackwater Estuary is approximately 10.7km and the size of the estuary is 4,403ha. Therefore, any pollution incidents that may occur as a result of either project (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats or species which are criteria for Ramsar and SAC designations or the foraging habitats of the SPA qualifying features.

- 6.2.12 The proposals for housing and mixed-use developments around Maldon are close to the Blackwater Estuary, with the potential for changes in hydrology (mitigated through standard good practice measures) and recreational disturbance. The development proposals for Land at Brook Meadows, Tiptree also identified likely significant effects and a potential adverse effect on site integrity of Blackwater Estuary SPA and Ramsar, Dengie SPA and Ramsar and Essex Estuaries SAC due to recreational disturbance. Recreational impacts are addressed by the Essex Coast Recreational disturbance Avoidance and Mitigation Strategy (RAMS), which is run by twelve local councils, Essex County Council and Natural England and funded by contributions from all new residential dwellings within the Zones of Influence of the European sites.
- 6.2.13 The contribution of the proposed scheme to disturbance of the qualifying species using Abberton Reservoir SPA and Ramsar and the sites covered by the Essex Coast RAMS is considered to be absent or negligible and so any contribution to a combined effect of disturbance is considered to be inconsequential.

6.3 Conclusion of in-combination assessment

- 6.3.1 It is concluded that the proposed scheme would not risk having a significant effect on a European site in-combination with other plans or projects. Natural England are in agreement with the conclusions of this assessment as set out in Section 7.1.

7 Conclusion

7.1.1 The following pathways to effect have been considered:

- Reduction of habitat
- Disturbance
- Fragmentation of species and habitat
- Reduction in species density or loss of individuals
- Resource requirements
- Emissions to air
- Emissions and other effects on water

7.1.2 The screening assessment of the proposed scheme has shown that **no likely significant effects on any European sites** are anticipated, when considered alone or in-combination with other plans and projects. Natural England are in agreement with this conclusion, as a letter dated 19 October 2021 states that: *'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'*.

Acronyms

Abbreviation	Term
ARN	Affected road network
CIRIA	Construction Industry Research and Information Association
cSAC	candidate Special Area of Conservation
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges
EMP	Environmental Management Plan
GDTE	Groundwater dependent terrestrial ecosystem
HEWRAT	Highways England Water Risk Assessment Tool
HRA	Habitats Regulations Assessment
IROPI	Imperative reasons of overriding public interest
IRZ	Impact risk zone
JNCC	Joint Nature Conservation Committee
LED	Light-emitting diode
MAGIC	Multi-Agency Government Information for the Countryside
NNNPS	National Networks National Policy Statement
NSER	No Significant Effects Report
NSIP	Nationally Significant Infrastructure Project
PCF	Project Control Framework
pSAC	potential Special Area of Conservation
pSPA	potential Special Protection Area
REAC	Register of Environmental Actions and Commitments
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

Glossary

Term	Definition
Affected road network (ARN)	All roads that trigger the traffic screening criteria and adjoining roads within 200m.
Annual average daily traffic	The average 24-hour traffic volume at a given location over a full year.
Competent authority	Any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office who must carry out an assessment under the Habitats Regulations. The competent authority for the proposed scheme is the Secretary of State for Transport.
Development Consent Order (DCO)	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).
European site	Habitats Directive or Birds Directive sites including: <ul style="list-style-type: none"> • Special Protection Areas (SPAs), and potential SPAs (pSPAs) • Special Areas of Conservation (SACs), and candidate or possible SACs (cSACs or pSACs) • Ramsar sites.
Greenhouse gas	A gaseous compound that absorbs infrared radiation and traps heat in the atmosphere. Greenhouse gases are usually expressed in terms of carbon dioxide equivalent (CO ₂ e)
Groundwater dependent terrestrial ecosystem (GWDTE)	Groundwater dependent terrestrial ecosystems are wetlands which critically depend on groundwater flows and chemistries.
Habitats Regulations Assessment (HRA)	A tool developed by the European Commission to help competent authorities (as defined in the Conservation of Habitats and Species Regulations 2017) to carry out assessment to ensure that a project, plan or policy will not have an adverse effect on the integrity of any Natura 2000 or European sites (Special Areas of Conservation, Special Protection Areas and Ramsar sites) (either in isolation or in combination with other plans and projects), and to begin to identify appropriate mitigation strategies where such effects are identified.
National Networks National Policy Statement (NNNPS)	The NNNPS 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.

Term	Definition
Nationally Significant Infrastructure Project (NSIP)	Major infrastructure developments in England and Wales, such as proposals for power plants, large renewable energy projects, new airports and airport extensions, and major road projects, as set out in the Planning Act 2008. See entry for Development Consent Order.
No Significant Effects Report (NSER)	A report containing evidence that there is an absence of European sites which meet the screening criteria at the screening stage of HRA.
Overseeing Organisation	A highway or road authority. The relevant Overseeing Organisation in England is National Highways.
Qualifying feature	Habitats or species that are the reason for selection of a European site.
Ramsar site	A wetland of international importance designated under the Ramsar Convention.
Special Area of Conservation (SAC)	A Special Area of Conservation is the land designated under Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora for the protection of habitats and/or species considered to be of European interest. In England, special areas of conservation are protected under the Conservation of Habitats and Species Regulations 2017 (as amended).
Special Protection Area (SPA)	A Special Protection Area is a designation under the European Union Directive on the Conservation of Wild Birds to ensure the protection of habitats used by migratory birds and certain particularly threatened species.
Statutory environmental body	Government agencies and statutory nature conservation organisations. In England, these are the Environment Agency, Natural England, Historic England, and the Forestry Commission.
Strategic road network	The network of motorways and trunk roads in England.
Zone of influence	The area over which ecological features could be affected by changes as a result of the proposed scheme and associated activities.

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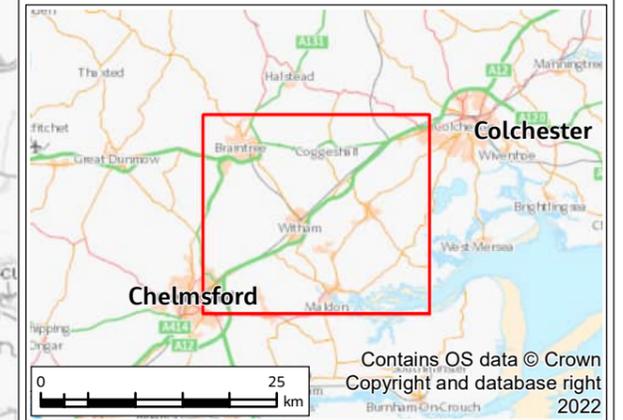
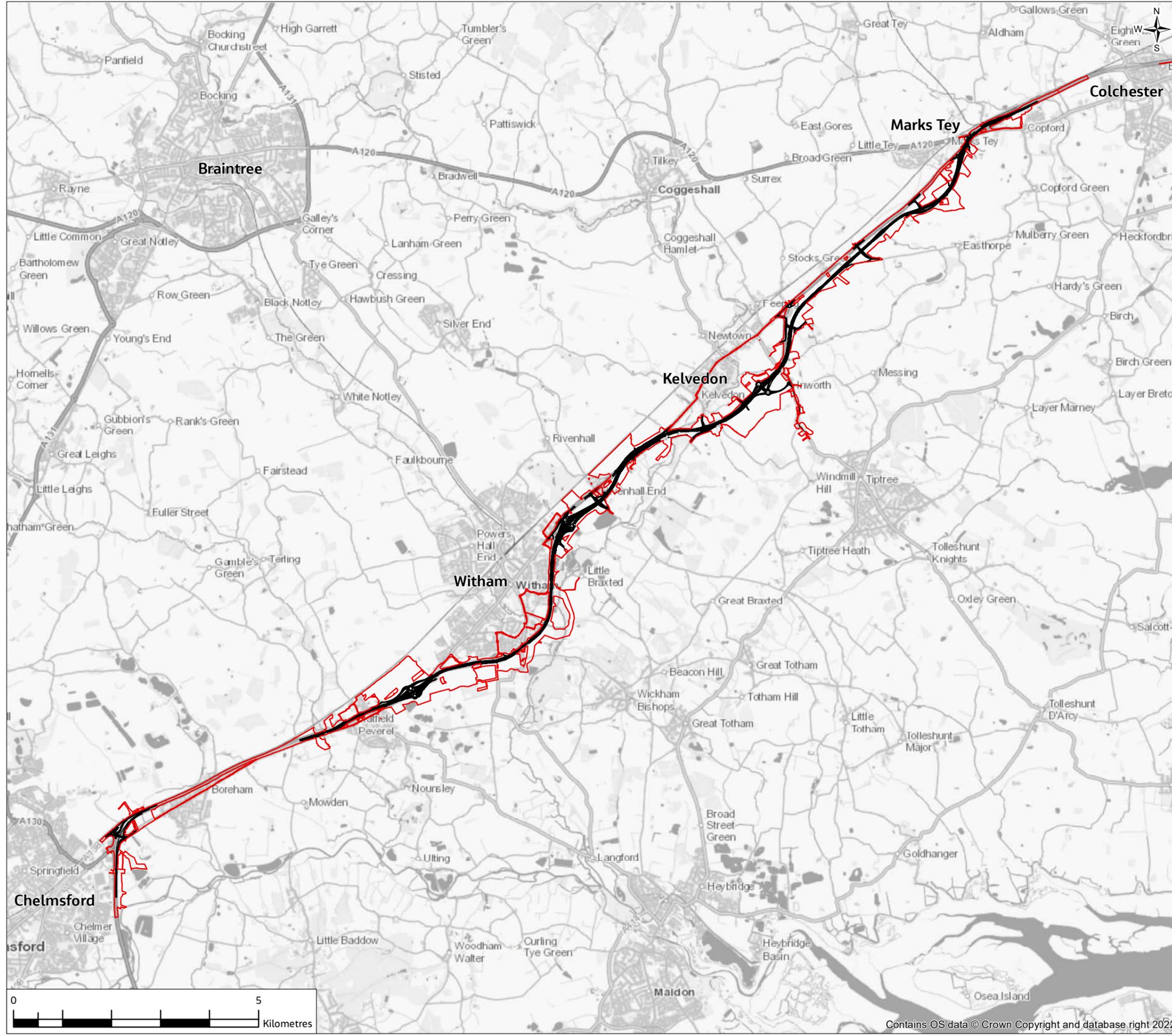
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Figure 1 Scheme location plan

FIGURE 1

Legend

- Order Limits
- Proposed Scheme



PO1	19/07/22	For DCO application	AD	AJ	RC	SG
Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

Development Consent Order Drawing Number: **TRO10060/APP/6.8** APFP Regulation: **Regulation 5(2)(g)**



Project
REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title
HABITAT REGULATIONS ASSESSMENT
SCHEME LOCATION PLAN

Drawing Status S4 - SUITABLE FOR STAGE APPROVAL

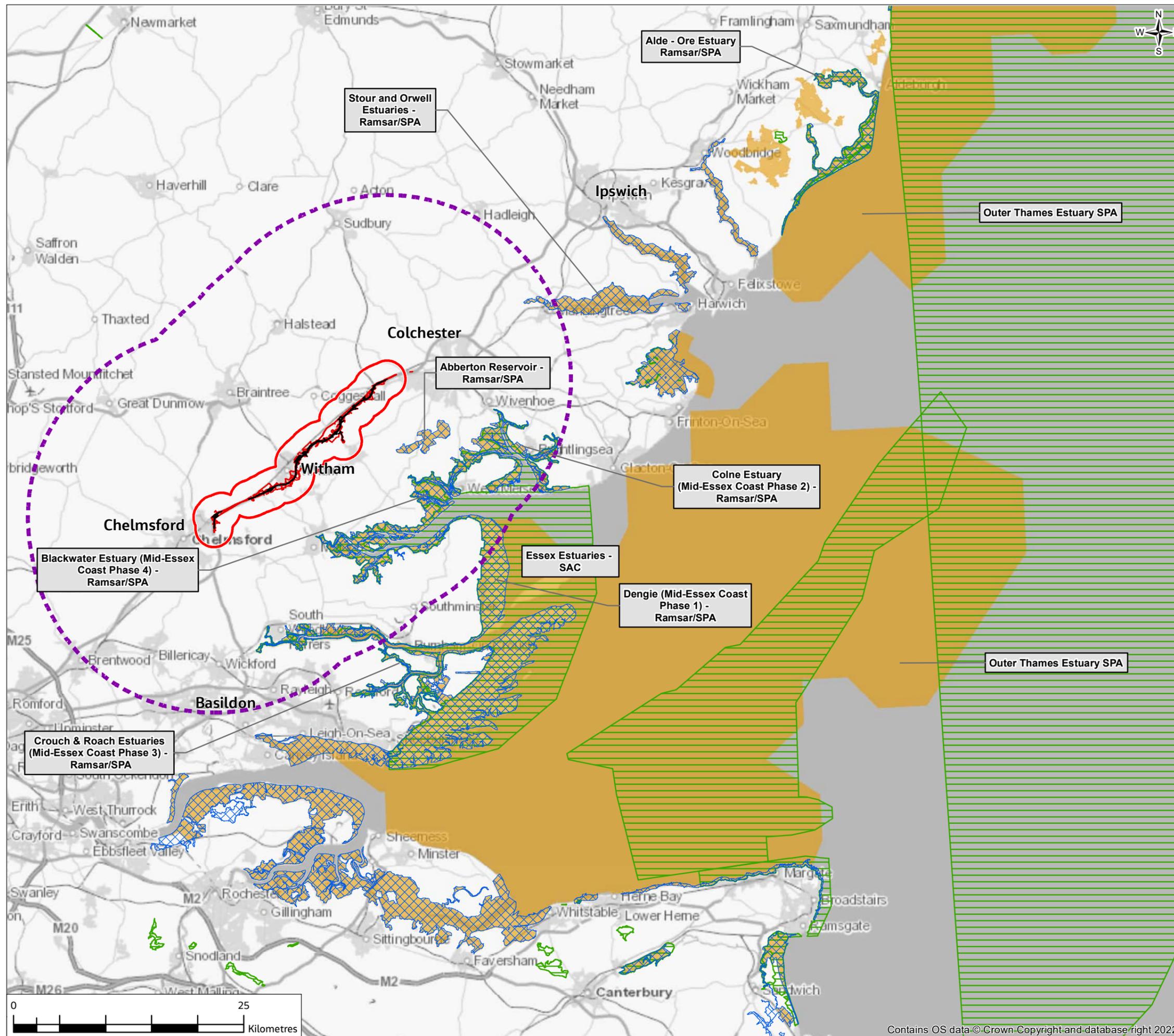
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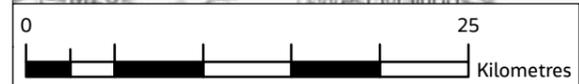
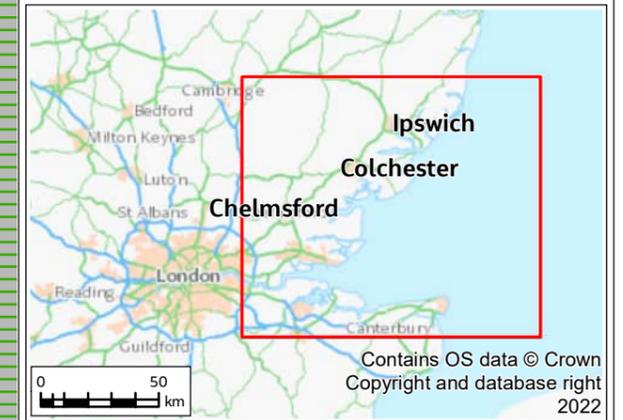
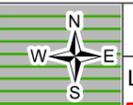
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Figure 2 Map of the proposed scheme and European sites

FIGURE 2



- Legend**
- Order Limits
 - Proposed Scheme
 - 2km Buffer around Proposed Scheme
 - 20km Buffer around Proposed Scheme
 - Special Areas of Conservation (SAC)
 - Special Protection Areas (SPA)
 - Wetlands of International Importance (Ramsar)



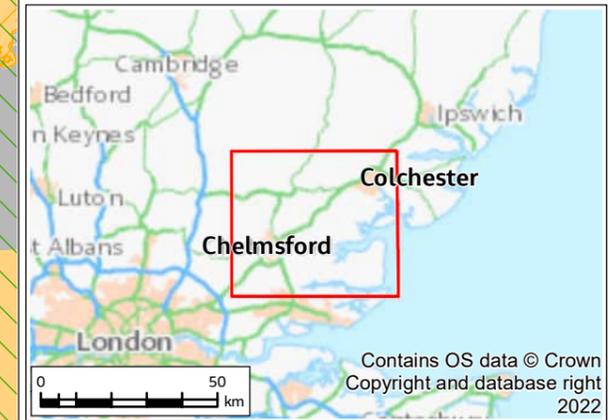
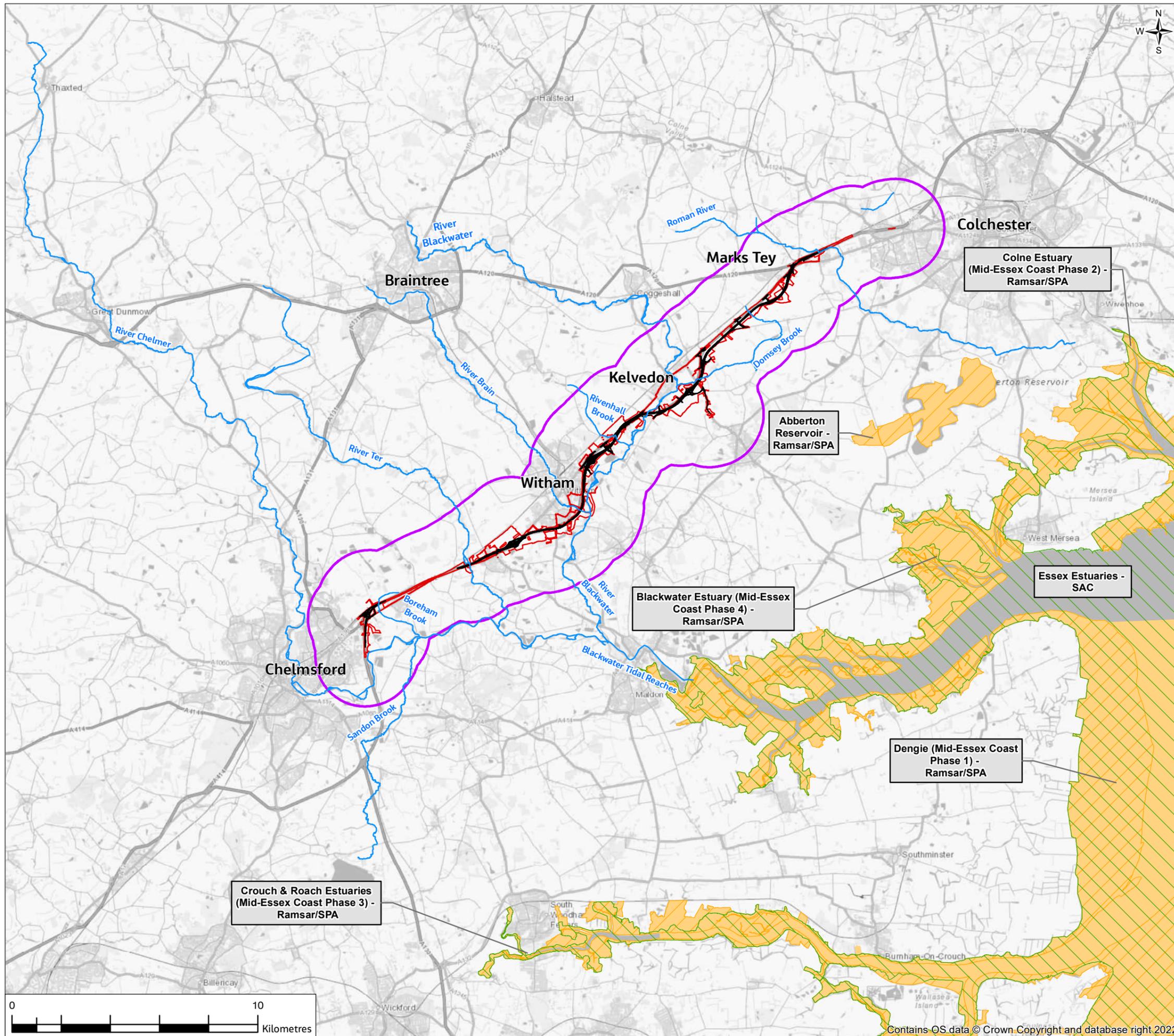
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Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
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Project REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
Drawing Title HABITAT REGULATIONS ASSESSMENT MAP OF THE PROPOSED SCHEME AND EUROPEAN SITES						
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Jacobs No.		B36601D1	Rev P01			
Client No.		HE551497				
Drawing Number HE551497-JAC-LDC-SCHW-SK-GI-0087						

Figure 3 Hydrological connections between the proposed scheme and European sites

FIGURE 3

Legend

- Order Limits
- Proposed Scheme
- 2km Buffer of Order Limits
- Watercourse
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar



