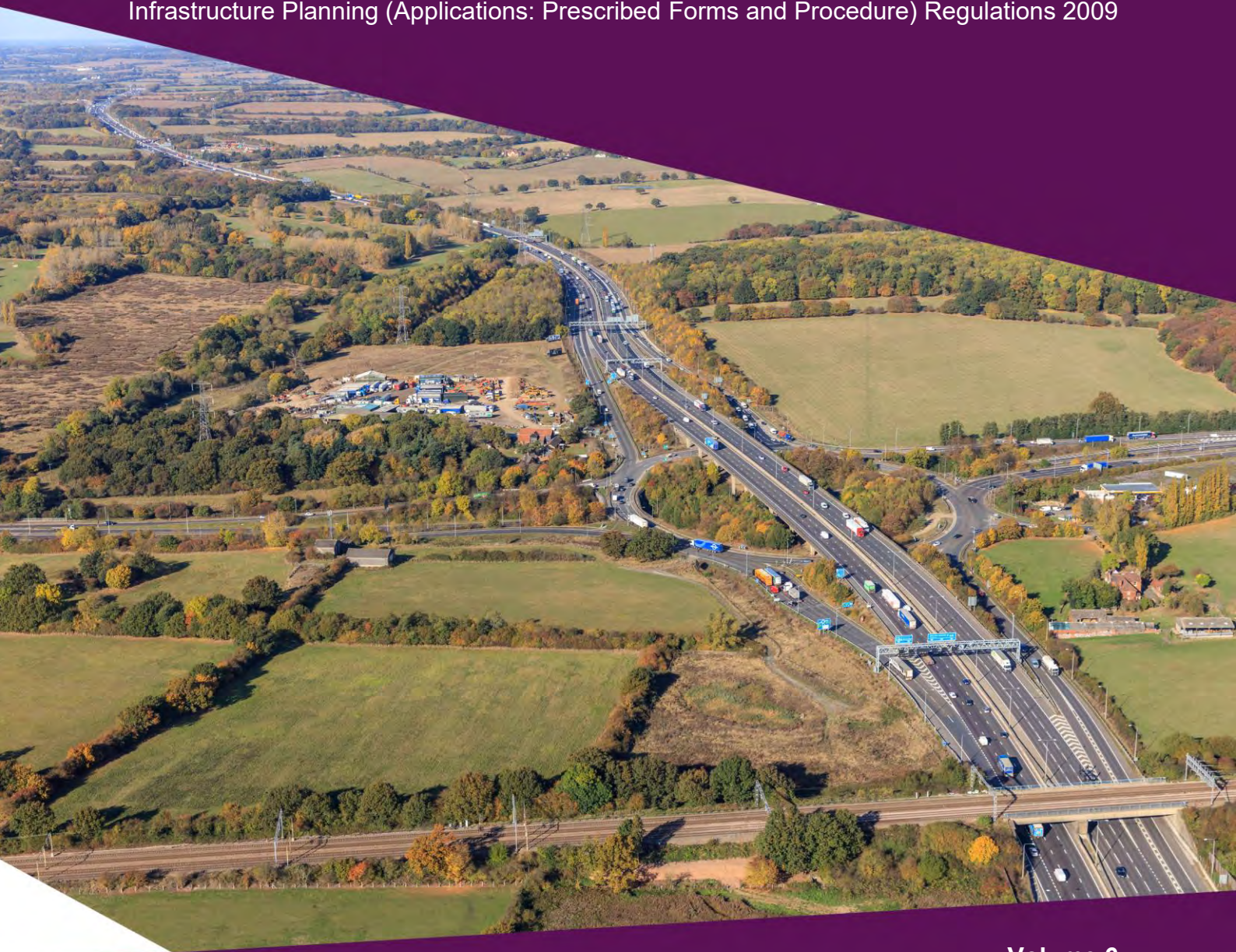
M25 junction 28 improvement scheme TR010029

6.9 Habitat regulations assessment: No significant effects report

APFP Regulation 5(2)(g)
Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



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Planning Act 2008

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

M25 junction 28 scheme
Development Consent Order 202[x]

6.9 HABITAT REGULATIONS ASSESSMENT: NO SIGNIFICANT EFFECTS REPORT

Regulation Number:	Regulation 5(2)(g)
Planning Inspectorate Scheme Reference:	TR010029
Application Document Reference:	TR010029/APP/6.9
Author:	M25 junction 28 improvement scheme project team, Highways England

Version	Date	Status of Version
1	May 2020	Application issue

Table of contents

Chapter Pages

Tables

1. Introduction

1.1. Terms of reference

1.1.1 Atkins Limited (Atkins) has been appointed by Highways England (the "Applicant") to provide a shadow Habitats Regulations Assessment (HRA) Stage 1: Screening report associated with the development of the M25 junction 28 improvement scheme (referred to as the "Scheme").

1.1.2 The Scheme is considered to be a Nationally Significant Infrastructure Project (NSIP) and therefore, this assessment has been undertaken following guidance in the Planning Inspectorate Advice Note Ten: Habitats Regulations Assessment[1] and the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 4, Part 1 Assessment of Implications (of Highways and/or Road Projects) on European Sites (Including Appropriate Assessment)[2] (HD 44/09). Since this document was drafted, HD44/09 has been withdrawn and replaced by an amended document: LA115 - Habitats Regulations assessment[3]. The conclusions of this screening assessment would not be altered if it were to be undertaken using the amended version.

1.1.3 This HRA has been produced in order to inform the assessment undertaken by the Competent Authority (in this case, the relevant Secretary of State) as to whether there would be any effects as a result of the Scheme on any European Designated Sites (European Sites hereafter). This is required by the Conservation of Habitats and Species Regulations 2017, known as the Habitats Regulations.

1.1.4 European Sites refer to sites protected in the UK for the habitats and/or species populations they contain that are of European or international importance. These include Special Protection Areas (SPAs) for Birds and Special Areas of Conservation (SACs) created under the EC Birds Directive and Habitats Directive. In addition, in accordance with UK policy[4], Wetlands of International Importance are included, which form part of a global network of protected sites created under the Ramsar Convention (also referred to as Ramsar Sites).

1.1.5 Screening forms the first stage of the HRA process and is designed to identify those elements of a project which are likely to give rise to significant adverse impacts on European Sites.

1.1.6 This report presents the results of the HRA Stage 1: Screening for the Scheme undertaken by Atkins on behalf of the Applicant. A consultation version of this document was prepared at a point when the Scheme was early in the preliminary design stage, using pre-application Development Consent Order (DCO) boundary. It has been updated to include the proposed DCO boundary, minor alterations in the DCO boundary have no implications on the conclusions of this assessment. The DCO boundary is shown on Figure 1 in Appendix A and the

[1] The Planning Inspectorate (2017) Habitat Regulations Assessment Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects.
[2] Previously available at the following address, but now withdrawn: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section4/hd4409.pdf
[3] http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section4/LA%20115%20revision%201%20Habitats%20Regulations%20assessment%20-web.pdf
[4] Ministry of Housing Communities & Local Government (2019) National Planning Policy Framework. Paragraph 176

Scheme is shown in the context of European Sites in Figure 2 and also in Appendix A.

1.2 The Scheme

1.2.1 In December 2014, the Department for Transport (DfT) published its Road Investment Strategy (RIS) for the investment period 2015 and 2020, announcing £15 billion to invest in England's strategic road network. The RIS sets out a list of schemes that are to be delivered by Highways England over this investment period, and identified M25 junction 28 as a key junction requiring improvement to address congestion and safety issues. In their second RIS (RIS2) for 2020 to 2025, published in March 2020, the DfT reiterate their support for improvements to M25 junction 28. The Scheme is described in RIS2 as an "*upgrade of the junction between the M25 and A12 in Essex, providing a free-flowing link from the northbound M25 to the eastbound A12"*.

1.2.2 The Scheme is located between Brentwood and Romford, on the border of London Borough of Havering and Brentwood Borough Council. M25 junction 28 is one of the major improvement projects planned for the south east and will provide better access towards Essex and London, as well as connecting Brentwood, Chelmsford, Colchester and Suffolk with London and other key destinations.

Scheme description

1.2.3 The Scheme comprises the following key works elements. These should be read in conjunction with Works plans (application document TR010029/APP/2.3) and Schedule 1 of the Development Consent Order (application document TR010029/APP/3.1). Further details are provided in Chapter 2 of the ES (application document TR010029/APP/6.1):

- Highways works:
  - The creation of a new two lane loop road with hard shoulder, for traffic travelling from the M25 northbound carriageway onto the A12 eastbound carriageway, including the provision of three new bridges (Alder Wood bridge, Duck Wood bridge and Grove bridge) and an underpass (Grove Farm underpass) to carry the new loop road over a proposed access track (Work No. 14).
  - Realignment of the existing A12 eastbound exit (off-slip) road (Work No. 2) to accommodate the new loop road including the provision of a new bridge (Maylands bridge) and the extension of the existing Grove culvert.
  - Improvements to the existing A12 eastbound and westbound carriageways and A12 eastbound entry (on-slip) road (Work Nos. 1, 3 and 4).
  - Realignment of the existing M25 northbound on-slip (Work No. 8).
  - Improvements to the existing junction 28 roundabout, the existing M25 northbound carriageway and the M25 northbound off-slip (Work Nos. 5, 7 and 12).
  - New gantries over the M25 carriageway (Work Nos. 9, 10 and 11).

  - Alterations of existing private access and egresses and the provision of new private means of access to accommodate the new loop road (Work Nos. 13, 14, 15 and 16).
- Earthworks and drainage works:
  - Earthworks including the deposit of surplus construction materials on two identified sites (Work Nos. 17 and 18).
  - Three new attenuation ponds and associated drainage and access roads (Works Nos. 19A, 19B, 20A, 20B, 21A and 21B) and a new drainage outfall pipe (Work No. 22).
- Realignment of watercourses:
  - Realignment of the Weald Brook and the Ingrebourne River (Work Nos. 23A, 23B, 23C and 23D).
- Environmental mitigation:
  - Two new flood compensation areas (Work Nos. 24A and 24B) and the provision of new ecological compensation and mitigation areas (Work Nos. 25 and 26) and two new environmental ponds (Work Nos. 27 and 28).
- Utilities:
  - Diversion of an already underground high pressure gas pipeline and diversion underground of an existing overhead electric line (Work Nos. 29 and 30).
- Accommodation works:
  - Accommodation works to provide replacement facilities for Maylands Golf Course (Work No. 32).

1.2.4 The total volume of excavation for the construction of the Scheme is currently estimated to be approximately 191,507 tonnes. Major alterations to existing highways structures are not anticipated to be required to deliver the Scheme.

1.2.5 Construction of the Scheme is planned to commence in spring 2022 for a period of approximately two years. Operation of the Scheme is planned to commence from autumn 2024. The Principal Contractor will be responsible for any construction defects that arise for a period of 12 months after opening. After this period the Scheme will be managed by Highways England's maintainer. Highways England propose that side roads and other rights of way would be handed over to the asset owner after opening, who would be responsible for ongoing maintenance.

Decommissioning

1.2.6 In view of the indefinite design life of the Scheme it is not considered appropriate for demolition to form part of each environmental topic assessment, rather the focus is on seeking to minimise disruption and to re-use materials as the Scheme is upgraded, that will also form part of the materials assessment. Demolition of the Scheme has therefore not been included in this the environmental assessment.

1.3 Background to HRA

1.3.1 Habitats Regulation Assessment (HRA) is required by Regulation 63 The Conservation of Habitats and Species Regulations 2017 for all plans and projects which may have likely significant effects on a European Site and are not directly connected with or necessary to the management of the European Site. The Scheme are not directly connected with, or necessary to, the nature conservation management of any European Site.

1.3.2 European Sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). HRA is also required, as a matter of UK Government policy for potential SPAs (pSPA), candidate SACs (cSAC) and listed and proposed Wetlands of International Importance (Ramsar sites and pRamsar) for the purposes of considering plans and projects which may affect them[5]. Hereafter, all of the above designated nature conservation sites are referred to as 'European Sites'.

1.3.3 The stages of HRA process are:

- **Stage 1 – Screening**: To test whether a plan or project either alone or in combination with other plans and projects is likely to have a significant effect on a European Site.
- **Stage 2 – Appropriate Assessment**: To determine whether, in view of a European Site's conservation objectives, the plan (either alone or in combination with other projects and plans) would have an adverse effect (or risk of this) on the integrity of the site with respect to the site structure, function and conservation objectives. If adverse impacts are anticipated, potential mitigation measures to alleviate impacts should be proposed and assessed.
- **Stage 3 – Assessment of alternative solutions**: Where a plan is assessed as having an adverse impact (or risk of this) on the integrity of a European Site, there should be an examination of alternatives (e.g. alternative locations and designs of development).
- **Stage 4 – Assessment where no alternative solutions remain and where adverse impacts remain:** In exceptional circumstance (e.g. where there are imperative reasons of overriding public interest), compensatory measures should be put in place to offset negative impacts.

1.3.4 This report comprises the Stage 1 – Screening of the project.

1.4 Purpose of this report

1.4.1 This HRA Stage 1: Screening report presents the findings of the screening assessment undertaken to identify likely significant effects of the Scheme on European Sites.

1.4.2 The technical content of this report includes all the information required within the requirements set out in Appendix 1: Template for Screening Matrices of Planning Inspectorate Advice Note Ten: Habitats Regulations Assessment[6].

[5]Ministry of Housing Communities & Local Government (2019) National Planning Policy Framework. Paragraph 176
[6] The Planning Inspectorate (2017) Habitats Regulations Assessment Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects.

2. Methodology

2.1 The Scheme

2.1.1 All available information about the Scheme was gathered in order to assess whether the Scheme is likely to have any significant effects on the European Sites.