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Project
REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title
HABITAT REGULATIONS ASSESSMENT
HYDROLOGICAL CONNECTIONS BETWEEN
THE PROPOSED SCHEME AND EUROPEAN SITES

Drawing Status
S4 - SUITABLE FOR STAGE APPROVAL

Scale @ A3	1:150000	DO NOT SCALE
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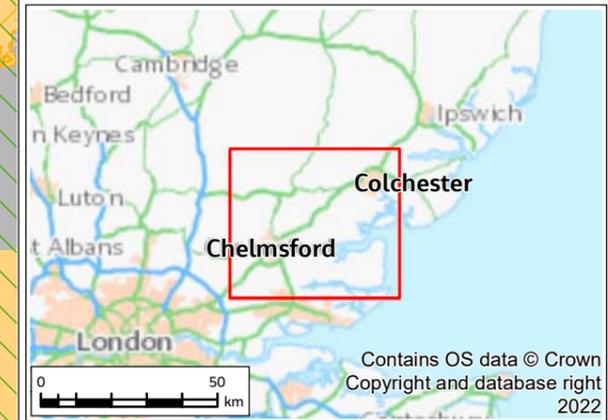
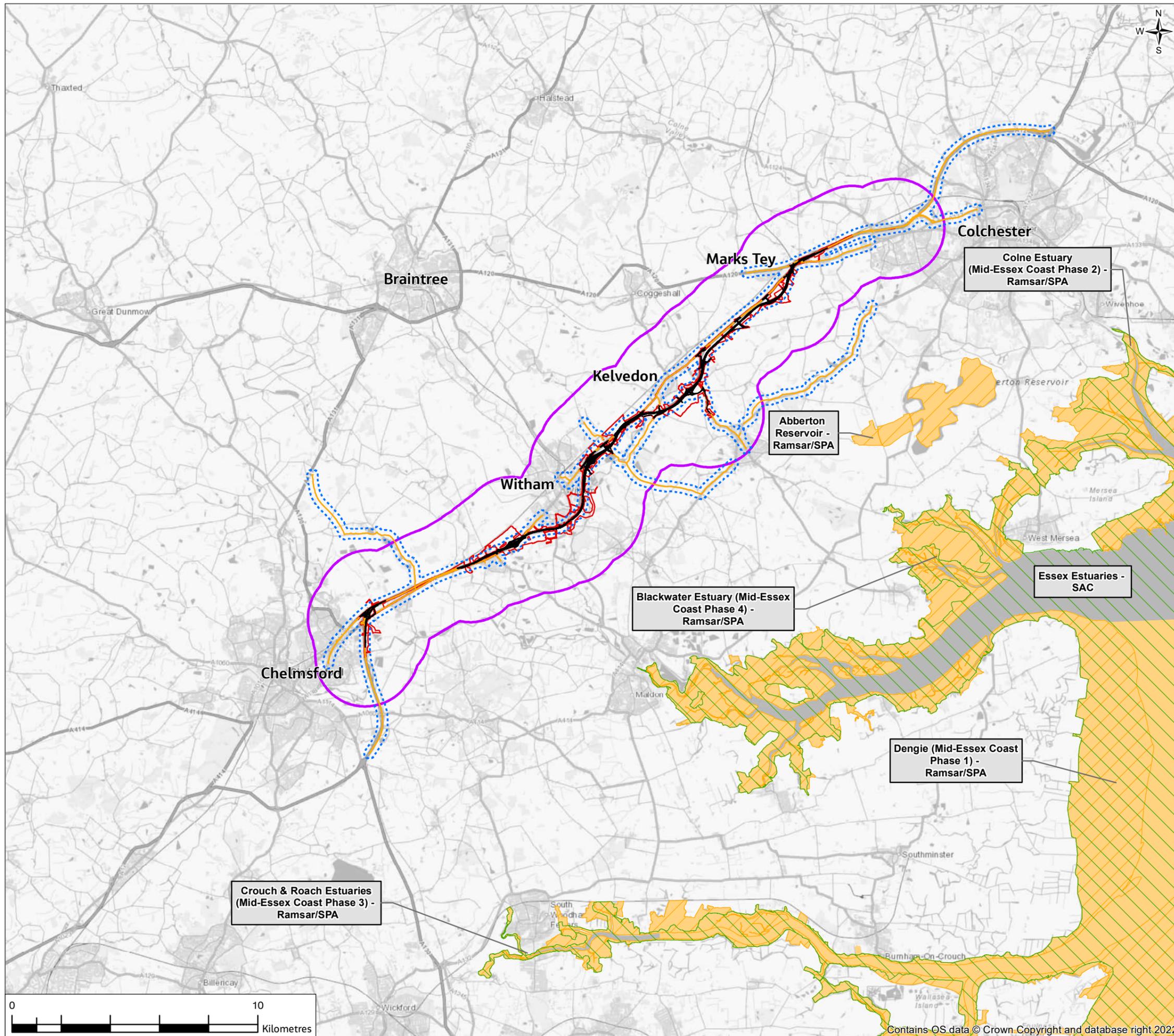


Figure 4 Proposed scheme affected road network and European sites

FIGURE 4

Legend

- Order Limits
- Proposed Scheme
- 2km Buffer - Screening Criteria
- Affected Road Network (ARN)
- Affected Road Network (ARN) 200m Buffer
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Ramsar



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Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd
Development Consent Order Drawing Number: TRO10060/APP/6.8			APFP Regulation: Regulation 5(2)(g)			
Project REGIONAL DELIVERY PARTNERSHIP A12 CHELMSFORD TO A120 WIDENING SCHEME						
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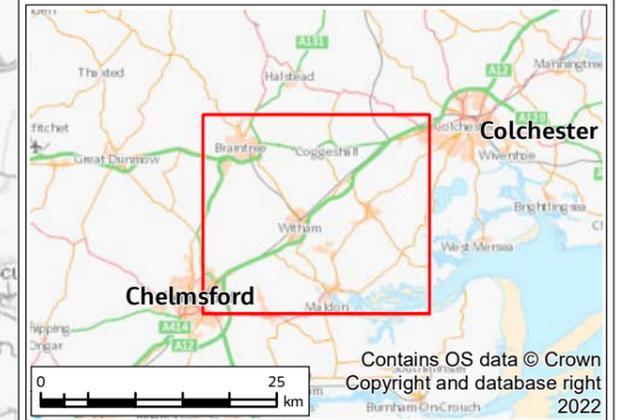
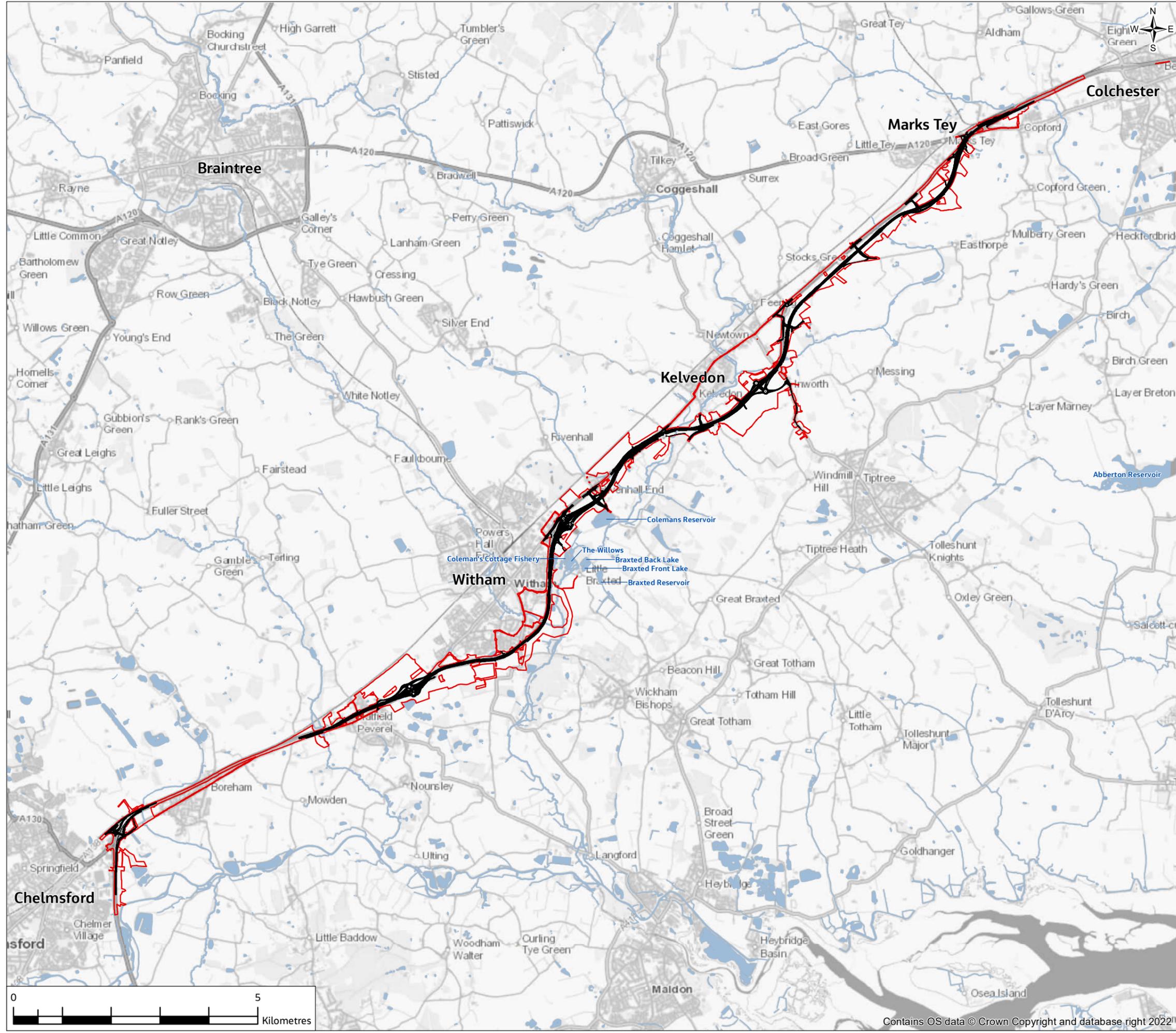


Figure 5 Waterbodies in the vicinity of the proposed scheme

FIGURE 5

Legend

- Order Limits
- Proposed Scheme
- Watercourse
- Waterbody



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Rev.	Rev. Date	Purpose of revision	Drawn	Check'd	Rev'd	App'd

Development Consent Order Drawing Number: **TRO10060/APP/6.8** APFB Regulation: **Regulation 5(2)(g)**



Project
REGIONAL DELIVERY PARTNERSHIP
A12 CHELMSFORD TO A120 WIDENING SCHEME

Drawing Title
HABITAT REGULATIONS ASSESSMENT
WATERBODIES IN THE VICINITY
OF THE PROPOSED SCHEME

Drawing Status
S4 - SUITABLE FOR STAGE APPROVAL

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Jacobs No.	B36601D1	
Client No.	HE551497	Rev P01

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Appendix A Reasonably foreseeable projects and plans

Table A.1 Major applications

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
3	Greater Beaulieu Park	09/01314/EIA	07.03.14	TL 72624 10334	234.3ha	Outline application for mixed use development including dwellings (c. 3,600), business park, retail, hotel, leisure, education & community etc.	No – the HRA for the Chelmsford Draft Local Plan: Preferred Options ⁹ identified no likely significant effects resulting from Strategic Growth Site 4 – Northeast Chelmsford which includes Greater Beaulieu Park.
1	Chelmsford North East Bypass (CNEB):	CC/CHL/14/20/SPO	14.04.2020	594545 225315	unknown	Chelmsford North East Bypass (CNEB): A single carriageway road between Roundabout 4 of the Beaulieu Park Radial Distributor Road (RDR1) and a new roundabout on the A131 at Chatham Green plus dualling of the existing A131 between Chatham Green and Deres Bridge roundabout.	No – the HRA for CNEB determined no Likely Significant Effect on Blackwater Estuary (Mid-Estuary Coast Phase 4) Ramsar site, Blackwater Estuary (Mid-Essex Coast Phase 4) Special Protection Area and Essex Estuaries Special Area of Conservation. Although the sites are hydrologically connected downstream of the Proposed Scheme (approximately 11.5 km at the closest point), it was determined that there are no pathways for direct or indirect impacts due to pollution control measures that are integral to the Proposed Scheme design and construction practice.

⁹ Amec Foster Wheeler. (2017). *Chelmsford Draft Local Plan: Preferred Options Habitats Regulations Assessment*. Available from <http://consult.chelmsford.gov.uk/file/4473247>.

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
2	Land at Russell Green	ESS/74/21/CHL/SO	10/08/2021	574832 212420	3.1ha	EIA screening opinion request - Proposed importation of approximately 85,000 tonnes of inert waste material (excavation soils) to stabilise former quarry face and satisfactorily restore former mineral site to landscape grassland and ponds, and associated improvements to existing site access to facilitate delivery of waste material.	No – the screening opinion for this development determined that EIA is not necessary as it is not within a 'sensitive area' and there are no potential impacts on European sites. There are no shared pathways for effects on hydrology or ornithology.
32	Bradwell B new nuclear power station	Bradwell B	Not yet submitted	574773 205430	~100ha	Bradwell B new nuclear power station and associated infrastructure	No – the construction of the A12 Chelmsford to A120 widening scheme will be completed before the construction for Bradwell B (if consented) begins.
29	Land At Broad Street Green Road And Langford Road And Maypole Road Great Totham	19/00741/OUT	14.10.2019	585250 208850	76.4ha	Residential development for 1,138 dwellings, residential care unit, primary school and early years childcare facility	No – the HRA for North Heybridge Garden Suburb (2109) assessed the potential for impacts on Blackwater Estuary (Mid-Estuary Coast Phase 4) Ramsar site, Blackwater Estuary (Mid-Essex Coast Phase 4) Special Protection Area and Essex Estuaries Special Area of Conservation. The only possible pathway for in-combination effects with the A12 Chelmsford to A120 widening scheme would be through potential impacts on surface and groundwater water quality. North Heybridge Garden Suburb is only 1km from the European

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
							<p>sites and the HRA screened out potential impacts of drainage during construction due to good construction site practices delivered via an approved CEMP to ensure no effects on European sites.</p> <p>The HRA found that there is a likely significant effect on mudflats and some wintering birds due to nutrification via sewage if, in combination with other projects, the capacity of the water treatment works is exceeded. However, mitigation measures are proposed such that there is no adverse effect on site integrity. There is no in-combination effect with the A12 Chelmsford to A120 widening scheme as there is no shared pathway for nutrification effects.</p>
30	Land North and West Of Knowles Farm	15/01327/OUT	Pending	584065 206116	17.83ha	Residential development (320 homes), employment development (2000 sqm) and new relief road to north of A414	<p>No -The Environmental Statement for South Maldon Garden Suburb, Wycke Hill North (2015) states that no off-site impacts due to drainage are expected, so no adverse impacts on water levels/quality etc of the European sites. There is no in-combination effect with the A12 Chelmsford to A120 widening scheme as there is no shared pathway.</p>

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
33	Land South Of Wycke Hill And Limebrook Way	18/00494/FUL	17.08.2018	584757 205431	76ha	In December 2016, outline planning permission was granted at this wider site for comprehensive development (LPA Application Ref. OUT/MAL/14/01103 - development of land for up to 1,000 dwellings, an employment area of 3.4 hectares (Use Classes B1, B2 and B8 uses), a local centre (Use Classes A1-A5, B1a, C2, C3, D1 and D2 uses), a primary school, two early years and childcare facilities, general amenity areas and formal open space including allotments, sports playing fields, landscaping, sustainable drainage measures including landscaped storage basins and Sustainable Drainage System (SuDS) features, vehicle accesses onto the existing highway network and associated infrastructure).	No – there is no shared pathway. There are no ecological assessment reports or HRA on the planning portal for this proposal but the consultation responses from the Environment Agency raised no concerns about potential pathways for impacts on European sites.

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
26	Land At Burghey Brook Farm London Road Rivenhall	21/00031/OUT	15.12.2021	583301 216098	3.6ha	Outline Planning Permission with all matters reserved for the demolition of the existing dwelling and buildings on the site and the erection of B2/B8 Industrial and Distribution units with associated parking, servicing and landscaping.	No – no shared pathways for effects on hydrology or ornithology.
22	Land North Of Colchester Road	20/00128/OUT	13.12.2021	572197 210404	4.38ha	Construction of B1c (Light Industrial), B2 (General Industry) and B8 (Storage and Distribution) uses, comprising a maximum gross internal floor space of 15,470 square metres, (166,518 square feet) with associated service yards, HGV and trailer parking, car parking provision, revised landscape provision and new service road with access onto Eastways.	No - no shared pathways for effects on hydrology or ornithology.
25	Land at: Coleman's Farm Quarry	ESS/36/21/BTE	N/A	58330 215816	7.5ha	Proposed western extension to the current site using existing approved facilities (site access, plant site, mineral processing plant and other ancillary facilities); including for the diversion of the Burghey Brook; with restoration to arable land	There are shared possible pathways to potential effects via: i) potential disturbance of birds using Coleman's Reservoir (species of which are also qualifying features of Abberton Reservoir SPA /Ramsar and other more distant estuarine sites). ii) hydrological linkages downstream to Blackwater Estuary (Mid-Estuary Coast

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
						using imported inert restoration materials, and on-site materials in advance of the A12 road widening and improvement national infrastructure project	<p>Phase 4) Ramsar site, Blackwater Estuary (Mid-Essex Coast Phase 4) Special Protection Area and Essex Estuaries Special Area of Conservation.</p> <p>There is no HRA report for the proposed extension and restoration of Coleman's Quarry. The potential for disturbance of birds on Coleman's Reservoir is not assessed as part of the Environmental Statement. The lack of assessment suggests that there is no potential effect of the proposals at Colemans Farm Quarry via disturbance of birds using Coleman's Reservoir on Abberton Reservoir SPA and Ramsar, or on the other more distant estuarine sites.</p> <p>The assessment of the effects of the A12 Chelmsford to A120 widening scheme alone concludes that the small numbers of birds recorded on Coleman's Reservoir that are qualifying features of European sites are unlikely to form part of the SPA/Ramsar populations due to the lack of functional linkage and distance from the European sites. Both the A12 Chelmsford to A120 widening scheme and the quarry proposals are outside the Impact Risk Zones for any of the European sites under consideration. Therefore, there is no likely significant in-combination effect as a result of disturbance on Abberton Reservoir SPA</p>

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
							<p>and Ramsar, Blackwater Estuary (Mid-Essex Coast Phase 4) SPA, or Colne Estuary SPA (Mid-Essex Coast Phase 2) SPA or Stour and Orwell Estuaries SPA</p> <p>Coleman's Quarry is hydrologically linked to the River Blackwater and then to Blackwater Estuary (which also forms part of Essex Estuaries SAC) via Burghey Brook, which is to be temporarily diverted as part of the proposals. Drainage to the River Blackwater will be maintained, with minor significance of effect on downstream watercourses as a result of dewatering. There is no assessment of potential effects on the estuarine European sites further downstream. The length of watercourse between both projects and the Blackwater Estuary is approximately 10.7km and the size of the estuary is 4,403ha. Therefore, any pollution incidents that may occur as a result of either project (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats or species which are criteria for Ramsar and SAC designations or the foraging habitats of the SPA qualifying features.</p>

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
23	Freebournes Road Witham	20/01754/FUL	28.05.2021	582847 214524	1.1ha	Erection of two warehouse buildings to providing multiple industrial units, with ancillary mezzanines, of flexible use (Use Class B2, B8, E(g) and Sui-Generis), retention of existing vehicular accesses off Freebournes Road and Wheaton Road with reconfigured car parking, service yards and associated landscaping.	No - no shared pathways for effects on hydrology or ornithology.
21	Land North Of Woodend Farm	19/01896/OUT	Pending	592159 223950	18.82ha	Construction of up to 450 residential dwellings, commercial floorspace, residential care home and day nursery with all associated access, servicing, parking, drainage infrastructure, landscaping, open space and utilities infrastructure.	No - no shared pathways for effects on hydrology or ornithology.

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
15	Land North Of Maldon Road	20/01264/OUT	12.11.2021	580076 211489	5.96ha	Outline planning application with all matters reserved except access for the demolition of the existing buildings and for the redevelopment of the site for up to 110 dwellings, including 40% affordable housing, with public open space, structural planting and landscaping, surface water flood mitigation and attenuation, and vehicular access point from Maldon Road.	No - no shared pathways for effects on hydrology or ornithology.
20	Land West Of Kelvedon Station	19/01025/FUL	02.03.2021	588756 217171	10.24ha	Construction of 238 new dwellings with associated garden and parking provision, dedicated improved access from Coggeshall Road including the demolition of two existing residential properties (Kings Villas) to facilitate this access, new public open space, a sustainable drainage system, and associated development.	No - no shared pathways for effects on hydrology or ornithology.