2.2 Determination of European Sites included in the HRA

2.2.1 In accordance with UK planning policy[7], Planning Inspectorate Advice Note Ten[8] states that the list of European Sites should be taken as including:

- Sites of Community Importance (SCIs)
- Special Protection Areas (SPAs) and potential SPAs (pSPAs)
- Special Areas of Conservation (SACs), and candidate or possible SACs (cSACs or pSACs)
- Ramsar sites and proposed Ramsar sites (pRamsar)

2.2.2 With regards to determining the European Sites to include in the Screening assessment ('Scoping'), the guidance in HD 44/09 states that as a general guide, subject to professional judgement about potential effect pathways, consideration should be given to any European Site if the Scheme is:

- Within 2 km of a European Site
- Within 30 km of a Special Area of Conservation (SAC) (including potential or candidate SACs) – where bats are a qualifying feature
- Crossing, adjacent/upstream or downstream of watercourses designated as a European Site
- Not directly connected with or necessary to the management of any European Site

2.2.3 In addition, DMRB guidance[9] states that SACs (SCIs or cSACs), SPAs, pSPAs, SSSIs and Ramsar sites located within 200m of an Affected Road Network (ARN)[10] should be considered in relation to air quality impacts. This approach is further confirmed in recent Natural England guidance[11] which states that protected sites falling within 200 m of the edge of a road affected by a plan or project need to be considered within HRA. Therefore, scoping included a search for any European Sites within 200 m of the ARN.

[7] Ministry of Housing Communities & Local Government (2019) National Planning Policy Framework. Paragraph 176
[8] The Planning Inspectorate (2016) Habitats Regulations Assessment Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects.
[9] Highways England (2007) Design Manual for Roads and Bridges Volume 11 Section 3 Part 1 Air Quality
[10] Affected Road Network (ARN) - the affected road network has been defined in accordance with HA 207/07 scoping criteria as set out in the Design Manual for Roads and Bridges Section 3 Part 1 (HA207/07), former Highways Agency, May 2007. Affected roads are those that meet any of the following criteria:
- Road alignment will change by 5 metres or more; or
- Daily traffic flows will change by 1,000 annual average daily traffic or more; or
- Heavy duty vehicle flows will change by 200 annual average daily traffic or more; or
- Daily average speed will change by 10 kilometres per hour or more; or
- Peak hour speed will change by 20 kilometres per hour or more.

[11] Natural England Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final – June 2018.

Obtaining infor atio on the inter ational sites with the potential to be aff cted

2.2.4 Infor atio on he quali ying fea ures etc. were obtained fro the Natura Eng and website nd the Jo nt Nat re Conservation Com it ee JNCC) webs te.

Obtaini g i formation on other p oje ts and p ans

2.2.5 T e Habitats Re ula ions requ res assessment of t e potential fo like y si nif cant effects of t e pro ect 'in omb nation' w th other projects an plans.

2.2.6 The effects of t is pr ject in omb nat on with other project are th c mul tive effect whi h w ll, or m gh , r sult fr m he ad ition of th effect o oth r relev nt pl ns or p ojects to the e fects of th s roject

2.2.7 The Habitats R gula ion Hand oo [12] advis s hat any la s or pro ec s a the foll wi g tages may be r levant to an i -combina ion assessm nt:

- App ications lodged but not ye de er ined
- Pro ects s bjec to pe iodic rev ew e.g an ual icences, during t e time that their renewal is unde consid ra ion

  Refus ls subject to ppe l p ocedures and no yet de er ined
- Pro ect au horised but not et star ed
- P oje ts tarted but not yet completed
- K ow pr jects t at do no require external auth risatio
- Pro osals in ad pted pla s
- Propos ls in final sed draf plans fo ma ly publis ed r submitted for fi al consultati n, examination or adop io .

2.2.8 search wa u derta en of loc l author ty plann ng ebpages for relevant planning ppl cations a d onse ts s well as a review f al ocated and propo ed sites in loc l lans. In ddi ion, the relevant local uthorities w re c ns lted to d termine whe her a y other deve op ent in the ic nity of the Scheme sh uld b tak n into consid rat on a d wh n they eliev t ese to be li ely o come forward

As essing likely sign ficant effect

2.2.9 A cr tica p rt f t e HRA Scr ening p oc ss is deter ining w et er r not the prop sal are l ke y to h ve a signif cant e fe t on Eur pean ites and, theref re, if hey ill req ir an Appropr ate Assessm nt. The con ep of 'li ely significant eff ct as embo ie in Art cle (3 of the Habi ats Direc ive and regula ion 6 (1 of he Habit ts Regulati ns is cent al to th ir operati n. ts interpretat on is well establis ed in aw nd guida ce nd embra es he precaution ry principle

2.2.10 Th Europea Cour Waddenze judgement[13] provid s clarificati n regardi g the term 'likely'. It concludes that: "an pla o projec no directl connecte wit or

[12] Tyldesley, D., and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, January 2018 edition UK: DTA Publications Limited www.dtapublications.co.uk .
[13] Case C – 127/02 Waddenzee, reference for a preliminary ruling from the Raad van State: Landelijke Vereniging tot Behoud van de Waddenzee, Nederlandse Vereniging tot Bescherming van Vogels v Staatssecretaris van Landbouw, Natuurbeheer en Visserij, 7th September 2004.

necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects."

2.2.11 Clarification has also been provided through case law on the meaning of 'likely' in relation to Bagmoor Wind Ltd v The Scottish Ministers[14]: *"the word 'likely' in the regulation is not to be construed as an expression of probability, in a legal sense, but as a description of the existence of a risk (or possibility)."* Consequently, if the possibility of a significant effect cannot be excluded based on objective information, an Appropriate Assessment will be required.

2.2.12 The European Court Waddenzee judgement also provides further clarification regarding the term 'significant': "where a plan or project not directly connected with or necessary to the management of a site is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that risk must be made in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project."

2.2.13 The Bagmoor Wind case also provides guidance on the term 'objective.' It states: "*objective, in this context, means information based on clear verifiable fact rather than subjective opinion*." The Habitats Regulations Handbook[15] states: "*it will not normally be sufficient for an applicant merely to assert that the plan or project will not have an adverse effect on a site, nor will it be appropriate for a competent authority to rely on reassurances based on supposition or speculation. On the other hand, there should be credible evidence to show that there is a real rather than a hypothetical risk of effects that could undermine the site's conservation objectives. Any serious possibility of a risk that the conservation objectives could be undermined should trigger an 'appropriate assessment'*."

2.2.14 The test for likelihood of significant effects requires that consideration is given to potential causes and potential effects (i.e. any potential impact pathways). To do this, information on the Scheme is needed to identify the potential causes of effects and information on the European Site is needed to identify any potential implications related to these effects. In the absence of a potential impact pathway, it can be concluded that no likely significant effect would arise. Relevant aspects (effects) of the Scheme has been checked against all features of the relevant European Sites (i.e. screened) to determine whether a likely significant effect may arise.

2.2.15 The judgement as to whether a significant effect is likely needs to be based on the best readily available information. Sources of information may include evidence from projects where similar operations have affected sites with similar qualifying features and conservation objectives and the judgement of relevant specialists that an effect is likely, as well as survey data collected to date for a particular project. In line with the precautionary principle, where there is uncertainty and/or information is lacking in relation to the capacity of the effect to undermine the site's conservation objectives, it must be assumed that there will

[14] Bagmoor Wind Limited v The Scottish Ministers, Court of Sessions [2012] CSIH 93.
[15] Tyldesley, D., and Chapman, C., (2013) The Habitats Regulations Assessment Handbook, January 2018 edition UK: DTA Publications Limited www.dtapublications.co.uk .

be an effect, unless further information can be made available to eliminate any areas of doubt.

2.2.16 The implication of the Court of Justice of the European Union (CJEU) judgement referred to as People Over Wind (Peter Sweetman v Coillte Teoranta, Case C-323/17) is that competent authorities cannot take account of any *"measures that are intended to avoid or reduce the harmful effects of the envisaged project on the site concerned"*, when considering at the HRA screening stage whether the plan or project is likely to have an adverse effect on a European Site. The effect of this is that the screening stage must be undertaken on a precautionary basis with no regard to any proposed integrated or additional avoidance or reduction measures. Where the likelihood of significant effects cannot be excluded on the basis of objective information, the competent authority must proceed to carry out an Appropriate Assessment to establish whether the plan or project will affect the integrity of the European Site, which can include at that stage consideration of the effectiveness of the proposed avoidance or reduction measures.

2.2.17 Case law in 2017 referred to as the 'Wealden Judgement'[16] prompted Natural England to make their internal guidance on assessing the effects of road traffic emissions on European Sites public[17]. The guidance provides further information on the in-combination assessment at screening stage with regard to air quality effects following the Wealden Judgement.

2.3 HRA consultation

2.3.1 Under Regulation 63(3) of the Habitats Regulations, the appropriate nature conservation body, in this case Natural England, must be consulted as part of HRA.

2.3.2 Planning Inspectorate Advice Note Ten (paragraph 4.2) emphasises that: "... applicants are [therefore] strongly advised to use the pre-application consultation process to obtain assurances from the statutory nature conservation bodies (SNCBs) and other bodies that all potential effects have been addressed appropriately and in sufficient detail before an application is submitted. Evidence of the outcome of this consultation should be appended to the NSER[18] or the HRA Report, as appropriate. This will be key to the decision making process, as under the Habitat Regulations the competent authority must consult the SNCB(s) and have regard to any representations made by them."

2.3.3 Highways England's own published guidance (paragraph 4.17 of HD 44/09) states that: "the relevant Overseeing Organisation and SEB[19](s) should be consulted, on the basis of the draft screening matrix to obtain their opinion as to whether any particular project may be likely to have a significant effect on any European sites. It is not a legal requirement to undertake consultation at the screening. However, the relevant SEB(s) should be asked to respond with a justified consultation representation under the objectives of the Habitats Regulations. Any representation made by the relevant SEB(s) should be recorded and any supporting correspondence logged within the screening matrix and the information saved in registered files."

[16] Case no: CO/3943/2016 – Between Wealden District Council and Secretary of State for Communities and Local Government, Lewes District Council and South Downs National Park Authority and Natural England.
[17] Natural England Internal Guidance – Approach to advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final – June 2018.
[18] NSER – No Significant Effects Report
[19] SEB – Statutory Environmental Body: In this case Natural England

2.3.4 This report has been submitted to Natural England. The outcome of consultation with Natural England is included in the results section of this document.

3. Results

3.1 Scoping of European Sites

3.1.1 There are no European Sites within 2 km of the Scheme.

3.1.2 There are four SAC designations between 2 km and 30 km of the Scheme; Epping Forest SAC (the closest located 12 km northwest of the Scheme), Essex Estuaries SAC, Wormley-Hoddesdonpark Woods SAC and North Downs Woodlands SAC. However, none of these have bats as a qualifying feature.

3.1.3 The Scheme is upstream of a European Site. The Ingrebourne River flows downstream into the River Thames which flows through the Thames Estuary and Marshes SPA and Ramsar site. The distance of these European Sites from the Scheme is approximately 35 km via watercourses (to the Ramsar site) and approximately 36km via watercourses (to the SPA).

3.1.4 There are no European Sites within 200m of the ARN.

3.1.5 The Scheme DCO boundary and relevant European Sites are shown in Appendix A (Figures 1 and 2, respectively).

3.1.6 As per the DMRB Volume 11, Section 4, Part 1 Assessment of Implications (of Highways and/or Road Projects) on European Sites (Including Appropriate Assessment) (HD 44/09) and associated document, the potential impacts of air quality to European Sites within 200 m of the ARN should be considered, there no sites within 200 m of the ARN. During consultation, Natural England raised a question about Epping Forest SAC; as can be seen in Appendix A, Figure 2, Epping Forest SAC is located 12 km from the DCO boundary and the ARN. Therefore, at this distance, there is no potential impact to screen for Epping Forest SAC, and therefore this SAC has not been considered further. This approach has been agreed with Natural England[20].

3.2 Results of Stage 1 – Screening (alone)

Thames Estuary and Marshes SPA

Site information

3.2.1 The Thames Estuary and Marshes SPA is designated for internationally important populations of regularly occurring Annex 1 species; internationally important populations of regularly occurring migratory species; and an internationally important assemblage of waterfowl.

3.2.2 The vulnerabilities of the Thames Estuary and Marshes SPA identified include:

- Coastal squeeze and erosion of intertidal habitat
- Disturbance from water borne recreation
- Dependence on appropriate grazing and management of water
- Continued water supply to grazing marsh

[20] Correspondence by email on December 18th 2019 from J Shavelar at Natural England agreeing approach to descoping of Epping Forest SAC from the HRA Stage 1 Screening.

- Development pressures

3.2.3 The published conservation objectives of the Thames Estuary and Marshes SPA are: subject to natural change, to maintain in favourable condition the habitats for the internationally important populations and assemblages of bird species, in particular intertidal mudflats, saltmarsh and intertidal shingle.

3.2.4 A copy of the standard data sheet for Thames Estuary and Marshes SPA is included in Appendix B.

Screening

3.2.5 The information collected during the screening exercise for the Thames Estuary and Marshes SPA is presented in the form of a screening matrix, using the template in Annex C of HD 44/09. This screening matrix is provided in Appendix B of this document. The matrix concludes that the Scheme represents no likelihood of significant effects to the European Site.

The Thames Estuary and Marshes Ramsar site

Site information

3.2.6 The Thames Estuary and Marshes Ramsar site is described in the Ramsar Information Sheet[21] as: “a complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.”

3.2.7 It is designated for the following reasons:

- Ramsar criterion 2 – the site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates
- Ramsar criterion 5 – assemblages of international importance: Species with peak counts in winter: 45118 waterfowl (5-year peak mean 1998/99-2002/2003)
- Ramsar criterion 6 – species/populations occurring at levels of international importance

3.2.8 Qualifying bird species listed against Ramsar criterion 6 are:

- Spring/summer: ringed plover, black-tailed godwit
- Winter: grey plover, red knot, dunlin and common redshank

3.2.9 Factors affecting the site’s ecological character are listed in section 26 of the Ramsar Information Sheet as, dredging, erosion, eutrophication and general disturbance from human activities. The document indicated that the waters in the Thames estuary have been identified as hyper-nutrified for nitrogen and phosphorous.

3.2.10 A copy of the Ramsar Information Sheet is included in Appendix C.

[21] http://jncc.defra.gov.uk/pdf/RIS/UK11069.pdf

Screening

3.2.11 The information collected during the screening exercise for Thames Estuary and Marshes Ramsar site is presented in the form of a Screening Matrix, using the template in Annex of HD 44/09. This Screening Matrix is provided in Appendix C of this document. This matrix concludes that the Scheme represents no likelihood of significant effects to the European Site. This conclusion applies to the DCO and any other envisaged consents for the Scheme.