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
27	Land South West Of Coggeshall Road	21/01631/SCO	22.01.2021	588441 223266	41.05ha	Town & Country Planning Act 1990 (as amended), Town & Country Planning (Environmental Impact Assessment) Regulations 2017 - Scoping Opinion Request - The proposed scheme includes up to 600 homes, land for a primary school, landscaping, infrastructure, including a pedestrian/cycle link from Kelvedon to Coggeshall and a new access from Coggeshall Road.	No - no shared pathways for effects on hydrology or ornithology.
37	Land off London Road	190699	04.11.2020	580834 213232	1.175ha	Erection of Business Park, comprising 3,009 sqm of B1(a) Offices in Three Two-Storey Blocks with associated Parking.	No - no shared pathways for effects on hydrology or ornithology.

Planning ID*	Project /plan or site name	Planning reference	Decision Date	Grid reference	Site Area	Summary of plan/project and status	Potential for in-combination effect?
42	Land at Brook Meadows	202604	10.05.2022	58886 216040	11.67ha	Outline application for the erection of up to 221 dwellings and associated infrastructure and works.	<p>No - no shared pathways for effects on hydrology.</p> <p>The HRA for the proposed development of land at Brook Meadows found no likely significant effects for effect on functionally linked land associated with the Essex coast designations as the site does not include arable or pasture that might support overwintering foraging resources for qualifying species such as lapwing and golden plover. The HRA for the A12 Chelmsford to A120 widening scheme determines no pathway to effect for these and other wintering species as there is plentiful arable habitat in the area and there is no evidence that the arable and pasture affected by the proposed scheme is functionally linked to the European sites.</p> <p>The HRA for the proposed development of land at Brook Meadows identifies a likely significant effects for possible impacts of recreational pressure, but there is no shared pathway to effect with the A12 Chelmsford to A120 widening scheme and therefore no potential for in-combination effects.</p>

* See Table 16.2 in Appendix 16.1 of the Environmental Statement [TR010060/APP/6.3] for planning IDs.

Table A.2 Allocations

Local Plan	Location	Site/ Policy Ref	Grid reference	Details	In combination effect
Chelmsford Local Plan – Preferred Options	Boreham	Strategic Site Ref: 7	TL 75963 09935	145 homes to be delivered by 2026. c. 7ha.	No – the HRA for the Chelmsford Local Plan – Preferred Options 10 identified no likely significant effects.
Chelmsford Local Plan – Preferred Options	Boreham	Strategic Site Ref: 7	TL 75963 09935	145 homes to be delivered by 2026. c. 7ha.	No – the HRA for the Chelmsford Local Plan – Preferred Options 11 identified no likely significant effects.
Chelmsford Local Plan – Preferred Options	Chelmsford Urban Area	Site Ref: 1a to 1g	Multiple	Approximately 1,100 homes with associated infrastructure to be delivered throughout plan period.	No – the HRA for the Chelmsford Local Plan – Preferred Options identified no likely significant effects.
Chelmsford Local Plan – Preferred Options	East Chelmsford – Manor Farm	Site Ref: 3a	TL 73568 05533	Up to 250 new homes of a mixed size and type, and density and massing that respond sensitively to its distinct landscape context. C. 26ha. To be delivered by 2026.	No – the HRA for the Chelmsford Local Plan – Preferred Options identified no likely significant effects.
Chelmsford Local Plan – Preferred Options	East Chelmsford – North of Maldon Rd	Site Ref: 3b	TI 74321 05639	Class B use employment land for a high-tech office/business park and safeguarded space for the future extension of Sandon Park & Ride. c. 13.5ha. To be delivered by 2026	No – the HRA for the Chelmsford Local Plan – Preferred Options identified no likely significant effects.

¹⁰ Amec Foster Wheeler. (2017). *Chelmsford Draft Local Plan: Preferred Options Habitats Regulations Assessment*. Available from <http://consult.chelmsford.gov.uk/file/4473247>

¹¹ Amec Foster Wheeler. (2017). *Chelmsford Draft Local Plan: Preferred Options Habitats Regulations Assessment*. Available from <http://consult.chelmsford.gov.uk/file/4473247>

Local Plan	Location	Site/ Policy Ref	Grid reference	Details	In combination effect
Pre-Submission Braintree Site Allocations and Development Management Plan (September 2014)	Hatfield Peverel	HAT17H	TL 78774 11835	Residential development (50 dwellings). c. 1.9ha.	No – the project comprises less than 150 dwellings and the site is less than 5ha, therefore scoped out.
Pre-Submission Braintree Site Allocations and Development Management Plan (September 2014)	Hatfield Peverel	n/a	TL 78778 11998	Employment Area	No – site already under industrial use (dairy). Same location as planning application 16/02096/OUT.
Pre-Submission Braintree Site Allocations and Development Management Plan (September 2014)	Witham	WIS2H	TL 82656 13600	Residential development (94 dwellings). c. 2.8 ha	No – the project comprises less than 150 dwellings and the site is less than 5ha, therefore scoped out.
Pre-Submission Braintree Site Allocations and Development Management Plan (September 2014)	Witham	WIS9H	TL 81218 13362	Residential development (213 dwellings)	No – part of major application 06/01143/OUT.
Braintree Core Strategy (Sept 2011)	Witham	RIV2H	TL 82760 16364	Growth Area: Land to the North East of Witham (in Rivenhall Parish) – off Forest Road. Including 300 dwellings. c. 16ha	No – as planning application 15/00799/OUT: the Ecological Assessment for the project stated that no significant impact on Blackwater Estuary SPA and Abberton Reservoir SPAs is anticipated if the survey area is developed.

Local Plan	Location	Site/ Policy Ref	Grid reference	Details	In combination effect
Braintree Core Strategy (Sept 2011)	Witham	WIS6H	TL 80658 13385	Growth Area: Land to the South West of Witham off Hatfield Rd. Including 600 dwellings.	No – as planning application 15/00430/OUT: the ES concluded that the development will not have any significant adverse effects upon ecological receptors subject to implementation of the necessary mitigation measures.
Colchester Local Plan: Preferred Options (July 2016)	Copford (east of Queensberry Ave)	Policy SS5 – site reference STN26	TL 93154 24193	Residential development (70 dwellings). C. 2.7ha	No – the project comprises less than 150 dwellings and the site is less than 5ha, therefore scoped out.
Colchester Local Plan: Preferred Options (July 2016)	Copford (west of Hall Rd)	Policy SS5 – site reference STN18	TL 93284 23926	Residential development (50 dwellings). C. 1.9ha	No – the project comprises less than 150 dwellings and the site is less than 5ha, therefore scoped out.
Colchester Local Plan: Preferred Options (July 2016)	East of Colchester	Policy SP8	n/a	East Colchester/West Tending New Garden Community including: housing for around 2,500 dwellings within the Plan period (as part of an overall total of between 7,000–9,000 homes); land for employment generating development; neighbourhood centres incorporating provision for convenience shopping, community, health and cultural provision; primary schools, a secondary school and other community facilities as appropriate; and a high proportion of the garden community will comprise green	No – the HRA Report for North Essex Authorities Strategic Section 1 for Local Plans (May 2017) ¹² concludes that the plans will not result in adverse effects on the integrity of European sites either alone or in-combination, providing that key recommendations and mitigation requirements (including Recreation Avoidance and Mitigation Strategies, provision of adequate water and sewage treatment, monitoring of wintering birds and creation and management of suitably located foraging habitat for SPA species) are adopted and successfully implemented. Without the mitigation and recommendations being successfully implemented, significant effects into account) are likely in relation to

¹² LUC (2017) HRA Report for North Essex Authorities Strategic Section 1 for Local Plan. Available from https://www.braintree.gov.uk/download/downloads/id/6375/habitats_regulation_assessment_screening_report_section_1.pdf

Local Plan	Location	Site/ Policy Ref	Grid reference	Details	In combination effect
				infrastructure including a new country park around Salary Brook. C. 485ha.	recreation and uncertain in relation to loss of habitat and water.
Essex Replacement Waste Local Plan	Rivenhall	IWMF2	TL 82680 20819	Strategic Site Allocations: AD 85,000tpa CHP 360 000tpa Allocated for: Biological and Other Waste Management Capacity. c. 25ha of which 14ha is open habitat.	No – the site is adjacent to existing industrial areas (quarry); therefore the area is highly unlikely to be regularly used by important numbers of foraging/roosting wildfowl/waders due to high disturbance levels. Given the localised extent of the project it is considered unlikely that it would result in a significant reduction in habitat area for mobile qualifying species. The Impact Assessment ES13 for the project concluded that impacts on open habitats are unlikely to be significant at the district level because of the large area of similar habitat (which will not be affected by the development) within the locality. With no pathway to effect for this project alone, no in-combination effects with the Proposed Scheme can be assumed.

¹³Golder Associates. (2008). Rivenhall Airfield eRCF Ecological Impact & Ecological Risk Assessment http://planning.essex.gov.uk/swifltg/MediaTemp/122961-1953075202_Appendix_7-1_Baseline_Ecology_Report_-_ESS-37-08-BTE_Redacted.pdf

Appendix B DMRB screening matrices

Abberton Reservoir SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Abberton Reservoir SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Abberton Reservoir SPA is 5.4km to the south-east (see Section 4.2 of this report). The distance from Coleman's Reservoir, which is a waterbody adjacent to the proposed scheme, is 9.6km.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Abberton Reservoir SPA is approx. 500m from the ARN. Abberton Reservoir SPA is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	The European site is not located within 200m of the ARN network, so impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance¹⁴</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Abberton Reservoir SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Abberton Reservoir SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

¹⁴ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Abberton Reservoir SPA UK9009141 (JNCC, 2015a)
Location and distance of the European site from the proposed works	Abberton Reservoir SPA is approx. 5.4km to the south-east of the proposed scheme.
European site size	718.31ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Great cormorant <i>Phalacrocorax carbo</i> (north-western Europe), 7% of the population in Great Britain (five-year mean 1993-1997) <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Northern shoveler <i>Anas clypeata</i> (north-western/central Europe), 1.6% of the population (five-year peak mean 1991/92-1995/96)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
	<ul style="list-style-type: none"> • Eurasian teal <i>Anas crecca</i> (north-western Europe), 2.5% of the population in Great Britain (five-year peak mean 1991/92-1995/96) • Eurasian wigeon <i>Mareca penelope</i> (western Siberia/north-western/north-eastern Europe), 0.2% of the population (five-year peak mean 1991/92-1995/96) • Gadwall <i>Anas strepera</i> (north-western Europe), 1.7% of the population (five-year peak mean 1991/92-1995/96) • Common pochard <i>Aythya ferina</i> (north-western/north-eastern Europe), 4.4% of the population in Great Britain (five-year peak mean 1991/92-1995/96) • Tufted duck <i>Aythya fuligula</i> (north-western Europe), 3.1% of the population in Great Britain (five-year peak mean 1991/92-1995/96) • Common goldeneye <i>Bucephala clangula</i> (north-western/central Europe), 2.7% of the population in Great Britain (five-year peak mean 1991/92-1995/96) • Mute swan <i>Cygnus olor</i> (Britain), 1.9% of the population in Great Britain (five-year peak mean 1991/92-1995/96) • Eurasian coot <i>Fulica atra</i> (north-western Europe – wintering), 11% of the population in Great Britain (five-year peak mean 1991/92-1995/96) • Great-crested grebe <i>Podiceps cristatus</i> (north-western Europe – wintering), 1.3% of the population in Great Britain (five-year peak mean 1991/92-1995/96) <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>An internationally important assemblage of Birds.</p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • 39,763 waterfowl (five-year peak mean 1991/92-1995/96). Including: great-crested grebe <i>Podiceps cristatus</i>, Eurasian wigeon <i>Mareca penelope</i>, gadwall <i>Anas strepera</i>, Eurasian teal <i>Anas crecca</i>, northern shoveler <i>Anas clypeata</i>, common pochard <i>Aythya ferina</i>, tufted duck <i>Aythya fuligula</i>, common goldeneye <i>Bucephala clangula</i>, Eurasian coot <i>Fulica atra</i>.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>Abberton Reservoir SPA is vulnerable to:</p> <ul style="list-style-type: none"> • structures, buildings in the landscape • other urbanisation, industrial and similar activities • human induced changes in hydraulic conditions • outdoor sports and leisure activities, recreational activities • changes in biotic conditions
European site conservation objectives – where these are readily available	<p>Abberton Reservoir SPA (Natural England, 2014)</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site.
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>Abberton Reservoir SPA is 5.4km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Species that are qualifying features of Abberton Reservoir SPA were recorded primarily at Coleman's Reservoir and from the waterbodies near Hatfield Peverel and Little Braxted (Figure 5). These waterbodies would not be directly affected by the proposed scheme.</p> <p>The waterfowl using Coleman's Reservoir which are qualifying features of Abberton Reservoir SPA include coot, tufted duck and cormorant (all as non-breeding populations, except cormorant).</p> <p>None of the waterbodies would be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a 200m buffer of terrestrial habitats would persist between the main carriageway and the reservoir, including a 15-20m deep shelter belt of trees around the reservoir.</p> <p>During winter, both coot and tufted duck are likely to remain at their home/roost waterbody or within a few kilometres of that location. The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period, and the distance between the proposed scheme and the designated site (9.6km) indicate that regular interchange of birds between the reservoir and the SPA network is very unlikely, and</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
	<p>consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features during the breeding season, on migration or over-winter could conceivably be fragmented if birds with functional links to Abberton Reservoir SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would result in a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Abberton Reservoir SPA is 5.4km away from the proposed scheme and approx. 2.6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Abberton Reservoir SPA.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
	No likely significant effects.
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	No likely significant effects.
Are the appropriate statutory environmental bodies in	A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i> '.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir SPA
agreement with this conclusion	

Abberton Reservoir Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Abberton Reservoir Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 20210	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
Land-take	There would be no land-take from the European site or land adjacent to the European site.
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Abberton Reservoir Ramsar site is 5.4km to the south-east (see Section 4.2 of this report) of the proposed scheme. The distance from Coleman's Reservoir, which is a waterbody adjacent to the proposed scheme, is 9.6km.
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Abberton Reservoir Ramsar is the nearest European site to the ARN approx. 500m away, providing either absent or negligible air quality impacts. Abberton Reservoir Ramsar site is not hydrologically connected to the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	The European site is not located within 200m of the ARN network, so impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance¹⁵ <i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i>	
Nature of proposals	<p>No specific measures are required with respect to Abberton Reservoir Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	No specific measures are required with respect to Abberton Reservoir Ramsar. Avoidance or alleviation measures contained

Where the project proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme project description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
	<p>within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Abberton Reservoir Ramsar UK11001 (JNCC, 2008a)
Location and distance of the	Abberton Reservoir Ramsar is approx. 5.4km to the south-east of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
European site from the proposed works	
European site size	726.2ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Ramsar criterion 5</i></p> <p>Assemblages of international importance.</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • 23,787 waterfowl (five-year peak mean 1998/99-2002/2003) <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p> <p>Qualifying species/populations (as identified at designation).</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Gadwall <i>Anas strepera strepera</i> (north-western Europe), 550 individuals, representing an average of 3.2% of the population in Great Britain (five-year peak mean 1998/9-2002/3) • Northern shoveler <i>Anas clypeata</i> (north-western and central Europe), 377 individuals, representing an average of 2.5% of the population in Great Britain (five-year peak mean 1998/9-2002/3) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Eurasian wigeon <i>Mareca penelope</i> (north-western Europe), 2,888 individuals, representing an average of 1.6% of the population (five-year peak mean 1991/92-1995/96) <p>Species/populations identified subsequent to designation for possible future consideration under criterion 6.</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Mute swan <i>Cygnus olor</i>, 387 individuals, representing an average of 1% of the population in Great Britain (five-year peak mean 1998/9-2002/3)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
	<ul style="list-style-type: none"> Common pochard <i>Aythya ferina</i> (north-eastern and north-western Europe), 4,373 individuals, representing an average of 1.2% of the population (five-year peak mean 1998/9-2002/3)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	No factors listed as adversely affecting the ecological character.
European site conservation objectives – where these are readily available	<p>No specific information provided as part of the designation – refer to conservation objectives for Abberton Reservoir SPA, as follows:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> The extent and distribution of the habitats of the qualifying features The structure and function of the habitats of the qualifying features The supporting processes on which the habitats of the qualifying features rely The population of each of the qualifying features, and The distribution of the qualifying features within the site.
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> reduction in habitat area (habitat loss, modification) 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
<ul style="list-style-type: none"> • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<p><i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i></p>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>Abberton Reservoir Ramsar is 5.4km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
Disturbance to key species	<p>Species that are features of Abberton Reservoir Ramsar were recorded primarily at Coleman's Reservoir and from the waterbodies near Hatfield Peverel and Little Braxted (Figure 5). These waterbodies would not be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a 200m buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a 15-20m deep shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period, and the distance between the proposed scheme and the designated site (9.6km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features on migration or over-winter could conceivably be fragmented if birds with functional links to Abberton Reservoir Ramsar make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Abberton Ramsar site is 5.4km away from the proposed scheme and approx. 2.6km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Abberton Reservoir Ramsar.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
relationships that define the structure of the site	functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site. No likely significant effects.
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality,	None. No hydrological connectivity.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Abberton Reservoir Ramsar
hydrological regime etc.)	
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Alde-Ore Estuary SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Alde-Ore Estuary SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Alde-Ore Estuary SPA is 42.8km to the north-east (see Section 4.2 of this report) of the proposed scheme and is being considered due to the foraging distances of gulls, which are qualifying features of the site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Alde-Ore Estuary SPA is >35km from the ARN. Alde-Ore Estuary SPA is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance¹⁶</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Alde-Ore Estuary SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Alde-Ore Estuary SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

¹⁶ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Alde-Ore Estuary UK9009112 (JNCC, 2015b)
Location and distance of the European site from the proposed works	Alde-Ore Estuary SPA is approx. 42.8km to the north-east of the proposed scheme.
European site size	2,403.5ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p>This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive.</p> <p>During the breeding season:</p> <ul style="list-style-type: none"> • Avocet <i>Recurvirostra avosetta</i>, 104 pairs representing at least 23.1% of the breeding population in Great Britain (five-year mean 1990-1994) • Little tern <i>Sternula albifrons</i>, 48 pairs representing at least 2.0% of the breeding population in Great Britain (5 count mean 1993-4,1996-8)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
	<ul style="list-style-type: none"> • Marsh harrier <i>Circus aeruginosus</i>, 3 pairs representing at least 1.9% of the breeding population in Great Britain (five-year mean 1993-1997) • Sandwich tern <i>Thalasseussandvicensis</i>, 170 pairs representing at least 1.2% of the breeding population in Great Britain (five-year mean 1992-1996) <p>Over winter:</p> <ul style="list-style-type: none"> • Avocet <i>Recurvirostra avosetta</i>, 766 individuals representing at least 60.3% of the wintering population in Great Britain (five-year peak mean 1991/2-1995/6) • Ruff <i>Philomachus pugnax</i>, 3 pairs representing at least 0.4% of the population in Great Britain (five-year peak mean 1991/92-1995/96) <p>This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species.</p> <p>During the breeding season:</p> <ul style="list-style-type: none"> • Lesser black-backed gull <i>Larus fuscus</i>, 14,070 pairs representing at least 11.3% of the breeding western Europe/Mediterranean/western Africa population (five-year mean 1994-1998) <p>Over winter:</p> <ul style="list-style-type: none"> • Redshank <i>Tringa totanus</i>, 1,919 individuals representing at least 1.1% of the wintering eastern Atlantic population (five-year peak mean 1991/2-1995/6)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • changes in biotic and abiotic conditions • human induced changes in hydraulic conditions • sports and leisure activities

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>Alde-Ore Estuary SPA is 42.8km from the proposed scheme.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
	<p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>Small numbers of lesser black-backed gull have been recorded using arable habitats within the study area. The loss of arable and other habitats could impact birds by reducing foraging and roosting opportunities commuting to or from wintering or breeding grounds, reducing the fitness of individuals.</p> <p>However, the extent of similar habitat within the range of birds is extremely large, given that they are well represented within the local and regional landscape, and the habitats within the zone of influence of the proposed scheme are not considered to be obligatory or high quality for these species.</p> <p>The European site is 42.8km from the proposed scheme, and given the relatively small, localised extent and linearity of the proposed scheme within the context of the local and regional landscape, it is considered that the proposed route would result in a negligible reduction in habitat area for mobile qualifying species outside the SPA.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>The only qualifying feature of the Alde-Ore Estuary SPA that was recorded near the proposed scheme is lesser black-backed gull. It was recorded in small numbers on arable fields.</p> <p>The landscape near the proposed route is dominated by arable land, and the localised disturbance associated with the construction and operation of the proposed scheme would affect only a small proportion of this habitat when considered in context of the total resource available. The proposed scheme is predominately a widening scheme, so any potential qualifying features that currently use these habitats would have become somewhat habituated to the visual and acoustic stimuli associated with an operating dual carriageway.</p> <p>During construction, the qualifying species that could potentially be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
	<p>behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances.</p> <p>It is considered that the proposed scheme would therefore result in a negligible disturbance of mobile qualifying species outside the SPA.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to the Alde-Ore Estuary SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of SPA qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>The Alde-Ore Estuary SPA is 42.8km away from the proposed scheme and >35km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Alde-Ore Estuary SPA.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
relationships that define the structure of the site	functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site. No likely significant effects.
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality,	None. No hydrological connectivity.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary SPA
hydrological regime etc.)	
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	No likely significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'.</i>