3.3 Results of Stage 1 – Screening (in-combination)

3.3.1 Plans and projects considered for in-combination assessment are taken from the cumulative effects assessment, which is provided in Chapter 15 of the ES. A total of 22 'other developments' were identified which had the potential to impact upon environmental receptors in conjunction with the Scheme during construction. These developments were identified by consideration of their scale, proximity to the Scheme and overlap in construction period. Of these 22 other developments, three were identified as having potential cumulative effects relating to biodiversity. These include Lower Thames Crossing NSIP (LTC), potential large, medium or small wind energy development sites (identified in The London Borough of Havering Local Plan Proposals Map) and Land at Oak Farm, south of Colchester Road. These are set out in Table 3.1 below.

Table 3.1: Plans and projects with potential for 'In-combination' effects

Development	Cumulative effect
Lower Thames Crossing	**Slight Adverse to Neutral** Lower Thames Crossing is a large scheme that affects similar habitats to the Scheme. The proposed new motorway is close to the Scheme and will affect similar habitats so there is potential for cumulative impacts during construction. However, the Lower Thames Crossing works proposed close to the Scheme may include mitigation / replacement land only. Lower Thames Crossing requires full ecological assessment and a mitigation compensation strategy to be developed prior to DCO application.
Small, medium, large wind development sites	Construction of a wind energy development within the DCO boundary has the potential for cumulative impacts in combination during construction with the Scheme on Ingrebourne Valley SMI and great crested newts, as well as bats. Potential impacts could be through loss and damage of habitats, loss of potential bat roosting and foraging habitat and killing or injury of great crested newts by construction machinery. Construction of a wind energy development within the DCO boundary would also limit the potential mitigation options for the Scheme due to cumulative habitat loss.
Land at Oak Farm, Maylands Fields	Land at Oak Farm is separated from the main area of construction works by the A12 although a pipeline diversion may be undertaken in proximity to Land at Oak Farm as part of the Scheme. Both developments directly impact the Ingrebourne Valley SMI. The Land at Oak Farm proposal is approximately 10 ha in size and long-term management is proposed to off-set habitat losses. Whilst great crested newt surveys undertaken for the Scheme have confirmed the presence of great crested newts in a pond a short distance from the Land at Oak Farm, an ecological assessment for this development considered the

Development	Cumulative effect
	Ingrebourne River to be a significant barrier to dispersal and concluded the species did not use the habitat within Land at Oak Farm.

Construction phase effects

3.3.2 There are no European Sites within 2 km of the Scheme and no SAC designations between 2 km and 30 km of the Scheme where bats are a qualifying feature. Consequently, there is no effect pathway and no potential for in combination effects with any of the identified projects.

3.3.3 Scoping identified a downstream pathway to Thames Estuary and Marshes SPA and Ramsar site (35 km and 36 km respectively via watercourses from the Scheme). As explained in the 'alone' assessment, this effect pathway is very weak due to the distance, relative size of the Scheme and nature of the European designations and consequently there is no risk of likely significant effects. The identified projects local to the Scheme, would have a similar pathway via watercourses to Thames Estuary and Marshes SPA and Ramsar site and are of a similar size or smaller than the Scheme and it is reasonable to assume that they also represent no risk of likely significant effects. The LTC Scheme is larger than the junction 28 Scheme and has greater potential to cause pollution effects on the European designated sites, however since the watercourse effect pathway for the Scheme has been discounted, any risk of in-combination effects can also be discounted.

3.3.4 Any construction phase in-combination effects are therefore discounted.

Operational phase effects

3.3.5 The traffic modelling used to generate the Affected Road Network extent, includes changes resulting from traffic flow in and around junction 28 and also projected traffic flows for the highway network (accounting for development and other changes). The traffic model therefore represents the Scheme in-combination with other plans and projects. There are no European Sites within 200 m of the ARN.

3.3.6 Any operational phase in-combination effects are therefore discounted.

4. Conclusion

4.1 Shadow Habitat Regulations Assessment Stage 1 Screening findings

4.1.1 The Scheme will be confined to junction 28 and the immediate surroundings.

4.1.2 The Scheme is not directly connected with, or necessary to, the nature conservation management of any European Sites, therefore HRA consideration is required.

4.1.3 Scoping identified hydrological linkage to two European Sites: Thames Estuary and Marshes SPA and Thames Estuary and Marshes Ramsar site. These European Sites are approximately 35 km downstream via watercourses. Due to the large distance and the nature of the works, the impacts of any water-borne pollution instances due to the Scheme will be greatly diluted and would have a negligible effect on these designated sites. Hyper-eutrification from nitrogen and phosphorous and water management are identified risks for the Ramsar designation, the Scheme will not cause any negative effects in relation to these factors.

4.1.4 Standard protection measures will be employed to ensure that water courses are protected from run-off of silt and pollution. However, these are not relied upon when reaching the no significant effects conclusion.

4.1.5 Likelihood of significant impacts on any other European Sites were discounted due to distance from the Scheme.

4.1.6 Therefore, this HRA Stage 1: Screening report has identified that there are no likely significant effects on European Sites as a result of the Scheme.