Alde-Ore Estuary Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Alde-Ore Estuary Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European sites or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Alde-Ore Estuary Ramsar site is 42.8km to the north-east of the proposed scheme (see Section 4.2 of this report).	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Alde-Ore Estuary Ramsar site is >35km from the ARN. Alde-Ore Estuary Ramsar site is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to any European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance¹⁷</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Alde-Ore Estuary Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Alde-Ore Estuary Ramsar. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

¹⁷ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Alde-Ore Estuary Ramsar UK11002 (JNCC, 2008b)
Location and distance of the European site from the proposed works	Alde-Ore Estuary Ramsar is approx. 42.8km to the north-east of the proposed scheme.
European site size	2,546.99.5ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Ramsar criterion 2</i></p> <p>The site supports a number of nationally scarce plant species and British Red Data Book invertebrates.</p> <p><i>Ramsar criterion 3</i></p> <p>The site supports a notable assemblage of breeding and wintering wetland birds.</p> <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
	<p>Qualifying species/populations (as identified at designation).</p> <p>Species regularly supported during the breeding season:</p> <ul style="list-style-type: none"> • Lesser black-backed gull <i>Larus fuscus graellsii</i>, 5,790 apparently occupied nests, representing an average of 3.9% of the breeding population (Mitchell <i>et al.</i>, 2004) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Avocet <i>Recurvirostra avosetta</i>, 1,187 individuals, representing an average of 1.6% of the population (five-year peak mean 1998/9-2002/3) • Common redshank <i>Tringa totanus totanus</i>, 2,368 individuals, representing an average of 2% of the population in Great Britain (five-year peak mean 1998/9-2002/3) <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Mute swan <i>Cygnus olor</i>, 387 individuals, representing an average of 1% of the population in Great Britain (five-year peak mean 1998/9-2002/3)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	Erosion
European site conservation objectives – where these are readily available	<p>No specific information provided as part of the designation. Refer to conservation objectives for Alde-Ore Estuary SPA as follows:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
	<ul style="list-style-type: none"> • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>The Alde-Ore Estuary Ramsar is 42.8km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>Small numbers of lesser black-backed gull have been recorded using arable habitats within the study area. The loss of arable and other habitats could impact birds by reducing foraging and</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
	<p>roosting opportunities commuting to or from wintering or breeding grounds, reducing the fitness of individuals.</p> <p>However, the extent of similar habitat within the range of birds is extremely large, given that they are well represented within the local and regional landscape, and the habitats within the zone of influence of the proposed scheme are not considered to be obligatory or high quality for these species.</p> <p>The European site is 42.8km from the proposed scheme, and given the relatively small, localised extent and linearity of the proposed scheme within the context of the local and regional landscape, it is considered that the proposed route would result in a negligible reduction in habitat area for mobile qualifying species outside the Ramsar.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Small numbers of lesser black-backed gull have been recorded in arable habitats in the study area.</p> <p>The landscape near the proposed route is dominated by arable land, and the localised disturbance associated with the construction and operation of the proposed scheme would affect only a small proportion of this habitat when considered in context of the total resource available. The proposed scheme is predominately a widening scheme, so any potential qualifying features that currently use these habitats would have become somewhat habituated to the visual and acoustic stimuli associated with an operating dual carriageway.</p> <p>During construction, the qualifying species that could potentially be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
	<p>It is considered that the proposed scheme would therefore result in a negligible disturbance of mobile qualifying species outside the Ramsar.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to the Alde-Ore Estuary Ramsar make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value	<p>The Alde-Ore Estuary Ramsar is 42.8km away from the proposed scheme and >35km away from the ARN at its closest point. Likely</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
(hydrology and air quality)	<p>significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Alde-Ore Estuary Ramsar.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Alde-Ore Estuary Ramsar
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Blackwater Estuary (Mid-Essex Coast Phase 4) SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is 6.0km to the south-east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	<p>DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is >800m from the ARN at its closest point.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the proposed scheme. The Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is hydrologically connected to the proposed scheme via the River Blackwater (10.7km downstream). Due to the size of the estuary (4,403ha) and the distance downstream, any pollution incident that may occur (even in the absence of good practice measures) would be diluted to such an extent that there would be no effect on the supporting habitats of the SPA qualifying features.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
	effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance¹⁸ <i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i>	
Nature of proposals	<p>No specific measures are required with respect to Blackwater Estuary (Mid-Essex Coast Phase 4) SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p> <p>It is anticipated that any new proposed watercourse crossings over the River Blackwater, River Brain, River Ter, Domsey Brook and Boreham Tributary would include clear span structures and/or culverts, as required. It is also assumed that some existing culverts and bridges would be retained and extended as required. There would be no likely significant effect on Blackwater Estuary (Mid-Essex Coast Phase 4) SPA due to distance downstream and dilution effects in the estuary.</p>
Location	No specific measures are required with respect to Blackwater Estuary (Mid-Essex Coast Phase 4) SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.

¹⁸ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
	Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.
Evidence for effectiveness	All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA UK9009245 (JNCC, 2015c)
Location and distance of the European site from the proposed works	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is 6.0km to the south-east of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
European site size	4,403.38ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p>The Blackwater Estuary is an integral component of the phased Mid-Essex Coast SPA.</p> <p>This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive.</p> <p>During the breeding season:</p> <ul style="list-style-type: none"> • Little tern <i>Sternula albifrons</i>, 21 pairs representing at least 0.9% of the breeding population in Great Britain (count as at five year mean 1992-1996) <p>Over winter:</p> <ul style="list-style-type: none"> • Hen harrier <i>Circus cyaneus</i>, 19 individuals representing up to 2.5% of the wintering population in Great Britain (five-year mean 1987/8-91/92) <p>This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:</p> <p>During the breeding season:</p> <ul style="list-style-type: none"> • Pochard <i>Aythya ferina</i>, 15 individuals representing up to 6% of the population in Great Britain (five-year mean 1987-1991). • Ringed plover <i>Charadrius hiaticula</i>, 135 individuals representing up to 1.9% of the wintering Europe/northern Africa population (five-year peak mean 1991/2-1995/6) <p>Over winter:</p> <ul style="list-style-type: none"> • Black-tailed godwit <i>Limosa limosa islandica</i>, 1,280 individuals representing up to 2% of the Iceland – breeding population (five-year peak mean 1991/2-1995/6)
Vulnerability of the European site – any information available from the standard data	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • changes in biotic and abiotic conditions • outdoor sports and leisure activities • urbanisation

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
forms on potential effect pathways	<ul style="list-style-type: none"> • industrial and similar activities and fishing • harvesting aquatic resources
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>The Blackwater Estuary (Mid-Estuary Coast Phase 4) SPA is 6.0km from the proposed scheme (10.7km downstream).</p> <p>No hydrological pathways exist which could cause a reduction of habitat area (taking into account the measures incorporated in the proposed scheme description).</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>The only qualifying species of Blackwater Estuary (Mid-Essex Coast Phase 4) SPA that was recorded during surveys was pochard. None of waterbodies in the study area would be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p> <p>The low numbers of pochard recorded and the distance between Coleman's Reservoir and the designated site (approx. 8.4km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within any European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to the Blackwater Estuary (Mid-Essex Coast Phase 4) SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
	<p>offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of SPA qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>The Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is 6.0km away from the proposed scheme and >6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the study area. The River Blackwater has downstream hydrological connectivity with the Blackwater Estuary (Mid-Essex Coast Phase 4) SPA (10.7km downstream from the Order Limits). The site supports GWDTE, but the zone of influence for groundwater impacts is estimated to be a maximum of 600m and so no impacts are predicted on GWDTE in European sites.</p> <p>The closest watercourse crossing is approximately 10.7km upstream from the SPA. Given the size of the estuary (4,403ha)</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
	<p>and the distance downstream, any pollution would be diluted and very unlikely to affect any of the habitats which are foraging habitats of the SPA qualifying features.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. Any pollution would be diluted due to the size of the estuary (4,403ha) and the distance downstream (10.7km).
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar	
Date:	Author	Verified
	(Name/Organisation):	(Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is 6.0km to the south-east of the proposed scheme (see Section 4.2 of this report).	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	<p>DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is >800m from the ARN at its closest point.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the proposed scheme. The Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is hydrologically connected to the proposed scheme via the River Blackwater (10.7km downstream). However, due to the size of the estuary (4,395ha) and the distance downstream, any pollution incident that may occur (even in the absence of good practice measures) would be diluted and not affect the features for which the Ramsar is designated.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance¹⁹ <i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i>	
Nature of proposals	<p>No specific measures are required with respect to Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p> <p>It is anticipated that any new proposed watercourse crossings over the River Blackwater, River Brain, River Ter, Domsey Brook and Boreham Tributary would include clear span structures and/or culverts, as required. It is also assumed that some existing culverts and bridges would be retained and extended as required. There would be no likely significant effect on Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar due to distance downstream and dilution effects in the estuary.</p>
Location	Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.

¹⁹ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
	Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.
Evidence for effectiveness	All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar UK11007 (JNCC, 2008c)
Location and distance of the European site from the proposed works	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is 6.0km to the south-east of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
European site size	4,395.15ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Ramsar criterion 1</i></p> <p>Qualifies by virtue of the extent and diversity of saltmarsh habitat present. This site, and the four others in the Mid-Essex Coast complex, includes a total of 3,237ha that represent 70% of the saltmarsh habitat in Essex and 7% of the total area of saltmarsh in Britain.</p> <p><i>Ramsar criterion 2</i></p> <p>The invertebrate fauna is well represented and includes at least 16 British Red Data Book species. In descending order of rarity, these are Endangered: a water beetle <i>Paracymus aeneus</i>; Vulnerable: a damselfly <i>Lestes dryas</i>, the flies <i>Aedes flavescens</i>, <i>Erioptera bivittata</i>, <i>Hybomitra expollicata</i> and the spiders <i>Heliophanus auratus</i> and <i>Trichopterna cito</i>; Rare: the beetles <i>Baris scolopacea</i>, <i>Philonthus punctus</i>, <i>Graptodytes bilineatus</i> and <i>Malachus vulneratus</i>, the flies <i>Campsicemus magius</i> and <i>Myopites eximia</i>, the moths <i>Idea ochrata</i> and <i>Malacosoma castrensis</i> and the spider <i>Euophrys</i> sp.</p> <p><i>Ramsar criterion 3</i></p> <p>This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in Britain.</p> <p><i>Ramsar criterion 5</i></p> <p>Assemblages of international importance: Species with peak counts in winter: 105,061 waterfowl (five-year peak mean 1998/99-2002/2003).</p> <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p> <p>Qualifying species/populations (as identified at designation). Species with peak counts in winter:</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
	<ul style="list-style-type: none"> • Dark-bellied brent goose <i>Branta bernicla</i>, 8,689 individuals, representing an average of 4% of the population (five-year peak mean 1998/9–2002/3) • Grey plover <i>Pluvialis squatarola</i> (eastern Atlantic/western Africa – wintering), 4,215 individuals, representing an average of 1.7% of the population (five-year peak mean 1998/9-2002/3) • Dunlin <i>Calidris alpina alpina</i> (western Siberia/western Europe), 27,655 individuals, representing an average of 2% of the population (five-year peak mean 1998/9-2002/3) • Black-tailed godwit <i>Limosa limosa islandica</i> (Iceland/western Europe), 2,174 individuals, representing an average of 6.2% of the population (five-year peak mean 1998/9-2002/3) <p>Species/populations identified subsequent to designation for possible future consideration under criterion 6.</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Common shelduck <i>Tadorna tadorna</i> (north-western Europe), 3,141 individuals, representing an average of 1% of the population (five-year peak mean 1998/9-2002/3) • European golden plover <i>Pluvialis apricaria apricaria</i>, <i>P. a. altifrons</i> (Iceland and Faroes/eastern Atlantic), 16,083 individuals, representing an average of 1.7% of the population (five-year peak mean 1998/9-2002/3) • Common redshank <i>Tringa totanus totanus</i>, 4,169 individuals, representing an average of 1.6% of the population (five-year peak mean 1998/9-2002/3)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	Erosion, and pollution from agricultural fertilisers. Arable agriculture surrounds the coastal wetland and runoff from fields enters the site.
European site conservation objectives – where	No details on conservation objectives available. Refer to conservation objectives for Blackwater Estuary (Mid-Essex Coast Phase 4) SPA, as follows:

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	There would be no land taken from the European site or from adjacent land.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
	<p>The Blackwater Estuary (Mid-Estuary Coast Phase 4) Ramsar is 6.0km from the proposed scheme (10.7km downstream).</p> <p>No hydrological pathways exist which could cause a reduction of habitat area (taking into account the measures incorporated in the proposed description).</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>The only species of Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar that was recorded during surveys was golden plover, which was recorded in very low numbers on arable fields.</p> <p>The landscape near the proposed route is dominated by arable land, and the localised disturbance associated with the construction and operation of the proposed scheme would affect only a small proportion of this habitat when considered in context of the total resource available. The proposed scheme is predominately a widening scheme, so any potential qualifying features that currently use these habitats would have become somewhat habituated to the visual and acoustic stimuli associated with an operating dual carriageway.</p> <p>During construction, individual birds that could be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances.</p> <p>It is considered that the proposed scheme would therefore result in a negligible disturbance of mobile qualifying species outside the Ramsar.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to the Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>The Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is 6.0km away from the proposed scheme and >6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
	<p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the study area. The River Blackwater has downstream hydrological connectivity with the Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar (10.7km downstream). The site supports GWDTE, but the zone of influence for groundwater impacts is estimated to be a maximum of 600m and so no impacts are predicted on GWDTE in European sites.</p> <p>The closest watercourse crossing is approximately 10.7km upstream from Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar. Given the size of the estuary (4,395ha) and the distance downstream, any pollution would be diluted and very unlikely to affect any of the habitats for which the Ramsar is designated.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
define the structure of the site	therefore be no interference with the structure of the European site. No likely significant effects.
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality,	None. Any pollution would be diluted due to the size of the estuary (4,395ha) and the distance downstream (10.7km).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar
hydrological regime etc.)	
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Colne Estuary (Mid-Essex Coast Phase 2) SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Colne Estuary (Mid-Essex Coast Phase 2) SPA is 9.7km to the east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	<p>DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Colne Estuary (Mid-Essex Coast Phase 2) SPA is >7km from the ARN at its closest point.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the proposed scheme. The Colne Estuary (Mid-Essex Coast Phase 2) SPA is hydrologically connected to the proposed scheme via the Roman River (16km downstream). Due to the size of the estuary (2,720ha) and the distance downstream, any pollution incident that may occur (even in the absence of good practice measures) would be diluted to such an extent that there would be no effect on the supporting habitats of the SPA qualifying features.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
	effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁰ <i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i>	
Nature of proposals	<p>No specific measures are required with respect to Colne Estuary (Mid-Essex Coast Phase 2) SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p> <p>It is anticipated that any new proposed watercourse crossings over the River Blackwater, River Brain, River Ter, Domsey Brook and Boreham Tributary would include clear span structures and/or culverts, as required. It is also assumed that some existing culverts and bridges would be retained and extended as required. There would be no likely significant effect on Colne Estuary (Mid-Essex Coast Phase 2) SPA due to distance downstream and dilution effects in the estuary.</p>
Location	No specific measures are required with respect to Colne Estuary (Mid-Essex Coast Phase 2) SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.

²⁰ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
	Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.
Evidence for effectiveness	All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Colne Estuary (Mid-Essex Coast Phase 2) SPA UK9009243 (JNCC, 2015d)
Location and distance of the European site from the proposed works	Colne Estuary (Mid-Essex Coast Phase 2) SPA is 9.7km to the east of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
European site size	2,719.93ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Article 4.1 Qualification (79/409/EEC)</i></p> <p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Little tern <i>Sternula albifrons</i> (eastern Atlantic – breeding), at least 1.6% of the breeding population in Great Britain (five-year mean 1992-1996) <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Hen harrier <i>Circus cyaneus</i>, up to 2.5% of the population in Great Britain, no count period specified <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Common pochard <i>Aythya ferina</i> (north-western/north-eastern Europe), up to 6% of the population in Great Britain (five-year mean 1987-1991) • Common ringed plover <i>Charadrius hiaticula</i> (Europe/northern Africa – wintering), up to 1.6% of the population in Great Britain (five-year mean 1987-1991) <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Dark-bellied brent geese <i>Branta bernicla bernicla</i> (western Siberia/western Europe), 1.6% of the population (five-year peak mean 1991/92-1995/96) • Common redshank <i>Tringa totanus</i> (eastern Atlantic – wintering), 1.2% of the population (five-year peak mean 1991/92-1995/96) <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>An internationally important assemblage of birds</p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • 38,600 waterfowl (five-year peak mean 1991/92-1995/96), including dark-bellied brent geese <i>Branta bernicla</i>, common redshank <i>Tringa totanus</i>
Vulnerability of the European site –	The following are listed as threats, pressures and activities with negative impacts on the site:

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
any information available from the standard data forms on potential effect pathways	<ul style="list-style-type: none"> • Outdoor sports and leisure activities, recreational activities • Other urbanisation, industrial and similar activities • Changes in biotic conditions • Changes in abiotic conditions • Fishing and harvesting aquatic resources
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>The Colne Estuary (Mid-Estuary Coast Phase 2) SPA is 9.7km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area (taking into account the measures incorporated in the proposed scheme description).</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>The only qualifying species of Colne Estuary (Mid-Estuary Coast Phase 2) SPA that was recorded during surveys was pochard. None of waterbodies in the study area would be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p> <p>The low numbers of pochard recorded and the distance between Coleman's Reservoir and the designated site (approx. 16.5km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	There would be no habitat fragmentation within the European site as a result of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
	<p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to the Colne Estuary (Mid-Essex Coast Phase 2) SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of SPA qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>The Colne Estuary (Mid-Essex Coast Phase 2) SPA is 9.7km away from the proposed scheme and >7km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the study area. The Roman River has downstream hydrological connectivity with the Colne Estuary (Mid-Essex Coast Phase 2) SPA.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
	<p>The closest watercourse crossing is approximately 16km upstream from Colne Estuary (Mid-Essex Coast Phase 2) SPA. Given the size of the estuary (2,720ha) and the distance downstream, any pollution would be diluted and very unlikely to affect any of the habitats which are foraging habitats of the SPA qualifying features.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible in comparison to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
	No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. Any pollution would be diluted due to the size of the estuary (2,720ha) and the distance downstream (16km).
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Colne Estuary (Mid-Essex Coast Phase 2) Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is 9.7km to the east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	<p>DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is >7km from the ARN at its closest point.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the proposed scheme. The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is hydrologically connected to the proposed scheme via the Roman River (16km downstream). Due to the size of the estuary (2,701ha) and the distance downstream, any pollution incident that may occur (even in the absence of good practice measures) would be diluted to such an extent that there would be no effect on the features for which the Ramsar is designated.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to any European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
	effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²¹</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Colne Estuary (Mid-Essex Coast Phase 2) Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p> <p>It is anticipated that any new proposed watercourse crossings over the River Blackwater, River Brain, River Ter, Domsey Brook and Boreham Tributary would include clear span structures and/or culverts, as required. It is also assumed that some existing culverts and bridges would be retained and extended as required. There would be no likely significant effect on Colne Estuary (Mid-Essex Coast Phase 2) Ramsar due to distance downstream and dilution effects in the estuary.</p>
Location	No specific measures are required with respect to Colne Estuary (Mid-Essex Coast Phase 2) Ramsar. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.

²¹ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
	Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.
Evidence for effectiveness	All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar UK11015 (JNCC, 2008d)
Location and distance of the European site from the proposed works	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is 9.7km to the east of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
European site size	2, 701.43ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Ramsar criterion 1</i></p> <p>The site is important due to the extent and diversity of saltmarsh present. This site, and the four other sites in the Mid-Essex Coast complex, includes a total of 3,237ha, that represent 70% of the saltmarsh habitat in Essex and 7% of the total saltmarsh in Britain.</p> <p><i>Ramsar criterion 2</i></p> <p>The site supports 12 species of nationally scarce plants and at least 38 British Red Data Book invertebrate species.</p> <p><i>Ramsar criterion 3</i></p> <p>This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in Britain.</p> <p><i>Ramsar criterion 5</i></p> <p>Assemblages of international importance.</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • 32,041 waterfowl (five-year peak mean 1998/99-2002/2003) <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p> <p>Qualifying species/populations (as identified at designation).</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose <i>Branta bernicla bernicla</i>, 3,165 individuals, representing an average of 1.4% of the population (five-year peak mean 1998/9-2002/3) • Common redshank <i>Tringa totanus totanus</i>, 1,624 individuals, representing an average of 1.3% of the population in Great Britain (five-year peak mean 1998/9-2002/3)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
	<p>Species/populations identified subsequent to designation for possible future consideration under criterion 6.</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Black-tailed godwit <i>Limosa limosa islandica</i> (Iceland/western Europe), 402 individuals, representing an average of 1.1% of the population (five-year peak mean 1998/9-2002/3)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>Factors adversely affecting the site's ecological character:</p> <ul style="list-style-type: none"> • Erosion • Pollution from agricultural fertilisers via runoff from adjacent agricultural land • Pollution from pesticides/agricultural runoff from adjacent agricultural land
European site conservation objectives – where these are readily available	<p>No specific information provided as part of the designation. Refer to conservation objectives for Colne Estuary (Mid-Essex Coast Phase 2) SPA, as follows:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
<p>operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<p><i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i></p>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>The Colne Estuary (Mid-Estuary Coast Phase 2) Ramsar is 9.7km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area (taking into account the measures incorporated in the proposed scheme description).</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Species that form part of the qualifying assemblage for Colne Estuary (Mid-Essex Coast Phase 2) Ramsar could be using wetland habitats near the proposed scheme, such as Coleman's Reservoir. None of waterbodies in the study area would be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
	<p>The low numbers of birds recorded and the distance between Coleman's Reservoir and the designated site (approx. 16.5km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to the Colne Estuary (Mid-Essex Coast Phase 2) Ramsar make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
	No likely significant effects.
Changes in key indicators of conservation value (hydrology and air quality)	<p>The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is 9.7km away from the proposed scheme and >7km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the study area. The Roman River has downstream hydrological connectivity with the Colne Estuary (Mid-Essex Coast Phase 2) Ramsar.</p> <p>The closest watercourse crossing is approximately 16km upstream from Colne Estuary (Mid-Essex Coast Phase 2) Ramsar. Given the size of the estuary (2,701ha) and the distance downstream, any pollution would be diluted and very unlikely to affect any of the Ramsar features.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site. No likely significant effects.
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. Any pollution would be diluted due to the size of the estuary (2,701ha) and the distance downstream (16km).
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is 11.7km to the south-east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is >8km from the ARN at its closest point. Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to any European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²²</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

²² Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA UK9009244 (JNCC, 2018)
Location and distance of the European site from the proposed works	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is 11.7km south-east of the proposed scheme.
European site size	1, 847.87ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>Overwinter the area regularly supports:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose <i>Branta bernicla bernicla</i>, 5,509 individuals representing at least 1.0% of the wintering western Siberia/western Europe population (five-year peak mean 1989/90-1993/94) <p>An internationally important assemblage of birds.</p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • 27,021 waterfowl (five-year peak mean 1990/91-1994/95), including dark-bellied brent goose <i>Branta bernicla bernicla</i>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • Changes in biotic conditions • Fishing and harvesting aquatic resources • Changes in abiotic conditions • Other urbanisation, industrial and similar activities • Outdoor sports and leisure activities, recreational activities
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European sites or from adjacent land.</p> <p>Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is 11.7km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is designated for dark-bellied brent goose and its waterfowl assemblage. Dark-bellied brent goose was not recorded during the surveys. Therefore, there is no evidence that habitat in the study area supports this species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Dark-bellied brent goose, which is a qualifying feature of Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA. has not been recorded in the study area.</p> <p>Species that contribute to the qualifying waterfowl assemblage could be using wetland habitats near the proposed scheme. These waterbodies would not be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds recorded at Coleman's Reservoir and the distance between the proposed scheme and the designated site (17.9km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
	No likely significant effects.
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features over-winter could conceivably be fragmented if birds with functional links to Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of SPA qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is 11.7km away from the proposed scheme and >8km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
	<p>There is no hydrological connectivity between the proposed scheme and Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is 11.7km to the south-east of the proposed scheme (see Section 4.2 of this report).	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is >8km from the ARN at its closest point. Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to any European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²³</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

²³ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar UK11058 (JNCC, 2008e)
Location and distance of the European site from the proposed works	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is 11.7km south-east of the proposed scheme.
European site size	1, 847.87ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<i>Ramsar criterion 2</i> Supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant and animal including 13 nationally scarce plant species: slender hare's ear <i>Bupleurum tenuissimum</i> , divided sedge <i>Carex divisa</i> , sea barley <i>Hordeum marinum</i> , golden-samphire <i>Inula crithmoides</i> , lax-flowered sea-lavender <i>Limonium humile</i> , curved hard-grass <i>Parapholis incurva</i> , Borrer's saltmarsh grass <i>Puccinellia fasciculata</i> , stiff saltmarsh grass <i>Puccinellia rupestris</i> , spiral tasselweed <i>Ruppia cirrhosa</i> , one-flowered glasswort <i>Salicornia pusilla</i> , small cord-grass <i>Spartina maritima</i> , shrubby seablite <i>Suaeda vera</i> and sea clover

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
	<p><i>Trifolium squamosum</i>. Several important invertebrate species are also present on the site, including scarce emerald damselfly <i>Lestes dryas</i>, the shorefly <i>Parydroptera discoomyzina</i>, the rare soldier fly <i>Stratiomys singularior</i>, the large horsefly <i>Hybomitra expollicata</i>, the beetles <i>Graptodytes bilineatus</i> and <i>Malachius vulneratus</i>, the ground lackey moth <i>Malacosoma castrensis</i> and <i>Eucosoma catoprana</i>.</p> <p><i>Ramsar criterion 5</i></p> <p>Assemblages of international importance:</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • 16,970 waterfowl (five-year peak mean 1998/99-2002/2003) <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p> <p>Qualifying species/populations (as identified at designation).</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose <i>Branta bernicla bernicla</i>, 2,103 individuals, representing an average of 2.1% of the population in Great Britain (five-year peak mean 1998/9-2002/3)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	Erosion, as sea defences are amplifying erosion in undefended areas, and persistent drought due to lack of fresh water flowing into site are listed as adverse factors.
European site conservation objectives – where these are readily available	No specific information provided as part of the designation. Refer to conservation objectives for Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA, as follows:

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	There would be no land taken from the European site or from adjacent land.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
	<p>Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is 11.7km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is designated for dark-bellied brent goose and its waterfowl assemblage. Dark-bellied brent goose was not recorded during the surveys. Therefore, there is no evidence that habitat in the study area supports this species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Dark-bellied brent goose, which is a qualifying feature of Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar, has not been recorded in the study area.</p> <p>Species that contribute to the qualifying waterfowl assemblage could be using wetland habitats near the proposed scheme. These waterbodies would not be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds recorded at Coleman's Reservoir and the distance between the proposed scheme and the designated site (11.7km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features over-winter could conceivably be fragmented if birds with functional links to Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar make</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
	<p>use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is 11.7km away from the proposed scheme and >8km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and the Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar site.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	<p>None. Absence of effect on the European site and negligible effects on functionally linked habitats.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
agreement with this conclusion	

Dengie (Mid-Essex Coast Phase 1) SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European sites.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Dengie (Mid-Essex Coast Phase 1) SPA is 14.1km to the south-east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Dengie (Mid-Essex Coast Phase 1) SPA is >8km from the ARN at its closest point. Dengie (Mid-Essex Coast Phase 1) SPA is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁴</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Dengie (Mid-Essex Coast Phase 1) SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Dengie (Mid-Essex Coast Phase 1) SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

²⁴ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Dengie (Mid-Essex Coast Phase 1) SPA UK9009242 (JNCC, 2015e)
Location and distance of the European site from the proposed works	Dengie (Mid-Essex Coast Phase 1) SPA is 14.1km south-east of the proposed scheme
European site size	3,133.94ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Article 4.1 Qualification (79/409/EEC)</i></p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Hen harrier <i>Circus cyaneus</i>, up to 2.5% of the population in Great Britain (five-year mean 1987-1991) <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Dark-bellied brent geese <i>Branta bernicla bernicla</i> (western Siberia/western Europe), 0.8% of the population (five-year peak mean 1991/92-1995/96)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
	<ul style="list-style-type: none"> • Red knot <i>Calidris canutus</i> (north-eastern Canada/ Greenland/Iceland/north-western Europe), 2.4% of the population (five-year peak mean 1991/92-1995/96) • Grey plover <i>Pluvialis squatarola</i> (eastern Atlantic – wintering), 1.4% of the population (five-year peak mean 1991/92-1995/96) <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>An internationally important assemblage of birds.</p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • 31,454 waterfowl (five-year peak mean 1991/92-1995/96), including dark-bellied brent geese <i>Branta bernicla bernicla</i>, grey plover <i>Pluvialis squatarola</i> and red knot <i>Calidris canutus</i>
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • changes in abiotic conditions • changes in biotic conditions • fishing and harvesting aquatic resources • hunting, fishing or collecting activities not referred to above • outdoor sports and leisure activities, recreational activities
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>Dengie (Mid-Essex Coast Phase 1) SPA is 14.1km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>Dengie (Mid-Essex Coast Phase 1) SPA is designated for hen harrier, dark-bellied brent goose, red knot, grey plover and its waterfowl assemblage. None of these species were recorded during surveys. Therefore, there is no evidence that habitat in the study area supports these species.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
Disturbance to key species	<p>None of the qualifying species of the SPA have been recorded in the study area. There is potential for the arable, grassland, open water and river corridor habitats affected by construction of the proposed scheme to be used by a subset of the mobile qualifying bird species of the Dengie (Mid-Essex Coast Phase 1) SPA.</p> <p>Species that contribute to the qualifying waterfowl assemblage could be using wetland habitats near the proposed scheme. These waterbodies would not be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds of each species at Coleman's Reservoir and the distance between the reservoir and the designated site (17.1km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features over-winter could conceivably be fragmented if birds with functional links to Dengie (Mid-Essex Coast Phase 1) SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
	<p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of SPA qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Dengie (Mid-Essex Coast Phase 1) SPA is 14.1km away from the proposed scheme and >8km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Dengie (Mid-Essex Coast Phase 1) SPA.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site. No likely significant effects.
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Dengie (Mid-Essex Coast Phase 1) Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Dengie (Mid-Essex Coast Phase 1) Ramsar is 14.1km to the south-east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. Dengie (Mid-Essex Coast Phase 1) Ramsar is >8km from the ARN at its closest point. Dengie (Mid-Essex Coast Phase 1) Ramsar is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁵</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Dengie (Mid-Essex Coast Phase 1) Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Dengie (Mid-Essex Coast Phase 1) Ramsar. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

²⁵ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Dengie (Mid-Essex Coast Phase 1) Ramsar UK11018 (JNCC, 2008f)
Location and distance of the European site from the proposed works	Dengie (Mid-Essex Coast Phase 1) Ramsar is 14.1km south-east of the proposed scheme
European site size	3,127.23ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Ramsar criterion 1</i></p> <p>Qualifies by virtue of the extent and diversity of saltmarsh habitat present. Dengie, and the four other sites in the Mid-Essex Coast Ramsar site complex, includes a total of 3,237ha, that represent 70% of the saltmarsh habitat in Essex and 7% of the total area of saltmarsh in Britain.</p> <p><i>Ramsar criterion 2</i></p> <p>Dengie supports a number of rare plant and animal species. The Dengie has 11 species of nationally scarce plants: sea kale <i>Crambe maritima</i>, sea barley <i>Hordeum marinum</i>, golden-</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
	<p>samphire <i>Inula crithmoides</i>, lax-flowered sea-lavender <i>Limonium humile</i>, the glassworts <i>Sarcocornia perennis</i> and <i>Salicornia pusilla</i>, small cord-grass <i>Spartina maritima</i>, shrubby sea-blite <i>Suaeda vera</i>, and the eelgrasses <i>Zostera angustifolia</i>, <i>Z. marina</i> and <i>Z. noltei</i>. The invertebrate fauna includes the following Red Data Book species: a weevil <i>Baris scolopacea</i>, a horsefly <i>Atylotus latistriatus</i> and a jumping spider <i>Euophrys browningi</i>.</p> <p><i>Ramsar criterion 3</i></p> <p>This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in Britain.</p> <p><i>Ramsar criterion 5</i></p> <p>Assemblages of international importance: Species with peak counts in winter:</p> <ul style="list-style-type: none"> • 43,828 waterfowl (five-year peak mean 1998/99-2002/2003) <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p> <p>Qualifying species/populations (as identified at designation).</p> <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose <i>Branta bernicla bernicla</i>, 2,000 individuals, representing an average of 2% of the population in Great Britain (five-year peak mean 1998/9-2002/3) • Grey plover <i>Pluvialis squatarola</i> (eastern Atlantic/western Africa – wintering), 4,582 individuals, representing an average of 1.8% of the population (five-year peak mean 1998/9-2002/3) • Red knot <i>Calidris canutus islandica</i> (western and southern Africa – wintering), 14,528 individuals, representing an average of 3.2% of the population (five-year peak mean 1998/9-2002/3)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
	<p>Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Bar-tailed godwit <i>Limosa lapponica lapponica</i> (western Palearctic), 2,593 individuals, representing an average of 2.1% of the population (five-year peak mean 1998/9-2002/3)
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	Erosion
European site conservation objectives – where these are readily available	<p>No specific information provided as part of the designation. Refer to conservation objectives for Dengie (Mid-Essex Coast Phase 1) SPA, as follows:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features • The distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
<p>operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<p><i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i></p>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>Dengie (Mid-Essex Coast Phase 1) Ramsar is 14.1km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>Dengie (Mid-Essex Coast Phase 1) Ramsar is designated for dark-bellied brent goose, red knot, grey plover and its waterfowl assemblage. None of these species were recorded during surveys. Therefore, there is no evidence that habitat in the study area supports these species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>None of the qualifying species of the Ramsar have been recorded in the study area. There is potential for the arable, grassland, open water and river corridor habitats affected by construction of the proposed scheme to be used by a subset of the mobile qualifying bird species of the Dengie (Mid-Essex Coast Phase 1) Ramsar.</p> <p>Species that contribute to the qualifying waterfowl assemblage could be using wetland habitats near the proposed scheme. These</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
	<p>waterbodies would not be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds recorded at Coleman's Reservoir and the distance between the reservoir and the designated site (17.1km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features over-winter could conceivably be fragmented if birds with functional links to Dengie (Mid-Essex Coast Phase 1) Ramsar site make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
	<p>habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Dengie (Mid-Essex Coast Phase 1) Ramsar is 14.1km away from the proposed scheme and >8km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Dengie (Mid-Essex Coast Phase 1) Ramsar site.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'.</i>

Essex Estuaries SAC

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Essex Estuaries SAC	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Essex Estuaries SAC is 6.0km to the south-east of the proposed scheme (see Section 4.2 of this report).	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	The proposed scheme would require no resources from the European site or land adjacent to the European site.
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	<p>DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Essex Estuaries SAC is >800m from the ARN at its closest point.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the proposed scheme. The Essex Estuaries SAC is hydrologically connected to the proposed scheme via the Roman River (16km downstream) and the River Blackwater (10.7km downstream). Due to the size of the SAC (46,110ha), its composite nature (composed of more than one estuary and overlapping with other designations) and the shortest distance downstream (10.7km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the qualifying features of the SAC.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁶ <i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i>	
Nature of proposals	<p>No specific measures are required with respect to Essex Estuaries SAC because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p> <p>It is anticipated that any new proposed watercourse crossings over the River Blackwater, River Brain, River Ter, Domsey Brook and Boreham Tributary would include clear span structures and/or culverts, as required. It is also assumed that some existing culverts and bridges would be retained and extended as required. There would be no likely significant effect on Essex Estuaries SAC due to distance downstream and dilution effects in the estuaries that comprise the designation.</p>
Location	No specific measures are required with respect to Essex Estuaries SAC. Avoidance or alleviation measures contained

²⁶ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
	<p>within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Essex Estuaries SAC UK0013690 (JNCC, 2015f)
Location and distance of the	Essex Estuaries SAC is 6.0km to the south-east of the proposed scheme.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
European site from the proposed works	
European site size	46,109.95ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • 1130 Estuaries • 1140 Mudflats and sandflats not covered by seawater at low tide • 1310 <i>Salicornia</i> and other annuals colonizing mud and sand • 1320 <i>Spartina</i> swards (<i>Spartinion maritimae</i>) • 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) • 1420 Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • 1110 Sandbanks which are slightly covered by sea water all the time <p>Annex I habitats present but not a qualifying feature (i.e. non-significant presence):</p> <ul style="list-style-type: none"> • 1220 Perennial vegetation of stony banks • 2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes')
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • outdoor sports and leisure activities, recreational activities • fishing and harvesting aquatic resources • other urbanisation, industrial and similar activities • changes in biotic conditions • changes in abiotic conditions
European site conservation	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
objectives – where these are readily available	<p>favourable conservation status of its qualifying features, by maintaining or restoring:</p> <ul style="list-style-type: none"> • the extent and distribution of qualifying natural habitats • the structure and function (including typical species) of qualifying natural habitats • the supporting processes on which qualifying natural habitats rely
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>Essex Estuaries SAC is 6.0km from the proposed scheme and 10.7km downstream.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
	<p>No hydrological pathways exist which could cause a reduction of habitat area (taking into account the measures incorporated in the proposed scheme description).</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>The SAC does not have any qualifying features which are mobile or vulnerable to disturbance.</p> <p>No likely significant effects.</p>
Habitat or species fragmentation	<p>Essex Estuaries SAC does not have any qualifying features which are mobile and is 6.0km from the proposed scheme. Therefore there will be no fragmentation of qualifying or functionally linked habitats.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>Essex Estuaries SAC does not have any qualifying features which are mobile and is 6.0km from the proposed scheme. Therefore there are no pathways by which key species could be reduced in density or abundance. No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Essex Estuaries SAC is 6.0km away from the proposed scheme and >800m away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>The proposed scheme would cross the River Blackwater, the River Brain, the River Ter, Domsey Brook and the Boreham Tributary and would fall within the surface water catchment of the Roman River at the eastern extent of the study area. The Essex Estuaries SAC is hydrologically connected to the proposed scheme via the Roman River (16km downstream) and the River Blackwater (10.7km downstream). The site supports GWDTE, but the zone of influence for groundwater impacts is estimated to be a maximum of 600m and so no impacts are predicted on GWDTE in European sites.</p> <p>The closest watercourse crossing is approximately 10.7km upstream from Essex Estuaries SAC. Given the size of the</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
	designation (>46,000ha) and the distance downstream, any pollution would be diluted and very unlikely to affect any of the habitats for which the SAC is designated. No likely significant effects.
Climate change	Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor. No likely significant effects.
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site. No likely significant effects.
Interference with key relationships that define the function of the site	No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site. No likely significant effects.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site.
Disturbance to key species	None. Absence of effect on the European site.
Habitat or species fragmentation	None. Absence of effect pathways that could lead to fragmentation.
Loss	None. No loss of habitat, species or connectivity.
Fragmentation	None. Absence of effect pathways that could lead to fragmentation.
Disruption	None. Absence of effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. Any pollution would be diluted due to the size of the designation (>46,000ha) and the distance downstream.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Essex Estuaries SAC
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Outer Thames Estuary SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Outer Thames Estuary SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	The Outer Thames Estuary is a marine SPA, 16.3km to the east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from any European site or land adjacent to any European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	Not applicable for a marine SPA. The Outer Thames Estuary SPA is a marine SPA that is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to any European site.
Transportation requirements	Not applicable.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁷</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to the Outer Thames Estuary SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to the Outer Thames Estuary SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

²⁷ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Outer Thames Estuary SPA UK9020309 (JNCC, 2017)
Location and distance of the European site from the proposed works	Outer Thames Estuary SPA is located 16.3km east of the proposed scheme.
European site size	392,451.66ha (100% marine)
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Article 4.1 Qualification (79/409/EEC)</i></p> <p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Little tern <i>Sternula albifrons</i>, 19.64% of the population in Great Britain (2011–2015) • Common tern <i>Sterna hirundo</i>, 2.66% of the population in Great Britain (2011–2015) <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Red throated diver <i>Gavia stellata</i> (north-western Europe), 38% of the population in Great Britain (peak mean over the period 1989-2006/07)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • renewable abiotic energy use • fishing and harvesting aquatic resources • pollution to groundwater (point sources and diffuse sources) • shipping lanes, ports, marine constructions • military use and civil unrest
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • the extent and distribution of the habitats of the qualifying features • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the population of each of the qualifying features • the distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime). 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
It is considered that there no pathways by which the Outer Thames Estuary SPA could be subject to impacts as a result of the proposed scheme.	
Initial assessment	
<i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i>	
Reduction of habitat area	No impact pathway. No likely significant effects.
Disturbance to key species	No impact pathway. No likely significant effects.
Habitat or species fragmentation	No impact pathway. No likely significant effects.
Reduction in species density/ loss of individuals	No impact pathway. No likely significant effects.
Changes in key indicators of conservation value (hydrology and air quality)	No impact pathway. No likely significant effects.
Climate change	Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
	Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor. No likely significant effects.
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	No impact pathway. No likely significant effects.
Interference with key relationships that define the function of the site	No impact pathway. No likely significant effects.
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None.
Disturbance to key species	None.
Habitat or species fragmentation	None.
Loss	None.
Fragmentation	None.
Disruption	None.
Disturbance	None.
Change to key elements of the site	None.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Outer Thames Estuary SPA
(e.g. water quality, hydrological regime etc.)	
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Stour and Orwell Estuaries SPA