4.1.7 Based on this conclusion, the Scheme will not require a HRA Stage 2: Appropriate Assessment.

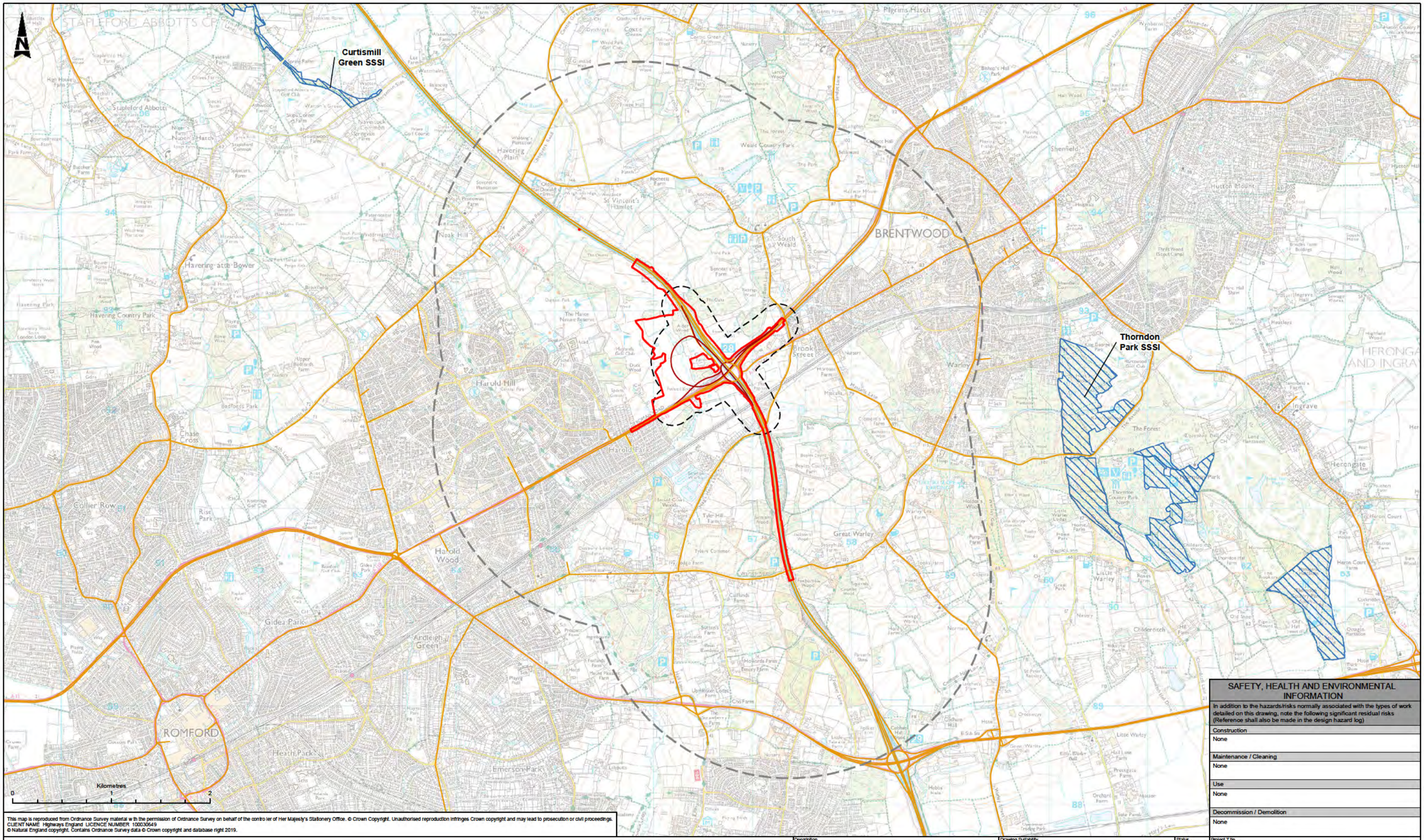
No significant effect matrix

4.1.8 In accordance with HD 44/09, ‘no significant effects matrices’ are included in Appendix D of this document.

Appendices

Appendix A. Figures

Site location and Scheme DCO boundary



LEGEND

- DCO Boundary
- 200m study area around Affected Road Network
- 2km Study Area
- Sites of Special Scientific Interest (SSSI)
- Affected Road Network
- Unaffected Road Network

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)

Construction
None

Maintenance / Cleaning
None

Use
None

Decommission / Demolition
None

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1	C01	SD	JB	EM	PG	18/03/20

Drawing Suitability: **PUBLISHED** — Status: **A1**

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Client: highways england

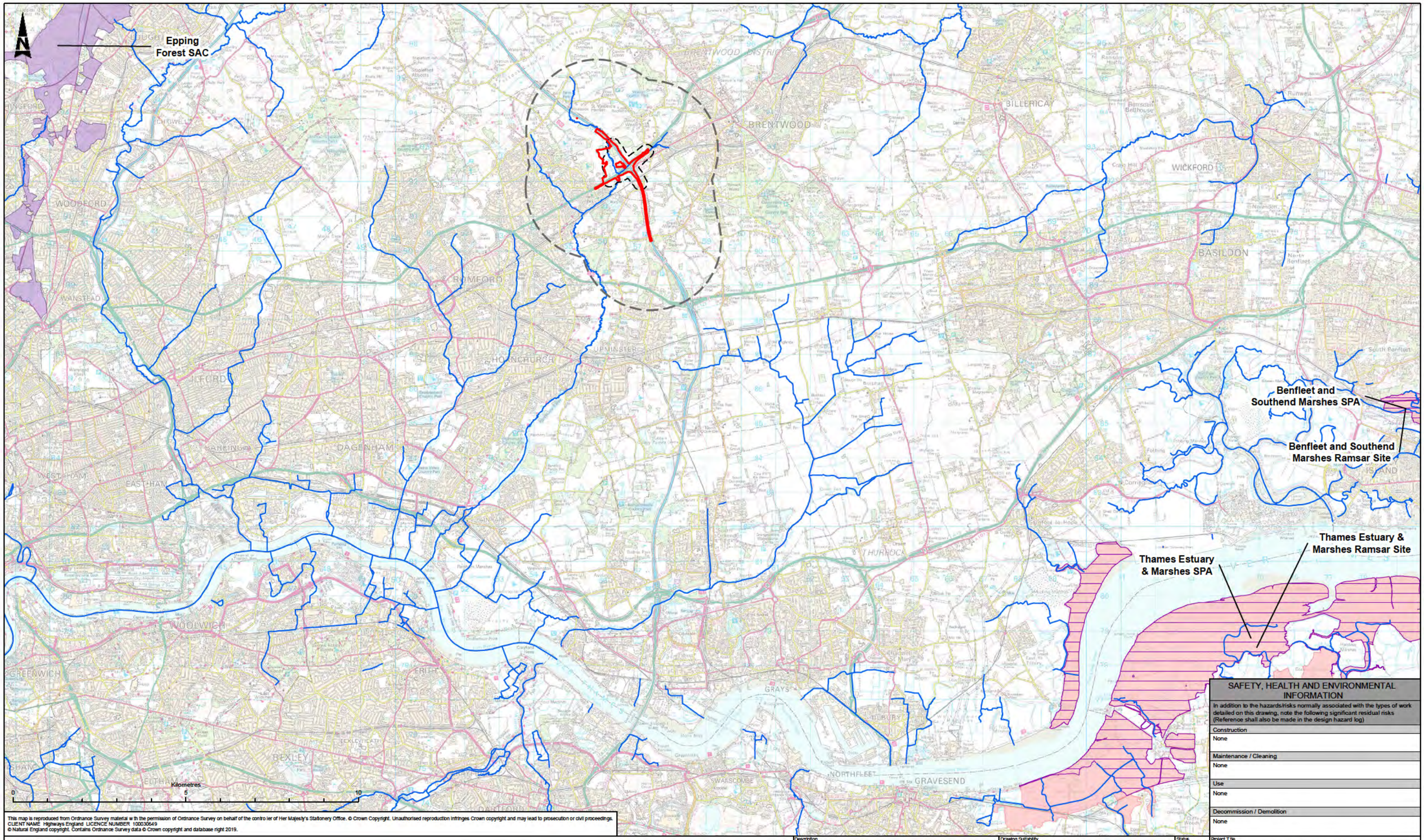
Project Title: M25 Junction 28

Drawing Title: FIGURE 1
SITE LOCATION AND DCO BOUNDARY

Drawing Number: HE551519 - ATK - EBD - XX - GS - GI - 000010
(Project | Originator | Volume | Location | Type | Role | Number)

Original Size	Scale	Project Ref. No	Sheet	Rev
A3	1:35,000	—	1 of 1	C01

Scheme in relation to European Sites



LEGEND

- DCO Boundary
- 2km Study Area
- 200m study area around Affected Road Network
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Ramsar Sites
- Main Rivers

Description	Status	Revision	Drawn	Checked	Reviewed	Authorised	Issue Date
PUBLISHED	A1	C01	SD	JB	EM	PG	18/03/20

Drawing Suitability: PUBLISHED — Status: A1

Project Title: M25 Junction 28

Drawing Title: FIGURE 2 EUROPEAN DESIGNATED SITES

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Drawing Number: Project | Originator | Volume
HE551519 - ATK - EBD
XX - GS - GI - 000011
Location | Type | Role | Number

Original Size	Scale	Project Ref. No	Sheet	Rev
A3	1:100,000	—	1 of 1	C01

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following significant residual risks (Reference shall also be made in the design hazard log)

Construction
None

Maintenance / Cleaning
None

Use
None

Decommission / Demolition
None

Appendix B. Thames Estuary and Marshes SPA, standard data form and screening matrix

B.1 SPA standard data form Thames Estuary Marshes SPA

Also available at: https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9012021.pdf

NATURA 2000 – STANDARD DATA FORM

Special Protection Areas under the EC Birds Directive.