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Stour and Orwell Estuaries SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Stour and Orwell Estuaries SPA is 14.2km to the north-east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Stour and Orwell Estuaries SPA is >6km from the ARN. Stour and Orwell Estuaries SPA is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to the European site.
Transportation requirements	As the European site is not located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
<p>Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁸</p> <p><i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i></p>	
Nature of proposals	<p>No specific measures are required with respect to Stour and Orwell Estuaries SPA because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Stour and Orwell Estuaries SPA. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>

²⁸ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Stour and Orwell Estuaries SPA UK9009121 (JNCC, 2015g)
Location and distance of the European site from the proposed works	The Stour and Orwell Estuaries SPA is 14.2km north-east of the proposed scheme.
European site size	3,667.37ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Article 4.1 Qualification (79/409/EEC)</i></p> <p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • <i>Avocet Recurvirostra avosetta</i> (western Europe/ western Mediterranean – breeding), 3.6% of the population in Great Britain (five-year peak mean 1996-2000) <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Northern pintail <i>Anas acuta</i> (north-western Europe), 1.2% of the population (five-year peak mean 1995/96-1999/2000)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
	<ul style="list-style-type: none"> • Dark-bellied brent geese <i>Branta bernicla bernicla</i> (Western Siberia/western Europe), 1.2% of the population (five-year peak mean 1995/96-1999/2000) • Dunlin <i>Calidris alpina alpina</i> (northern Siberia/Europe/western Africa), 1.4% of the population (five-year peak mean 1995/96-1999/2000) • Red knot <i>Calidris canutus</i> (north-eastern Canada/Greenland/Iceland/north-western Europe), 1.3% of the population (five-year peak mean 1995/96-1999/2000) • Black-tailed godwit <i>Limosa limosa islandica</i> (Iceland – breeding), 7.3% of the population (five-year peak mean 1995/96-1999/2000) • Grey plover <i>Pluvialis squatarola</i> (eastern Atlantic – wintering), 1.3% of the population (five-year peak mean 1995/96-1999/2000) • Common redshank <i>Tringa totanus</i> (eastern Atlantic – wintering), 2.8% of the population (five-year peak mean 1995/96-1999/2000) <p>On passage the area regularly supports:</p> <ul style="list-style-type: none"> • Common redshank <i>Tringa totanus</i> (eastern Atlantic – wintering), 2% of the population (five-year peak mean 1995/96-1999/2000) <p><i>Article 4.2 Qualification (79/409/EEC)</i></p> <p>An internationally important assemblage of birds.</p> <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • 63,017 waterfowl (five-year peak mean 1991/92-1995/96), including great-crested grebe <i>Podiceps cristatus</i>, great cormorant <i>Phalacrocorax carbo</i>, dark-bellied brent geese <i>Branta bernicla bernicla</i>, common shelduck <i>Tadorna tadorna</i>, Eurasian wigeon <i>Mareca penelope</i>, gadwall <i>Anas strepera</i>, northern pintail <i>Anas acuta</i>, common goldeneye <i>Bucephala clangula</i>, common-ringed plover <i>Charadrius hiaticula</i>, grey plover <i>Pluvialis squatarola</i>, northern lapwing <i>Vanellus vanellus</i>, red knot <i>Calidris canutus</i>, dunlin <i>Calidris alpina alpina</i>, black-tailed godwit <i>Limosa limosa islandica</i>, Eurasian curlew <i>Numenius arquata</i>, common redshank <i>Tringa totanus</i>, ruddy turnstone <i>Arenaria interpres</i>, mute swan <i>Cygnus olor</i>, golden plover <i>Pluvialis apricaria</i>, greater scaup <i>Aythya marila</i>.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The following are listed as threats, pressures and activities with negative impacts on the site:</p> <ul style="list-style-type: none"> • changes in biotic conditions • outdoor sports and leisure activities, recreational activities • changes in abiotic conditions • other urbanisation, industrial and similar activities • fishing and harvesting aquatic resources
European site conservation objectives – where these are readily available	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • the extent and distribution of the habitats of the qualifying features • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the population of each of the qualifying features • the distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
Initial assessment	
<p><i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i></p>	
Reduction of habitat area	<p>There would be no land taken from the European sites or from adjacent land.</p> <p>The Stour and Orwell Estuaries SPA is 14.2km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>There would be no loss of wetland habitats that could be used by qualifying species.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Species that form part of the assemblage of waterfowl that is a qualifying feature of Stour and Orwell Estuaries SPA were recorded primarily at Coleman's Reservoir and from the waterbodies near Hatfield Peverel and Little Braxted (Figure 5).</p> <p>None of the waterbodies would be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a 200m buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a 15-20m deep shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period, and the distance between the reservoir and the designated site (28.6km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <p>No likely significant effects.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to Stour and Orwell Estuaries SPA make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of SPA qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>The Stour and Orwell Estuaries SPA is 14.2km away from the proposed scheme and >6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p> <p>There is no hydrological connectivity between the proposed scheme and Stour and Orwell Estuaries SPA.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
	No likely significant effects.
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries SPA
Are the appropriate statutory environmental bodies in agreement with this conclusion	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects'</i> .

Stour and Orwell Estuaries Ramsar

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European site under consideration	Stour and Orwell Estuaries Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Description of project		
<i>Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the European site by virtue of:</i>		
Size and scale (road type and probable traffic volume)	The A12 Chelmsford to A120 widening scheme (the proposed scheme) seeks to improve the A12 along a distance of approximately 24km between junction 19 (Boreham interchange) and junction 25 (Marks Tey interchange) in Essex. The existing A12 varies between two and three lane dual carriageway. Traffic levels would increase on the A12 between junctions 19 and 25, as well as on the sections of the A12 on either side of the proposed scheme. Traffic would reduce significantly on the two sections of the existing A12 that are bypassed as part of the proposed scheme (Rivenhall End and between junctions 24 and 25). Traffic flows are discussed in detail in the Transport Assessment [TR010060/APP/7.2] and the Combined Modelling and Appraisal Report [TR010060/APP/7.3]. Traffic flow data was used to define the ARN, where the annual average daily traffic flows change by 1,000 or more.	
Land-take	There would be no land-take from the European site or land adjacent to the European site.	
Distance from the European site or key features of the site (from edge of the project assessment corridor)	Stour and Orwell Estuaries Ramsar is 14.2km to the north-east of the proposed scheme (see Section 4.2 of this report).	
Resource requirements (from	The proposed scheme would require no resources from the European site or land adjacent to the European site.	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
the European site or from areas in proximity to the site, where of relevance to consideration of impacts)	
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	DMRB LA 105 Air Quality recommends that air quality impact assessments need only be undertaken for assessment of likely significant effects on designated sites within 200m of the ARN. The Stour and Orwell Estuaries Ramsar is >6km from the ARN. Stour and Orwell Estuaries Ramsar is not hydrologically connected to the proposed scheme.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavation would be required within or adjacent to any European site.
Transportation requirements	As no European sites are located within 200m of the ARN network, impacts associated with air quality change arising from transportation requirements would not arise.
Duration of construction, operation etc.	The anticipated start of construction would be in 2024. It is anticipated that the completed scheme would open in 2027. The duration of the proposed scheme would not exacerbate any effects as all effect pathways are considered to be negligible in scale.
Other	N/A.
Description of good practice measures required to avoid nuisance or to ensure wider legislative compliance²⁹	

²⁹ Where the proposed scheme adopts construction good practice or measures required to avoid nuisance or to ensure

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
<i>Describe any assumed (plainly established and uncontroversial) mitigation measures, including information on:</i>	
Nature of proposals	<p>No specific measures are required with respect to Stour and Orwell Estuaries Ramsar because there are no predicted impacts due to noise or emissions to air or water.</p> <p>The EMP prescribes appropriate working methodologies and requires adherence to good practice guidelines with respect to pollution prevention (air and water) and water management control measures. CIRIA's (2015) Environmental Good Practice on Site Guide will be used as the basis for standard good practice measures.</p>
Location	<p>No specific measures are required with respect to Stour and Orwell Estuaries Ramsar. Avoidance or alleviation measures contained within the EMP would be implemented throughout the proposed scheme with specific measures installed where required.</p> <p>Measures with respect to watercourse crossings would be restricted to construction and operational areas near watercourses.</p>
Evidence for effectiveness	<p>All measures within the EMP are based on construction good practice and on standard measures to avoid or reduce environmental impacts. These would draw on the professional experience of National Highways, the proposed scheme designers, and the contractors to provide the most effective practicable measures available at the time of construction. All construction good practice measures are standard within the industry as they have proven to be effective.</p>
Mechanism for delivery (legal conditions, restrictions or other)	<p>All measures set out in the proposed scheme's Environmental Statement are captured within the REAC (Appendix A of the first iteration EMP) [TR010060/APP/6.5]. Following the measures within the EMP would be a requirement of the DCO for the proposed scheme. Implementation of the EMP would be</p>

wider legislative compliance, these measures are reported as part of the proposed scheme description¹ and are considered in the assessment of likely significant effects (i.e. screening).

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
legally enforceable obligations)	monitored by National Highways, the contractor and the Environmental/Ecological Clerk of Works appointed to the proposed scheme. Parts of the proposed scheme would require consents from appropriate statutory agencies; adherence to particular working methods and practices would be a condition of such consents.
Characteristics of European site(s)	
<i>A brief description of the European site should be produced, including information on:</i>	
Name of European site and its EU code	Stour and Orwell Estuaries Ramsar UK11067 (JNCC, 2008g)
Location and distance of the European site from the proposed works	The Stour and Orwell Estuaries Ramsar is 14.2km north-east of the proposed scheme.
European site size	3,676.92ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p><i>Ramsar criterion 2</i></p> <p>Contains seven nationally scarce plants: stiff saltmarsh-grass <i>Puccinellia rupestris</i>; small cord-grass <i>Spartina maritima</i>; perennial glasswort <i>Sarcocornia perennis</i>; lax-flowered sea-lavender <i>Limonium humile</i>; and the eelgrasses <i>Zostera angustifolia</i>, <i>Z. marina</i> and <i>Z. noltei</i>.</p> <p>Contains five British Red Data Book invertebrates: the muscid fly <i>Phaonia fusca</i>; the horsefly <i>Haematopota grandis</i>; two spiders, <i>Arctosa fulvolineata</i> and <i>Baryphyma duffeyi</i>; and the Endangered swollen spire snail <i>Mercuria confusa</i>.</p> <p><i>Ramsar criterion 5</i></p> <p>Assemblages of international importance.</p> <p>Species with peak counts in winter:</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
	<ul style="list-style-type: none"> • 63,017 waterfowl (five-year peak mean 1998/99-2002/2003) <p><i>Ramsar criterion 6</i></p> <p>Species/populations occurring at levels of international importance.</p> <p>Qualifying species/populations (as identified at designation).</p> <p>Species with peak counts in spring/autumn:</p> <ul style="list-style-type: none"> • Common redshank <i>Tringa totanus totanus</i>, 2,588 individuals, representing an average of 2% of the population (five-year peak mean 1995/96-1999/2000) <p>Species with peak counts in winter:</p> <ul style="list-style-type: none"> • Dark-bellied brent goose <i>Branta bernicla bernicla</i>, 2,627 individuals, representing an average of 1.2% of the population (five-year peak mean 1995/96-1999/2000) • Northern pintail <i>Anas acuta</i> (north-western Europe), 741 individuals, representing an average of 1.2% of the population (five-year peak mean 1995/96-1999/2000) • Grey plover <i>Pluvialis squatarola</i> (eastern Atlantic/western Africa – wintering), 3,261 individuals, representing an average of 1.3% of the population (five-year peak mean 1995/96-1999/2000) • Red knot <i>Calidris canutus islandica</i> (western and southern Africa – wintering), 5,970 individuals, representing an average of 1.3% of the population (five-year peak mean 1995/96-1999/2000) • Dunlin <i>Calidris alpina alpina</i> (western Siberia/western Europe), 19,114 individuals, representing an average of 1.4% of the population (five-year peak mean 1995/96-1999/2000) • Black-tailed godwit <i>Limosa limosa islandica</i> (Iceland/western Europe), 2,559 individuals, representing an average of 7.3% of the population (five-year peak mean 1995/96-1999/2000) • Common redshank <i>Tringa totanus totanus</i>, 3,687 individuals, representing an average of 2.8% of the population (five-year peak mean 1995/96-1999/2000)

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	Erosion due to the exacerbation of natural coastal processes by fixed sea defences, port development and maintenance dredging.
European site conservation objectives – where these are readily available	<p>No specific information provided as part of the designation. Refer to conservation objective for Stour and Orwell Estuaries SPA, as follows:</p> <p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • the extent and distribution of the habitats of the qualifying features • the structure and function of the habitats of the qualifying features • the supporting processes on which the habitats of the qualifying features rely • the population of each of the qualifying features • the distribution of the qualifying features within the site
Assessment criteria	
<i>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.</i>	
<p>In-depth design and construction details are not currently available. However, reasonable assumptions have been made relating to the likely construction and operational activities and conditions. The screening assessment concentrated on those issues which may affect the conservation objectives of the European sites and their qualifying features:</p> <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals 	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
	<ul style="list-style-type: none"> • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime)
Initial assessment	
<p><i>The key characteristics of the site and the details of the European site should be considered in identifying potential impacts. Describe any likely changes to the site arising as a result of:</i></p>	
Reduction of habitat area	<p>There would be no land taken from the European site or from adjacent land.</p> <p>The Stour and Orwell Estuaries Ramsar is 14.2km from the proposed scheme.</p> <p>No hydrological pathways exist which could cause a reduction of habitat area.</p> <p>There would be no loss of wetland habitats that could be used by species that form part of the qualifying waterfowl assemblage.</p> <p>No likely significant effects.</p>
Disturbance to key species	<p>Species that form part of the assemblage of waterfowl that is a qualifying feature of Stour and Orwell Estuaries Ramsar were recorded primarily at Coleman's Reservoir and from the waterbodies near Hatfield Peverel and Little Braxted (Figure 5).</p> <p>None of the waterbodies would be directly affected by the proposed scheme. The road would be closer to Coleman's Reservoir than it is at present, but a 200m buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a 15-20m deep shelter belt of trees around the reservoir.</p> <p>The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period, and the distance between the proposed scheme and the designated site (14.2km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
	No likely significant effects.
Habitat or species fragmentation	<p>There would be no habitat fragmentation within the European site as a result of the proposed scheme.</p> <p>Habitat used by mobile bird qualifying features could conceivably be fragmented if birds with functional links to Stour and Orwell Estuaries Ramsar make use of areas within the zone of influence of the proposed scheme.</p> <p>However, the existing A12 is a current source of habitat fragmentation in this area; online widening and the adjacent offline segments would create a negligible increase in habitat fragmentation in this area. Any effects of fragmentation would be negligible given the availability of suitable alternative foraging habitat within the local landscape and the mobility of the species concerned.</p> <p>Given the mobility of the bird species, the construction and operational phases are unlikely to fragment populations of Ramsar qualifying species that use habitats near the proposed scheme.</p> <p>No likely significant effects.</p>
Reduction in species density/ loss of individuals	<p>During the construction and operational phases, there is potential for low-flying birds to be injured or killed due to traffic collisions. However, there is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway.</p> <p>No likely significant effects.</p>
Changes in key indicators of conservation value (hydrology and air quality)	<p>Stour and Orwell Estuaries Ramsar is 14.2km away from the proposed scheme and >6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone.</p>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
	<p>There is no hydrological connectivity between the proposed scheme and Stour and Orwell Estuaries Ramsar.</p> <p>No likely significant effects.</p>
Climate change	<p>Chapter 15: Climate of the Environmental Statement [TR010060/APP/6.1] concludes that estimated changes in greenhouse gas emissions as a result of the proposed scheme would be negligible compared to relevant UK carbon budgets. On this basis, operational phase greenhouse gas emissions are considered unlikely to have a material impact on the ability of the UK Government to meet its carbon reduction targets and are therefore considered to be not significant, in line with DMRB LA 114 (Highways England, 2021) and the National Networks National Policy Statement (Department for Transport, 2014). Furthermore, it is not possible to attribute a specific local emission of carbon to effects on a local receptor.</p> <p>No likely significant effects.</p>
<i>Describe any likely impacts on the European site as a whole in terms of:</i>	
Interference with the key relationships that define the structure of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the structure of the European site.</p> <p>No likely significant effects.</p>
Interference with key relationships that define the function of the site	<p>No effect pathways have been identified that would have anything other than absent or negligible effects on the European site or functionally linked habitats for mobile species. There would therefore be no interference with the function of the European site.</p> <p>No likely significant effects.</p>
<i>Indicate the significance as a result of the identification of impacts set out above in terms of:</i>	

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
Reduction of habitat area	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Disturbance to key species	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Habitat or species fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Loss	None. No or negligible loss of habitat, species or connectivity.
Fragmentation	None. Absence or negligible effect pathways that could lead to fragmentation.
Disruption	None. Absence or negligible effect pathways that could disrupt achievement of conservation objectives.
Disturbance	None. Absence of effect on the European site and negligible effects on functionally linked habitats.
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	None. No hydrological connectivity.
<i>Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.</i>	
None of the anticipated elements of the proposed scheme, or combination of elements, are expected to lead to a likely significant effect on the European site.	
Outcome of screening stage	Not likely to be significant effects.
Are the appropriate statutory environmental	A letter from Natural England (dated 19 October 2021) states that: <i>'Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects</i>

Project Name	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
European site under consideration	Stour and Orwell Estuaries Ramsar
bodies in agreement with this conclusion	<i>on any European sites are anticipated, when considered alone or in-combination with other plans or projects'.</i>

Appendix C Planning Inspectorate screening matrices

C.1 Potential effects

C.1.1 Potential effects upon the European sites which are considered within the submitted HRA report are provided in Table C.1.

Table C.1 Effects considered within the screening matrices

European designated site	Effects described in submission information	Presented in screening matrices as
Abberton Reservoir Ramsar Abberton Reservoir SPA Alde-Ore Estuary Ramsar Alde-Ore Estuary SPA	<ul style="list-style-type: none"> • Pollution via emissions to air • Pollution via surface water (due to discharge or flooding) 	Air/water
Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar Blackwater Estuary (Mid-Essex Coast Phase 4) SPA	<ul style="list-style-type: none"> • Habitat loss • Habitat fragmentation 	Habitat loss
Colne Estuary (Mid-Essex Coast Phase 2) Ramsar Colne Estuary (Mid-Essex Coast Phase 2) SPA Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar	<ul style="list-style-type: none"> • Disturbance from noise • Visual disturbance • Disturbance from lighting 	Disturbance
Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA	<ul style="list-style-type: none"> • Reduction in species density/ loss of individuals 	Species loss/mortality
Dengie (Mid-Essex Coast Phase 1) Ramsar Dengie (Mid-Essex Coast Phase 1) SPA Essex Estuaries SAC Outer Thames Estuary SPA Stour and Orwell Estuaries Ramsar Stour and Orwell Estuaries SPA	<ul style="list-style-type: none"> • Appraisal of other projects and plans 	In-combination effects

C.1.2 The European sites included within the screening assessment are:

- Abberton Reservoir Ramsar
- Abberton Reservoir SPA
- Alde-Ore Estuary Ramsar
- Alde-Ore Estuary SPA
- Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar

- Blackwater Estuary (Mid-Essex Coast Phase 4) SPA
- Colne Estuary (Mid-Essex Coast Phase 2) Ramsar
- Colne Estuary (Mid-Essex Coast Phase 2) SPA
- Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar
- Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA
- Dengie (Mid-Essex Coast Phase 1) Ramsar
- Dengie (Mid-Essex Coast Phase 1) SPA
- Essex Estuaries SAC
- Outer Thames Estuary SPA
- Stour and Orwell Estuaries Ramsar
- Stour and Orwell Estuaries SPA

C.1.3 Evidence for, or against, likely significant effects on the European sites and its qualifying features is detailed within the footnotes to the screening matrices below.

Matrix key:

✓ = Likely significant effect cannot be excluded

X = Likely significant effect can be excluded

C = Construction

O = Operation

D = Decommissioning

C.1.4 Decommissioning is not considered within the assessment for the proposed scheme as highway schemes are designed to have a material lifespan of between 20 and 40 years before major maintenance and upgrading is required. It is considered highly unlikely that the proposed scheme would be decommissioned after this time, as the road is likely to have become an integral part of the infrastructure in the area. Decommissioning is therefore not an integral planned element of the proposed scheme and therefore not subject to HRA.

C.2 HRA screening matrices

Abberton Reservoir Ramsar

Name of European site and designation: Abberton Reservoir Ramsar UK11001															
Distance to NSIP: 5.4km															
European site features	Likely effects of NSIP														
	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 5 Assemblages of international importance during winter period: 23,787 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ramsar criterion 6: species/ populations occurring at levels of international importance:															
Gadwall <i>Anas strepera strepera</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Northern shoveler <i>Anas clypeata</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Eurasian wigeon <i>Mareca penelope</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Mute swan <i>Cygnus olor</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common pochard <i>Aythya ferina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is approx. 5.4km from the nearest extent of the proposed scheme. No potential for direct habitat loss. The proposed scheme is not likely to result in the loss of wetland habitats that could be used by qualifying feature or in additional habitat fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 5.4km from the nearest extent of the proposed scheme. Qualifying features potentially within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is approx. 5.4km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Abberton Reservoir SPA

Name of European site and designation: Abberton Reservoir SPA UK9009141															
Distance to NSIP: 5.4km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of Development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Article 4.2 Qualification (79/409/EEC): during the breeding and wintering seasons the area regularly supports specified species:															
Great cormorant <i>Phalacrocorax carbo</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Northern shoveler <i>Anas clypeata</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Eurasian teal <i>Anas crecca</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Eurasian wigeon <i>Mareca penelope</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Gadwall <i>Anas strepera</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common pochard <i>Aythya ferina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Abberton Reservoir SPA UK9009141															
Distance to NSIP: 5.4km															
European site features	Likely effects of NSIP														
	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of Development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Tufted duck <i>Aythya fuligula</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common goldeneye <i>Bucephala clangula</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Mute swan <i>Cygnus olor</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Eurasian coot <i>Fulica atra</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Great-crested grebe <i>Podiceps cristatus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 Qualification (79/409/EEC): an internationally important assemblage of birds over winter: 39,763 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is approx. 5.4km from the nearest extent of the proposed scheme. No potential for direct habitat loss. The proposed scheme is not likely to result in the loss of wetland habitats that could be used by qualifying features or in additional habitat fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 5.4km from the nearest extent of the proposed scheme. Qualifying features potentially within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18)
e	European site is approx. 5.4km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Alde-Ore Ramsar

Name of European site and designation: Alde-Ore Ramsar UK11002															
Distance to NSIP: 42.8km															
European site features		Likely effects of NSIP													
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:															
Ramsar criterion 2: nationally scarce plant species and British Red Data Book invertebrates.	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 3: notable assemblage of breeding and wintering wetland birds.	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 6: species/populations occurring at levels of international importance:															
Lesser black-backed gull <i>Larus fuscus graellsii</i> ,	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Avocet <i>Recurvirostra avosetta</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common redshank <i>Tringa totanus totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Mute swan <i>Cygnus olor</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is approx. 42.8km from the nearest extent of the proposed scheme. No potential for direct habitat loss. Lesser black-backed gull recorded in small numbers on arable land in the study area. It is considered that the proposed scheme would result in a negligible reduction in habitat area or fragmentation (paragraph 5.2.1 and 5.2.16).
c	European site is approx. 42.8km from the nearest extent of the proposed scheme. Qualifying features potentially within the proposed scheme study area likely to be habituated to visual and acoustic stimuli associated with an operating dual carriageway and be able to move away from sources of disturbance into adjacent undisturbed habitat without significant energetic burden (paragraph 5.2.11).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is approx. 42.8km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Alde-Ore SPA

Name of European site and designation: Alde-Ore SPA UK9009112															
Distance to NSIP: 42.8km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Article 4.1 of the Directive (79/409/EEC): the site supports Annex I species during the breeding season and over winter.															
Avocet <i>Recurvirostra avosetta</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Little tern <i>Sternula albifrons</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Marsh harrier <i>Circus aeruginosus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Sandwich tern <i>Thalasseussandvicensis</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ruff <i>Philomachus pugnax</i> ,	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): by supporting populations of European importance of the following migratory species:															
Lesser black-backed gull <i>Larus fuscus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Alde-Ore SPA UK9009112															
Distance to NSIP: 42.8km															
European site features	Likely effects of NSIP														
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Redshank <i>Tringa totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is approx. 42.8km from the nearest extent of the proposed scheme. No potential for direct habitat loss. Lesser black-backed gull recorded in small numbers on arable land in the study area. It is considered that the proposed scheme would result in a negligible reduction in habitat area or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 42.8km from the nearest extent of the proposed scheme. Qualifying features potentially within the proposed scheme study area likely to be habituated to visual and acoustic stimuli associated with an operating A road and be able to move away from sources of disturbance into adjacent undisturbed habitat without significant energetic burden (paragraph 5.2.11).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is approx. 42.8km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar

Name of European site and designation: Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar UK11007															
Distance to NSIP: 6.0km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 1: saltmarsh habitat	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 2: Red Data Book invertebrate species:															
Water beetle <i>Paracymus aeneus</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Damselfly <i>Lestes dryas</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Flies <i>Aedes flavescens</i> , <i>Erioptera bivittata</i> , <i>Hybomitra expollicata</i> , <i>Campsicemus magius</i> and <i>Myopites eximia</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Spiders <i>Heliophanus auratus</i> , <i>Trichopterna cito</i> and <i>Euophrys</i> sp.	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar UK11007															
Distance to NSIP: 6.0km															
European site features		Likely effects of NSIP													
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Beetles <i>Baris scolopacea</i> , <i>Philonthus punctus</i> , <i>Graptodytes bilineatus</i> and <i>Malachius vulneratus</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Moths <i>Idaea ochrata</i> and <i>Malacosoma castrensis</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 3: saltmarsh plant communities	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 5: assemblages of international importance in winter. Species with peak counts in winter: 105,061 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
Ramsar criterion 6: species/ populations occurring at levels of international importance:															

Name of European site and designation: Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar UK11007															
Distance to NSIP: 6.0km															
European site features		Likely effects of NSIP													
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:															
Dark-bellied brent goose <i>Branta bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
Grey plover <i>Pluvialis squatarola</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
Dunlin <i>Calidris alpina alpina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
Black-tailed godwit <i>Limosa limosa islandica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
Common shelduck <i>Tadorna tadorna</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
European golden plover <i>Pluvialis apricaria apricaria</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	
Common redshank <i>Tringa totanus totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d	X ^d	X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.19). Due to the size of the Ramsar site (4,395ha) and the distance downstream (10.7km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the habitats or species of the Ramsar and no impacts on qualifying features (paragraph 5.2.23).
b	European site is 6.0km from the nearest extent of the proposed scheme. No potential for direct habitat loss. The proposed scheme is not likely to result in the loss of wetland habitats that could be used by qualifying bird species or in additional habitat fragmentation (paragraph 5.2.16).
c	European site is approx. 6.0km from the nearest extent of the proposed scheme. Qualifying bird species potentially within the proposed scheme study area most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 6.0km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Blackwater Estuary (Mid-Essex Coast Phase 4) SPA

Name of European site and designation: Blackwater Estuary (Mid-Essex Coast Phase 4) SPA UK9009245															
Distance to NSIP: 6.0km															
European site features	Likely effects of NSIP														
	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:															
Article 4.1 of the Directive (79/409/EEC): the site supports Annex I species during breeding and winter seasons:															
Little tern <i>Sternula albifrons</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Hen harrier <i>Circus cyaneus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): support populations of European importance of the migratory species:															
Pochard <i>Aythya ferina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ringed plover <i>Charadrius hiaticula</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Black-tailed godwit <i>Limosa limosa islandica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Dark-bellied brent goose <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Blackwater Estuary (Mid-Essex Coast Phase 4) SPA UK9009245															
Distance to NSIP: 6.0km															
European site features	Likely effects of NSIP														
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Dunlin <i>Calidris alpina alpina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Grey plover <i>Pluvialis squatarola</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ringed plover <i>Charadrius hiaticula</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): regularly supports 109,964 individual waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.19). Due to the size of the SPA (4,403ha) and the distance downstream (10.7km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the supporting habitats of the SPA and no impacts on qualifying features (paragraph 5.2.23).
b	European site is 6.0km from the nearest extent of the proposed scheme. No potential for direct habitat loss. The proposed scheme is not likely to result in the loss of wetland habitats that could be used by qualifying bird species or in additional habitat fragmentation (paragraph 5.2.16).
c	European site is approx. 6.0km from the nearest extent of the proposed scheme. Qualifying bird species potentially within the proposed scheme study area most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 6.0km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Colne Estuary (Mid-Essex Coast Phase 2) Ramsar

Name of European site and designation: Colne Estuary (Mid-Essex Coast Phase 2) Ramsar UK11015															
Distance to NSIP: 9.7km															
European site features	Likely effects of NSIP														
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 1: the site is important due to the extent and diversity of saltmarsh present	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 2: the site supports 12 species of nationally scarce plants and at least 38 British Red Data Book invertebrate species	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 3: this site supports a full and representative sequences of saltmarsh plant communities	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 5: assemblages of international importance in winter. Species with peak counts in winter: 32,041 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ramsar criterion 6: species/populations occurring at levels of international importance:															
Dark-bellied brent goose <i>Branta bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common redshank <i>Tringa totanus totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Black-tailed godwit <i>Limosa limosa</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.19). Due to the size of the Ramsar site (2,701ha) and the distance downstream (16km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the habitats or species of the Ramsar (paragraph 5.2.23).
b	European site is 9.7km from the nearest extent of the proposed scheme. No potential for direct habitat loss. The proposed scheme is not likely to result in the loss of wetland habitats that could be used by qualifying bird species or in additional habitat fragmentation (paragraph 5.2.16).
c	European site is approx. 9.7km from the nearest extent of the proposed scheme. Qualifying bird species potentially within the proposed scheme study area most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 9.7km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Colne Estuary (Mid-Essex Coast Phase 2) SPA

Name of European site and designation: Colne Estuary (Mid-Essex Coast Phase 2) SPA UK9009243															
Distance to NSIP: 9.7km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Article 4.1 Qualification (79/409/EEC): the site supports Annex I species during the breeding season and over winter:															
Little tern <i>Sternula albifrons</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Hen harrier <i>Circus cyaneus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 Qualification (79/409/EEC): during the breeding and wintering season, the area regularly supports:															
Common pochard <i>Aythya ferina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common ringed plover <i>Charadrius hiaticula</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Colne Estuary (Mid-Essex Coast Phase 2) SPA UK9009243															
Distance to NSIP: 9.7km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Dark-bellied brent geese <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common redshank <i>Tringa totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 Qualification (79/409/EEC): the area regularly supports an internationally important assemblage of birds over winter: 38,600 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.19). Due to the size of the SPA (2,720ha) and the distance downstream (16km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the supporting habitats of the SPA and no impacts on qualifying features (paragraph 5.2.23).
b	European site is 9.7km from the nearest extent of the proposed scheme. No potential for direct habitat loss. The proposed scheme is not likely to result in the loss of wetland habitats that could be used by qualifying bird species or in additional habitat fragmentation (paragraph 5.2.16).
c	European site is approx. 9.7km from the nearest extent of the proposed scheme. Qualifying bird species potentially within the proposed scheme study area most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 9.7km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar

Name of European site and designation: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar UK11058															
Distance to NSIP: 11.7km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 2: supports an appreciable assemblage of rare, vulnerable or endangered species or subspecies of plant and animal:															
Slender hare's ear <i>Bupleurum tenuissimum</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Divided sedge <i>Carex divisa</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Sea barley <i>Hordeum marinum</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Golden-samphire <i>Inula crithmoides</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Lax-flowered sea-lavender <i>Limonium humile</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar UK11058															
Distance to NSIP: 11.7km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Curved hard-grass <i>Parapholis incurva</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Borrer's saltmarsh grass <i>Puccinellia fasciculata</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Stiff saltmarsh grass <i>Puccinellia rupestris</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Spiral tasselweed <i>Ruppia cirrhosa</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
One-flowered glasswort <i>Salicornia pusilla</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Small cord-grass <i>Spartina maritima</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Shrubby seablite <i>Suaeda vera</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Sea clover <i>Trifolium squamosum</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar UK11058															
Distance to NSIP: 11.7km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Emerald damselfly <i>Lestes dryas</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Shorefly <i>Parydroptera discomyzina</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Soldier fly <i>Stratiomys singularior</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Large horsefly <i>Hybomitra expollicata</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Beetles <i>Graptodytes bilineatus</i> and <i>Malachius vulneratus</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ground lackey moth <i>Malacosoma castrensis</i> and <i>Eucosoma catoprana</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar UK11058															
Distance to NSIP: 11.7km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 5: assemblages of international importance. Species with peak counts in winter: 16,970 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ramsar criterion 6: species/populations occurring at levels of international importance:															
Dark-bellied brent goose <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is 11.7km from the nearest extent of the proposed scheme. No potential for direct habitat loss. Dark-bellied brent geese not present in the survey area – no habitat loss or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 11.7km from the nearest extent of the proposed scheme. Bird species that are part of the qualifying assemblage that could occur within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 11.7km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA

Name of European site and designation: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA UK9009244															
Distance to NSIP: 11.7km															
European site features	Likely effects of NSIP														
	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Article 4.2 of the Directive (79/409/EEC): over winter the area regularly supports Annex I species															
Dark-bellied brent goose <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): over winter the site supports an internationally important assemblage of birds: 27,021 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is 11.7km from the nearest extent of the proposed scheme. No potential for direct habitat loss. Dark-bellied brent geese not present in the survey area – no habitat loss or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 11.7km from the nearest extent of the proposed scheme. Bird species that are part of the qualifying assemblage that could occur within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.12).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.13).
e	European site is 11.7km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Dengie (Mid-Essex Coast Phase 1) Ramsar

Name of European site and designation: Dengie (Mid-Essex Coast Phase 1) Ramsar UK11018															
Distance to NSIP: 14.1km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 1: saltmarsh habitat	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 2: supports rare plant and animal species:															
Sea kale <i>Crambe maritima</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Sea barley <i>Hordeum marinum</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Golden-samphire <i>Inula crithmoides</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Lax-flowered sea-lavender <i>Limonium humile</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Dengie (Mid-Essex Coast Phase 1) Ramsar UK11018															
Distance to NSIP: 14.1km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Glassworts <i>Sarcocornia perennis</i> and <i>Salicornia pusilla</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Small cord-grass <i>Spartina maritima</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Shrubby sea-blite <i>Suaeda vera</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Eelgrasses <i>Zostera angustifolia</i> , <i>Z. marina</i> and <i>Z. noltei</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Weevil <i>Baris scolopacea</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Horsefly <i>Atylotus latistriatus</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Jumping spider <i>Euophrys browningi</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Dengie (Mid-Essex Coast Phase 1) Ramsar UK11018															
Distance to NSIP: 14.1km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 3: saltmarsh plant communities	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Ramsar criterion 5: assemblages of international importance in winter. Species with peak counts in winter: 43,828 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Ramsar criterion 6: species/populations occurring at levels of international importance in winter:															
Dark-bellied brent goose <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Grey plover <i>Pluvialis squatarola</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Dengie (Mid-Essex Coast Phase 1) Ramsar UK11018															
Distance to NSIP: 14.1km															
European site features	Likely effects of NSIP														
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Red knot <i>Calidris canutus islandica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Bar-tailed godwit <i>Limosa lapponica lapponica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is 14.1km from the nearest extent of the proposed scheme. No potential for direct habitat loss. None of the criterion 6 species were recorded during surveys. Therefore, there is no evidence that habitat in the study area supports these species and no potential for habitat loss or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 14.1km from the nearest extent of the proposed scheme. Bird species that are part of the qualifying assemblage that could occur within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 14.1km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Dengie (Mid-Essex Coast Phase 1) SPA

Name of European site and designation: Dengie (Mid-Essex Coast Phase 1) SPA UK9009242															
Distance to NSIP: 14.1km															
European site features	Likely effects of NSIP														
	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Article 4.1 of the Directive (79/409/EEC): the site supports specified species during winter:															
Hen harrier <i>Circus cyaneus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): over winter the area regularly supports specified species:															
Dark-bellied brent geese <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Red knot <i>Calidris canutus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Dengie (Mid-Essex Coast Phase 1) SPA UK9009242															
Distance to NSIP: 14.1km															
European site features		Likely effects of NSIP													
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Grey plover <i>Pluvialis squatarola</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): over winter regularly supports an internationally important assemblage of birds: 31,454 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is approx. 14.1km from the nearest extent of the proposed scheme. No potential for direct habitat loss. None of the qualifying species were recorded during surveys. Therefore, there is no evidence that habitat in the study area supports these species and no potential for habitat loss or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 14.1km from the nearest extent of the proposed scheme. Bird species that are part of the qualifying assemblage that could occur within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is approx. 14.1km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Essex Estuaries SAC

Name of European site and designation: Essex Estuaries SAC UK0013690															
Distance to NSIP: 6.0km															
European site features				Likely effects of NSIP											
Effect	Air/water			Habitat loss			Disturbance			Species mortality/loss			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:															
Annex I habitats:															
Estuaries	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	
Mudflats and sandflats	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	
<i>Salicornia</i> and other annuals colonizing mud and sand	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	
<i>Spartina</i> swards (<i>Spartinion maritimae</i>)	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	
Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	
Sandbanks	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	
Perennial vegetation of stony banks	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	

Name of European site and designation: Essex Estuaries SAC UK0013690															
Distance to NSIP: 6.0km															
European site features	Likely effects of NSIP														
Effect	Air/water			Habitat loss			Disturbance			Species mortality/loss			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Shifting dunes along the shoreline with <i>Ammophila arenaria</i>	X ^a	X ^a		X ^b	X ^b								X ^c	X ^c	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.19). Due to the size of the SAC (46,110ha), its composite nature (composed of more than one estuary and overlapping with other designations) and the shortest distance downstream (10.7km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the qualifying features of the SAC (paragraph 5.2.23).
b	European site is 6.0km from the nearest extent of the proposed scheme. No potential for direct habitat loss (paragraph 5.2.1).
c	European site is 6.0km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Outer Thames Estuary SPA

Name of European site and designation: Outer Thames Estuary SPA UK9020309															
Distance to NSIP: 16.3km															
European site features	Likely effects of NSIP														
	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Effect	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Article 4.1 of the Directive (79/409/EEC): the site supports Annex I species during the breeding season and over winter:															
Little tern <i>Sternula albifrons</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common tern <i>Sterna hirundo</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Red throated diver <i>Gavia stellata</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). The Outer Thames Estuary SPA is a marine SPA that is not hydrologically connected to the proposed scheme (paragraph 5.2.21).
b	European site is a marine SPA. No potential for habitat loss.
c	SPA is designated for marine species and therefore there is no impact pathway.
d	SPA is designated for marine species and therefore there is no impact pathway.
e	SPA is designated for marine species and therefore there is no impact pathway.

Stour and Orwell Estuaries Ramsar

Name of European site and designation: Stour and Orwell Estuaries Ramsar UK11067															
Distance to NSIP: 14.2km															
European site features		Likely effects of NSIP													
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Ramsar criterion 2: contains seven nationally scarce plants and five British Red Data Book invertebrates:															
Stiff saltmarsh-grass <i>Puccinellia rupestris</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Small cord-grass <i>Spartina maritima</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Perennial glasswort <i>Sarcocornia perennis</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Lax-flowered sea-lavender <i>Limonium humile</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Eelgrasses <i>Zostera angustifolia</i> , <i>Z. marina</i> and <i>Z. noltei</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	
Muscid fly <i>Phaonia fusca</i>	X ^a	X ^a		X ^b	X ^b								X ^e	X ^e	

Name of European site and designation: Stour and Orwell Estuaries Ramsar UK11067																
Distance to NSIP: 14.2km																
European site features		Likely effects of NSIP														
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects			
	Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Horsefly <i>Haematopota grandis</i>	X ^a	X ^a		X ^b	X ^b									X ^e	X ^e	
Spiders <i>Arctosa fulvolineata</i> and <i>Baryphyma duffeyi</i>	X ^a	X ^a		X ^b	X ^b									X ^e	X ^e	
Swollen spire snail <i>Mercuria confusa</i>	X ^a	X ^a		X ^b	X ^b									X ^e	X ^e	
Ramsar criterion 5: assemblages of international importance in winter: 63,017 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d			X ^e	X ^e	
Ramsar criterion 6: species/populations occurring at levels of international importance:																
Common redshank <i>Tringa totanus totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d			X ^e	X ^e	
Dark-bellied brent goose <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d			X ^e	X ^e	

Name of European site and designation: Stour and Orwell Estuaries Ramsar UK11067															
Distance to NSIP: 14.2km															
European site features		Likely effects of NSIP													
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O
Northern pintail <i>Anas acuta</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Grey plover <i>Pluvialis squatarola</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Red knot <i>Calidris canutus islandica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Dunlin <i>Calidris alpina alpina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Black-tailed godwit <i>Limosa limosa islandica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Common redshank <i>Tringa totanus totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
a	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
b	European site is 14.2km from the nearest extent of the proposed scheme. No potential for direct habitat loss. None of the criterion 6 species were recorded during surveys. Therefore, there is no evidence that habitat in the study area supports these species and no potential for habitat loss or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
c	European site is approx. 14.2km from the nearest extent of the proposed scheme. Bird species that are part of the qualifying assemblage that could occur within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 14.2km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Stour and Orwell Estuaries SPA

Name of European site and designation: Stour and Orwell Estuaries SPA UK9009121															
Distance to NSIP: 14.2km															
European site features				Likely effects of NSIP											
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Stage of development:															
Article 4.1 of the Directive 79/409/EEC): during the breeding the site supports Annex I species:															
Avocet <i>Recurvirostra avosetta</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): over winter the area regularly supports specified bird species:															
Northern pintail <i>Anas acuta</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Dark-bellied brent geese <i>Branta bernicla bernicla</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Dunlin <i>Calidris alpina alpina</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Red knot <i>Calidris canutus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Black-tailed godwit <i>Limosa limosa islandica</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Grey plover <i>Pluvialis squatarola</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Name of European site and designation: Stour and Orwell Estuaries SPA UK9009121															
Distance to NSIP: 14.2km															
European site features			Likely effects of NSIP												
Effect	Air/water			Habitat loss			Disturbance			Species loss/mortality			In combination effects		
Stage of development:	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Common redshank <i>Tringa totanus</i>	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	
Article 4.2 of the Directive (79/409/EEC): the site supports an internationally important assemblage of birds over winter: 63,017 waterfowl	X ^a	X ^a		X ^b	X ^b		X ^c	X ^c		X ^d	X ^d		X ^e	X ^e	

Evidence supporting conclusions

Reference	Evidence
A	European site is more than 200m from the affected road network which is the distance at which effects of air pollution are considered to impact air quality (paragraph 5.2.20). Site has no hydrological connectivity to the proposed scheme (paragraph 5.2.21).
B	European site is 14.2km from the nearest extent of the proposed scheme. No potential for direct habitat loss. None of the qualifying species were recorded during surveys. Therefore, there is no evidence that habitat in the study area supports these species and no potential for habitat loss or fragmentation (paragraph 5.2.1 and paragraph 5.2.16).
C	European site is approx. 14.2km from the nearest extent of the proposed scheme. Bird species that are part of the qualifying assemblage that could occur within the proposed scheme study area are most likely to be recorded on Coleman's Reservoir and other waterbodies. The road would be closer to Coleman's Reservoir than it is at present, but a buffer of terrestrial habitats would persist between the proposed scheme and the reservoir, including a shelter belt of trees around the reservoir (paragraph 5.2.13).
d	There is already a highways network within the wider landscape, so individuals would either be avoiding the area or be habituated to the presence of highway infrastructure and adapted to avoid collisions. Any increase in traffic collisions would therefore be negligible in the context of the existing highway (paragraph 5.2.18).
e	European site is 14.2km from the nearest extent of the proposed scheme. Effects are either absent or negligible and so could not result in any significant contribution to in-combination effects with other plans and projects (Section 6 of this report).