Each Natura 2000 site in the United Kingdom has its own Standard Data Form containing site-specific information. The data form for this site has been generated from the Natura 2000 Database submitted to the European Commission on the following date:

22/12/2015

The information provided here, follows the officially agreed site information format for Natura 2000 sites, as set out in the Official Journal of the European Union recording the Commission Implementing Decision of 11 July 2011 (2011/484/EU).

The Standard Data Forms are generated automatically for all of the UK's Natura 2000 sites using the European Environment Agency's Natura 2000 software. The structure and format of these forms is exactly as produced by the EEA's Natura 2000 software (except for the addition of this coversheet and the end notes). The content matches exactly the data submitted to the European Commission.

Please note that these forms contain a number of codes, all of which are explained either within the data forms themselves or in the end notes.

Further technical documentation may be found here
http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal

As part of the December 2015 submission, several sections of the UK's previously published Standard Data Forms have been updated. For details of the approach taken by the UK in this submission please refer to the following document:
http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

More general information on Special Protection Areas (SPAs) in the United Kingdom is available from the SPA home page on the JNCC website. This webpage also provides links to Standard Data Forms for all SPAs in the UK.

Date form generated by the Joint Nature Conservation Committee
25 January 2016.

http://jncc.defra.gov.uk/

NATURA 2000 - STANDARD DATA FORM

**For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)**

SITE **UK9012021**

SITENAME **Thames Estuary and Marshes**

TABLE OF CONTENTS

1. SITE IDENTIFICATION

Back to top

1.1 Type	1.2 Site code
A	UK9012021

1.3 Site name

Thames Estuary and Marshes

1.4 First Compilation date	1.5 Update date
2000-03	2015-12

1.6 Respondent:

Name/Organisation:	Joint Nature Conservation Committee
Address:	Joint Nature Conservation Committee Monkstone House City Road Peterborough PE1 1JY
Email:	

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2000-03
National legal reference of SPA designation	Regulations 12A and 13-15 of the Conservation Habitats and Species Regulations 2010, (http://www.legislation.gov.uk/uksi/2010/490/contents/made) as amended by The Conservation of Habitats and Species (Amendment) Regulations 2011 (http://www.legislation.gov.uk/uksi/2011/625/contents/made).

2. SITE LOCATION

Back to top

2.1 Site-centre location [decimal degrees]:

Longitude	Latitude
0.596388889	51.48555556

2.2 Area [ha]:

4802.47

2.3 Marine area [%]

55.7

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code	Region Name
UKJ4	Kent
UKH3	Essex

2.6 Biogeographical Region(s)

Atlantic (100.0 %)

3. ECOLOGICAL INFORMATION

Back to top

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo
B	A672	Calidris alpina alpina			w	29646	29646	i		G	B		C	
B	A143	Calidris canutus			w	4848	4848	i		G	C		C	
B	A137	Charadrius hiaticula			c	1324	1324	i		G	B		C	
B	A082	Circus cyaneus			w	7	7	i		G	C		C	
B	A616	Limosa limosa islandica			w	1699	1699	i		G	B		C	
B	A141	Pluvialis squatarola			w	2593	2593	i		G	C		C	
B	A132	Recurvirostra avosetta			w	283	283	i		G	A		C	
		Tringa												

B	A162	totanus			w	3251	3251	i		G	B		C	

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see reference portal)
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C|R|V|P	IV	V	A	B	C	D
B	WATR	Waterfowl assemblage			75019	75019	i						X	

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see reference portal)
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories: IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

Back to top

4.1 General site character

Habitat class	% Cover
N07	3.7
N06	5.6
N03	1.5
N09	1.9
N05	0.9
N10	29.1
N02	57.3
Total Habitat Cover	100.00000000000001

Other Site Characteristics

1 Terrestrial: Soil & Geology: shingle,alluvium,mud 2 Terrestrial: Geomorphology and landscape: coastal,floodplain 4 Marine: Geomorphology: estuary,intertidal sediments (including sandflat/mudflat)

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Circus cyaneus 1% of the population in Great Britain Five year peak mean for 1993/94 to 1997/98 Recurvirostra avosetta (Western Europe/Western Mediterranean - breeding) 28.3% of the population in Great Britain Five year peak mean for 1993/93 to 1997/98 ARTICLE 4.2 QUALIFICATION (79/409/EEC) Over winter the area regularly supports: Calidris alpina alpina (Northern Siberia/Europe/Western Africa) 2.1% of the population Five year peak mean for 1993/94 to 1997/98 Calidris canutus (North-eastern Canada/Greenland/Iceland/North-western Europe) 1.4% of the population Five year peak mean for 1993/94 to 1997/98 Limosa limosa islandica (Iceland - breeding) 2.4% of the population Five year peak mean for 1993/94 to 1997/98 Pluvialis squatarola (Eastern Atlantic - wintering) 1.7% of the population Five year peak mean for 1993/94 to 1997/98 Tringa totanus (Eastern Atlantic - wintering) 2.2% of the population Five year peak mean for 1993/94 to 1997/98 On passage the area regularly supports: Charadrius hiaticula (Europe/Northern Africa - wintering) 2.6% of the population Five year peak mean for 1993/94 to 1997/98 ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY IMPORTANT ASSEMBLAGE OF BIRDS Over winter the area regularly supports: 75019 waterfowl (5 year peak mean 1991/92-1995/96) Including: Recurvirostra avosetta , Pluvialis squatarola , Calidris canutus , Calidris alpina alpina , Limosa limosa islandica , Tringa totanus

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	M01		B
H	I01		B
H	G01		I
H	M02		B

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i|o|b]
H	A02		I
H	G03		I
H	D05		I
H	A04		I
H	A06		I

Rank: H = high, M = medium, L = low
Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,
T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.5 Documentation

Conservation Objectives - the Natural England links below provide access to the Conservation Objectives (and other site-related information) for its terrestrial and inshore Natura 2000 sites, including conservation advice packages and supporting documents for European Marine Sites within English waters and for cross-border sites. See also the 'UK Approach' document for more information (link via the JNCC website).

Link(s): http://jncc.defra.gov.uk/pdf/Natura2000_StandardDataForm_UKApproach_Dec2015.pdf

http://publications.naturalengland.org.uk/category/3212324
http://publications.naturalengland.org.uk/category/6490068894089216

5. SITE PROTECTION STATUS (optional)

Back to top

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
UK04	100.0				

6. SITE MANAGEMENT

Back to top

6.1 Body(ies) responsible for the site management:

Organisation:	Natural England
Address:	
Email:	

6.2 Management Plan(s):

An actual management plan does exist:

- [ ] Yes
- [ ] No, but in preparation
- [X] No

6.3 Conservation measures (optional)

For available information, including on Conservation Objectives, see Section 4.5.