Appendix D Finding of No Significant Effects Report Matrices (Screening)

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European Site under consideration	Abberton Reservoir SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Name and location of European Site: Abberton Reservoir SPA, Essex. 5.4km to the south-east of proposed scheme.		
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.		
Is the project directly connected with or necessary to the management of the site (provide details)? No		
The assessment of significance of effects		
Describe how the project (alone or in combination) is likely to affect the European Site. Impacts considered in screening:		
<ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
Explain why these effects are not considered significant.		
<ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • Disturbance of birds using Coleman's Reservoir was considered, but the regular interchange of birds between the reservoir and the SPA network is very unlikely. Consequently, the habitats affected by the proposed scheme are not functionally linked to the SPA. 		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
	<ul style="list-style-type: none"> Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. Emissions to air (change in air quality) – Abberton Reservoir SPA is 5.4km away from the proposed scheme and approx. 2.6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. There is no hydrological connectivity between the proposed scheme and Abberton Reservoir SPA. 		
	List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk		
	Response to consultation. A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.		
	Data collected to carry out the assessment		
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Abberton Reservoir Ramsar		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
	Name and location of European Site: Abberton Reservoir Ramsar, Essex. 5.4km to the south-east of proposed scheme.		
	Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.			
Is the project directly connected with or necessary to the management of the site (provide details)? No			
The assessment of significance of effects			
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening:			
<ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 			
Explain why these effects are not considered significant.			
<ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • Disturbance of birds using Coleman's Reservoir was considered, but the regular interchange of birds between the reservoir and the Ramsar network is very unlikely. Consequently, the habitats affected by the proposed scheme are not functionally linked to the Ramsar. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • Emissions to air (change in air quality) – Abberton Reservoir Ramsar is 5.4km away from the proposed scheme and approx. 2.6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Abberton Reservoir Ramsar. 			
List of agencies consulted: provide contact name and telephone or e-mail address.			
Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.	
Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European Site under consideration	Alde-Ore Estuary SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Name and location of European Site: The Alde-Ore Estuary SPA is 42.8km to the north-east of proposed scheme.		
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.		
Is the project directly connected with or necessary to the management of the site (provide details)? No		
The assessment of significance of effects		
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening:		
<ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
Explain why these effects are not considered significant.		
<ul style="list-style-type: none"> • No habitat loss or modification. 		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
<ul style="list-style-type: none"> No habitat fragmentation. During construction, the qualifying species that could potentially be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances. It is considered that the proposed scheme would therefore result in a negligible disturbance of mobile qualifying species outside the SPA. Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. The Alde-Ore Estuary SPA is 42.8km away from the proposed scheme and >35km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. There is no hydrological connectivity between the proposed scheme and Alde-Ore Estuary SPA. 			
List of agencies consulted: provide contact name and telephone or e-mail address.			
Natural England. Anna Oliveri. [REDACTED]@naturalengland.org.uk			
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		
Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Alde-Ore Estuary Ramsar		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
Name and location of European Site: The Alde-Ore Estuary Ramsar is 42.8km to the north-east of proposed scheme.	
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.	
Is the project directly connected with or necessary to the management of the site (provide details)? No	
The assessment of significance of effects	
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • During construction, the qualifying species that could potentially be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances. It is considered that the proposed scheme would therefore result in a negligible disturbance of mobile qualifying species outside the Ramsar. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. 	

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
<ul style="list-style-type: none"> The Alde-Ore Estuary Ramsar is 42.8km away from the proposed scheme and >35km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. There is no hydrological connectivity between the proposed scheme and Alde-Ore Estuary Ramsar. 			
List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation. A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) SPA		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: The Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is 6.0km to the south-east of the proposed scheme.			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.	
Is the project directly connected with or necessary to the management of the site (provide details)? No	
The assessment of significance of effects	
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The low numbers of pochard recorded and the distance between Coleman's Reservoir and the designated site (approx. 8.4km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • The Blackwater Estuary (Mid-Essex Coast Phase 4) SPA is 6.0km away from the proposed scheme and >800m away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • The closest watercourse crossing is approximately 10.7km upstream from the SPA. Given the size of the estuary (4,403ha) and the distance downstream, any pollution incidents that may occur (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats which are foraging habitats of the SPA qualifying features. 	
List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk	
Response to consultation.	

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: The Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is 6.0km to the south-east of proposed scheme.			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.			
Is the project directly connected with or necessary to the management of the site (provide details)? No			
The assessment of significance of effects			
Describe how the project (alone or in combination) is likely to affect the European Site.			
Impacts considered in screening:			
<ul style="list-style-type: none"> reduction in habitat area (habitat loss, modification) 			

Project name:		A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
<ul style="list-style-type: none"> • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 			
<p>Explain why these effects are not considered significant.</p> <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • During construction, individual birds that could be present within the zone of influence of significant disturbance effects would be able to move away from sources of disturbance into adjacent undisturbed habitat, if needed. Any such avoidance behaviour is considered to have a negligible energetic burden (and thus no adverse effect to an individual bird's physical condition) given the propensity of these species to migrate or forage across large distances. It is considered that the proposed scheme would therefore result in a negligible disturbance of mobile qualifying species outside the Ramsar. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • The Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar is 6.0km away from the proposed scheme and >800m away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • The closest watercourse crossing is approximately 10.7km upstream from Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar. Given the size of the estuary (4,395ha) and the distance downstream, any pollution incidents that may occur (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats for which the Ramsar is designated or which are foraging habitats of the Ramsar bird features. 			
<p>List of agencies consulted: provide contact name and telephone or e-mail address.</p> <p>Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk</p>			
<p>Response to consultation.</p> <p>A letter from Natural England (dated 19 October 2021) states that: '<i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i>'.</p>			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
			assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) SPA		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: The Colne Estuary (Mid-Essex Coast Phase 2) SPA is 9.7km to the east of proposed scheme.			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.			
Is the project directly connected with or necessary to the management of the site (provide details)? No			
The assessment of significance of effects			
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening:			
<ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
Explain why these effects are not considered significant.			
<ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The low numbers of pochard recorded and the distance between Coleman's Reservoir and the designated site (approx. 16.5km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • The Colne Estuary (Mid-Essex Coast Phase 2) SPA is 9.7km away from the proposed scheme and >5km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • The closest watercourse crossing is approximately 16km upstream from Colne Estuary (Mid-Essex Coast Phase 2) SPA. Given the size of the estuary (2,720ha) and the distance downstream, any pollution incidents that may occur (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats which are foraging habitats of the SPA qualifying features. 			
List of agencies consulted: provide contact name and telephone or e-mail address.			
Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European Site under consideration	Colne Estuary (Mid-Essex Coast Phase 2) Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Name and location of European Site: The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is 9.7km to the east of proposed scheme.		
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.		
Is the project directly connected with or necessary to the management of the site (provide details)? No		
The assessment of significance of effects		
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The low numbers of birds recorded and the distance between Coleman's Reservoir and the designated site (approx. 16.5km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar 		

Project name:		A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
<ul style="list-style-type: none"> • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • The Colne Estuary (Mid-Essex Coast Phase 2) Ramsar is 9.7km away from the proposed scheme and >5km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • The closest watercourse crossing is approximately 16km upstream from Colne Estuary (Mid-Essex Coast Phase 2) Ramsar. Given the size of the estuary (2,720ha) and the distance downstream, any pollution incidents that may occur (even in the absence of standard measures) would be diluted to such an extent that there are no likely effects on any of the habitats for which the Ramsar is designated or which are foraging habitats of the Ramsar bird features. Furthermore, during construction, good practice for pollution prevention, approved drainage designs and water management, such as using new attenuation ponds to store surface runoff and emergency response procedures for spillages, would be implemented as part of the overall EMP that would be required. The water quality of the watercourses crossed by the proposed scheme is likely to benefit from its operation compared to the do-nothing scenario. 			
List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation. A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European Site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Name and location of European Site: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is 11.7km to the south-east of proposed scheme.		
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.		
Is the project directly connected with or necessary to the management of the site (provide details)? No		
The assessment of significance of effects		
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The relatively low numbers of birds of recorded at Coleman's Reservoir and the distance between the reservoir and the designated site (17.9km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and 		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
<p>consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <ul style="list-style-type: none"> • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA is 11.7km away from the proposed scheme and >8km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) SPA. 			
List of agencies consulted: provide contact name and telephone or e-mail address.			
Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is 11.7km to the south-east of proposed scheme.			
Description of the project: 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			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
not already three lanes) with a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.	
Is the project directly connected with or necessary to the management of the site (provide details)? No	
The assessment of significance of effects	
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The relatively low numbers of birds recorded at Coleman's Reservoir and the distance between the proposed scheme and the designated site (11.7km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar is 11.7km away from the proposed scheme and >8km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Ramsar. 	
List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk	

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Dengie (Mid-Essex Coast Phase 1) SPA		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: Dengie (Mid-Essex Coast Phase 1) SPA is 14.1km to the south-east of proposed scheme.			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.			
Is the project directly connected with or necessary to the management of the site (provide details)? No			
The assessment of significance of effects			
Describe how the project (alone or in combination) is likely to affect the European Site.			
Impacts considered in screening:			
<ul style="list-style-type: none"> reduction in habitat area (habitat loss, modification) 			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
	<ul style="list-style-type: none"> • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
	<p>Explain why these effects are not considered significant.</p> <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The relatively low numbers of birds of each species at Coleman's Reservoir and the distance between the proposed scheme and the designated site (14.1km) indicate that regular interchange of birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • Dengie (Mid-Essex Coast Phase 1) SPA is 14.1km away from the proposed scheme and >8km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Dengie (Mid-Essex Coast Phase 1) SPA 		
	<p>List of agencies consulted: provide contact name and telephone or e-mail address.</p> <p>Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk</p>		
	<p>Response to consultation.</p> <p>A letter from Natural England (dated 19 October 2021) states that: '<i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in-combination with other plans or projects</i>'.</p>		
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European Site under consideration	Dengie (Mid-Essex Coast Phase 1) Ramsar	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Name and location of European Site: Dengie (Mid-Essex Coast Phase 1) Ramsar is 14.1km to the south-east of proposed scheme.		
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.		
Is the project directly connected with or necessary to the management of the site (provide details)? No		
The assessment of significance of effects		
Describe how the project (alone or in combination) is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The relatively low numbers of birds of each species at Coleman's Reservoir and the distance between the proposed scheme and the designated site (14.1km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and 		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
<p>consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar.</p> <ul style="list-style-type: none"> • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • Dengie (Mid-Essex Coast Phase 1) Ramsar is 14.1km away from the proposed scheme and >8km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Dengie (Mid-Essex Coast Phase 1) Ramsar 			
List of agencies consulted: provide contact name and telephone or e-mail address.			
Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Essex Estuaries SAC		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: Essex Estuaries SAC is 6.0km from the proposed scheme			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
(Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.	
Is the project directly connected with or necessary to the management of the site (provide details)? No	
The assessment of significance of effects	
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The SAC does not have any qualifying features which are mobile or vulnerable to disturbance. • Essex Estuaries SAC does not have any qualifying features which are mobile and is 6.0km from the proposed scheme. Therefore, there are no pathways by which key species could be reduced in density or abundance. • Essex Estuaries SAC is 6.0km away from the proposed scheme and >800m away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • The closest watercourse crossing is approximately 10.7km upstream from Essex Estuaries SAC. Given the size of the designation (>46,000ha), its composite nature (composed of more than one estuary and overlapping with other designations) and the shortest distance downstream (10.7km), any pollution incident that may occur (even in the absence of good practice construction measures) would be diluted to such an extent that there would be no effect on the qualifying features of the SAC. 	
List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk	
Response to consultation.	

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Outer Thames Estuary SPA		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: The Outer Thames Estuary is 16.3km to the east of proposed scheme.			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.			
Is the project directly connected with or necessary to the management of the site (provide details)? No			
The assessment of significance of effects			
Describe how the project (alone or in combination) is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> reduction in habitat area (habitat loss, modification) 			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
<ul style="list-style-type: none"> • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 			
<p>Explain why these effects are not considered significant.</p> <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • No impact pathway to disturb key species. • Outer Thames Estuary SPA does not have any impact pathway to result in the reduction of species density. • Outer Thames Estuary SPA does not have an impact pathway to the proposed scheme and as a result of air emissions would not arise as a consequence of the proposed scheme. 			
<p>List of agencies consulted: provide contact name and telephone or e-mail address.</p> <p>Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk</p>			
<p>Response to consultation.</p> <p>A letter from Natural England (dated 19 October 2021) states that: '<i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i>'.</p>			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)	
European Site under consideration	Stour and Orwell Estuaries SPA	
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs
Name and location of European Site: The Stour and Orwell Estuaries SPA is 14.2km north-east of the proposed scheme.		
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.		
Is the project directly connected with or necessary to the management of the site (provide details)? No		
The assessment of significance of effects		
Describe how the project (alone or in combination) is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 		
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period, and the distance between the proposed scheme and the designated site (14.2km) indicate that regular interchange of 		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
<p>birds between the reservoir and the SPA is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the SPA.</p> <ul style="list-style-type: none"> • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • The Stour and Orwell Estuaries SPA is 14.2km away from the proposed scheme and >6km from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Stour and Orwell Estuaries SPA. 			
List of agencies consulted: provide contact name and telephone or e-mail address.			
Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk			
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
European Site under consideration	Stour and Orwell Estuaries Ramsar		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):	
March 2021	Liz Allchin, Senior Associate Director of Ecology, Jacobs	Russell Cryer, Associate Director of Ecology, Jacobs	
Name and location of European Site: The Stour and Orwell Estuaries Ramsar is 14.2km north-east of the proposed scheme.			
Description of the project: 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 a bypass between junctions 22 (Colemans interchange) and 23 (Kelvedon South interchange) and a second bypass between junctions 24 (Kelvedon North			

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)
interchange) and 25 (Marks Tey interchange). It also includes safety improvements, including closing off existing private and local direct accesses onto the main carriageway, and providing alternative provision for walkers, cyclists and horse riders to existing routes along the A12, which would be removed.	
Is the project directly connected with or necessary to the management of the site (provide details)? No	
The assessment of significance of effects	
Describe how the project (alone or in combination is likely to affect the European Site. Impacts considered in screening: <ul style="list-style-type: none"> • reduction in habitat area (habitat loss, modification) • habitat fragmentation • disturbance (change in visual or acoustic stimuli) • reduction in species density/loss of individuals • emissions to air (change in air quality) • changes in hydrology (water quality, hydrological regime) 	
Explain why these effects are not considered significant. <ul style="list-style-type: none"> • No habitat loss or modification. • No habitat fragmentation. • The relatively low numbers of birds of each species at Coleman's Reservoir, their presence during several visits within the survey period, and the distance between the proposed scheme and the designated site (14.2km) indicate that regular interchange of birds between the reservoir and the Ramsar is very unlikely, and consequently that the habitats affected by the proposed scheme are not functionally linked to the Ramsar. • Reduction in species density/loss of individuals – Any increase in traffic collisions would be negligible in the context of the existing highway. • The Stour and Orwell Estuaries Ramsar is 14.2km away from the proposed scheme and >6km away from the ARN at its closest point. Likely significant effects as a result of air emissions would not arise as a consequence of the proposed scheme alone. • There is no hydrological connectivity between the proposed scheme and Stour and Orwell Estuaries Ramsar. 	
List of agencies consulted: provide contact name and telephone or e-mail address. Natural England. Anna Oliveri, [REDACTED]@naturalengland.org.uk	

Project name:	A12 Chelmsford to A120 widening scheme (PCF Stage 3)		
Response to consultation.			
A letter from Natural England (dated 19 October 2021) states that: ' <i>Natural England agrees with the Habitats Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans or projects</i> '.			
Data collected to carry out the assessment			
Who carried out the assessment?	Sources of data	Level of assessment complete	Where can the full results on the assessment be accessed and viewed?
Dr Liz Allchin, Jacobs	Jacobs (2020a; 2020b) wintering and breeding bird reports. Others as referenced in main NSER report.		

Appendix E Letter from Natural England on agreement of No Significant Effects

Date: 19 October 2021
Our ref: DAS/12135 - 359585
Your ref: S4-Stage Approval JOSOS 49



[REDACTED]@highwaysengland.co.uk
Cc: [REDACTED]@jacobs.com

BY EMAIL ONLY

Customer Services
Hombeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

Dear Ms Baxter,

Discretionary Advice Service (Charged Advice)
CT Ref: 12135 A12 Chelmsford to A120 widening

Development proposal and location: A12 Chelmsford to A120 widening

Thank you for your consultation on the above dated 24 June 2021, which was received on the same date.

This advice is being provided as part of Natural England's Discretionary Advice Service. Highways England has asked Natural England to provide advice upon:

- Habitats Regulations Assessment Stage 1 Screening Assessment

This advice is provided in accordance with the Quotation and Agreement dated 5th August 2020.

The following advice is based upon the information within A12 Chelmsford to A120 widening scheme TR010060, Habitat Regulations Assessment Stage 1 Screening Assessment, dated 21/06/21.

Natural England agrees with the Habitat Regulations Stage 1 Screening Assessment conclusion that no likely significant effects on any European sites are anticipated, when considered alone or in combination with other plans and projects. Therefore the competent authority may agree to the project insofar as it may affect European sites, by ascertaining no adverse effect to site integrity.

For clarification of any points in this letter, please contact Anna Oliveri on [REDACTED]

- The advice provided in this letter has been through Natural England's Quality Assurance process

The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then

available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance or law. Natural England will not accept any liability for the accuracy, adequacy or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.

Yours Sincerely,

Anna Oliveri
Sustainable Development Lead Advisor – West Anglia

Cc commercialservices@naturalengland.org.uk

Annex 1

European Protected Species

A licence is required in order to carry out any works that involve certain activities such as capturing the animals, disturbance, or damaging or destroying their resting or breeding places. Note that damage or destruction of a breeding site or resting place is an absolute offence and unless the offences can be avoided (e.g. by timing the works appropriately), it should be licensed. In the first instance it is for the developer to decide whether a species licence will be needed. The developer may need to engage specialist advice in making this decision. A licence may be needed to carry out mitigation work as well as for impacts directly connected with a development. Further information can be found in Natural England's ['How to get a licence'](#) publication.

If the application requires planning permission, it is for the local planning authority to consider whether the permission would offend against Article 12(1) of the Habitats Directive, and if so, whether the application would be likely to receive a licence. This should be based on the advice Natural England provides at formal consultation on the likely impacts on favourable conservation status and Natural England's [guidance](#) on how the three tests (no alternative solutions, imperative reasons of overriding public interest and maintenance of favourable conservation status) are applied when considering licence applications.

Natural England's pre-submission Screening Service can screen application drafts prior to formal submission, whether or not the relevant planning permission is already in place. Screening will help applicants by making an assessment of whether the draft application is likely to meet licensing requirements, and, if necessary, provide specific guidance on how to address any shortfalls. The advice should help developers and ecological consultants to better manage the risks or costs they may face in having to wait until the formal submission stage after planning permission is secured, or in responding to requests for further information following an initial formal application.

The service will be available for new applications, resubmissions or modifications – depending on customer requirements. More information can be found on [Natural England's website](#).