EXPLANATION OF CODES USED IN THE NATURA 2000 STANDARD DATA FORMS

The codes in the table below are also explained in the official European Union guidelines for the Standard Data Form. The relevant page is shown in the table below.

1.1 Site type

CODE	DESCRIPTION	PAGE NO
A	Designated Special Protection Area	53
B	SAC (includes candidates Special Areas of Conservation, Sites of Community Importance and designated SAC)	53
C	SAC area the same as SPA. Note in the UK Natura 2000 submission this is only used for Gibraltar	53

3.1 Habitat representativity

CODE	DESCRIPTION	PAGE NO
A	Excellent	57
B	Good	57
C	Significant	57
D	Non-significant presence	57

3.1 Habitat code

CODE	DESCRIPTION	PAGE NO
1110	Sandbanks which are slightly covered by sea water all the time	57
1130	Estuaries	57
1140	Mudflats and sandflats not covered by seawater at low tide	57
1150	Coastal lagoons	57
1160	Large shallow inlets and bays	57
1170	Reefs	57
1180	Submarine structures made by leaking gases	57
1210	Annual vegetation of drift lines	57
1220	Perennial vegetation of stony banks	57
1230	Vegetated sea cliffs of the Atlantic and Baltic Coasts	57
1310	Salicornia and other annuals colonizing mud and sand	57
1320	Spartina swards (Spartinion maritimae)	57
1330	Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	57
1340	Inland salt meadows	57
1420	Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornetea fruticosi)	57
2110	Embryonic shifting dunes	57
2120	Shifting dunes along the shoreline with Ammophila arenaria ("white dunes")	57
2130	Fixed coastal dunes with herbaceous vegetation ("grey dunes")	57
2140	Decalcified fixed dunes with Empetrum nigrum	57
2150	Atlantic decalcified fixed dunes (Calluno-Ulicetea)	57
2160	Dunes with Hippopha□ rhamnoides	57
2170	Dunes with Salix repens ssp. argentea (Salicion arenariae)	57
2190	Humid dune slacks	57
21A0	Machairs (* in Ireland)	57
2250	Coastal dunes with Juniperus spp.	57
2330	Inland dunes with open Corynephorus and Agrostis grasslands	57
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	57
3130	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea	57
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	57
3150	Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation	57

CODE	DESCRIPTION	PAGE NO
3160	Natural dystrophic lakes and ponds	57
3170	Mediterranean temporary ponds	57
3180	Turloughs	57
3260	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation	57
4010	Northern Atlantic wet heaths with Erica tetralix	57
4020	Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix	57
4030	European dry heaths	57
4040	Dry Atlantic coastal heaths with Erica vagans	57
4060	Alpine and Boreal heaths	57
4080	Sub-Arctic Salix spp. scrub	57
5110	Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)	57
5130	Juniperus communis formations on heaths or calcareous grasslands	57
6130	Calaminarian grasslands of the Violetalia calaminariae	57
6150	Siliceous alpine and boreal grasslands	57
6170	Alpine and subalpine calcareous grasslands	57
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (* important orchid sites)	57
6230	Species-rich Nardus grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe)	57
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)	57
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	57
6510	Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis)	57
6520	Mountain hay meadows	57
7110	Active raised bogs	57
7120	Degraded raised bogs still capable of natural regeneration	57
7130	Blanket bogs (* if active bog)	57
7140	Transition mires and quaking bogs	57
7150	Depressions on peat substrates of the Rhynchosporion	57
7210	Calcareous fens with Cladium mariscus and species of the Caricion davallianae	57
7220	Petrifying springs with tufa formation (Cratoneurion)	57
7230	Alkaline fens	57
7240	Alpine pioneer formations of the Caricion bicoloris-atrofuscae	57
8110	Siliceous scree of the montane to snow levels (Androsacetalia alpinae and Galeopsietalia ladani)	57
8120	Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)	57
8210	Calcareous rocky slopes with chasmophytic vegetation	57
8220	Siliceous rocky slopes with chasmophytic vegetation	57
8240	Limestone pavements	57
8310	Caves not open to the public	57
8330	Submerged or partially submerged sea caves	57
9120	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion)	57
9130	Asperulo-Fagetum beech forests	57
9160	Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	57
9180	Tilio-Acerion forests of slopes, screes and ravines	57
9190	Old acidophilous oak woods with Quercus robur on sandy plains	57
91A0	Old sessile oak woods with Ilex and Blechnum in the British Isles	57
91C0	Caledonian forest	57
91D0	Bog woodland	57
91E0	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	57
91J0	Taxus baccata woods of the British Isles	57

3.1 Relative surface

CODE	DESCRIPTION	PAGE NO
A	15%-100%	58
B	2%-15%	58
C	< 2%	58

3.1 Conservation status habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	59
B	Good conservation	59
C	Average or reduced conservation	59

3.1 Global grade habitat

CODE	DESCRIPTION	PAGE NO
A	Excellent value	59
B	Good value	59
C	Significant value	59

3.2 Population (abbreviated to 'Pop.' in data form)

CODE	DESCRIPTION	PAGE NO
A	15%-100%	62
B	2%-15%	62
C	< 2%	62
D	Non-significant population	62

3.2 Conservation status species (abbreviated to 'Con.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent conservation	63
B	Good conservation	63
C	Average or reduced conservation	63

3.2 Isolation (abbreviated to 'Iso.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Population (almost) Isolated	63
B	Population not-isolated, but on margins of area of distribution	63
C	Population not-isolated within extended distribution range	63

3.2 Global Grade (abbreviated to 'Glo.' Or 'G.' in data form)

CODE	DESCRIPTION	PAGE NO
A	Excellent value	63
B	Good value	63
C	Significant value	63

3.3 Assemblages types

CODE	DESCRIPTION	PAGE NO
WATR	Non breeding waterfowl assemblage	UK specific code
SBA	Breeding seabird assemblage	UK specific code
BBA	Breeding bird assemblage (applies only to sites classified pre 2000)	UK specific code

4.1 Habitat class code

CODE	DESCRIPTION	PAGE NO
N01	Marine areas, Sea inlets	65
N02	Tidal rivers, Estuaries, Mud flats, Sand flats, Lagoons (including saltwork basins)	65
N03	Salt marshes, Salt pastures, Salt steppes	65
N04	Coastal sand dunes, Sand beaches, Machair	65
N05	Shingle, Sea cliffs, Islets	65
N06	Inland water bodies (Standing water, Running water)	65
N07	Bogs, Marshes, Water fringed vegetation, Fens	65
N08	Heath, Scrub, Maquis and Garrigue, Phygrana	65
N09	Dry grassland, Steppes	65
N10	Humid grassland, Mesophile grassland	65
N11	Alpine and sub-Alpine grassland	65
N14	Improved grassland	65
N15	Other arable land	65
N16	Broad-leaved deciduous woodland	65
N17	Coniferous woodland	65
N19	Mixed woodland	65
N21	Non-forest areas cultivated with woody plants (including Orchards, groves, Vineyards, Dehesas)	65
N22	Inland rocks, Screes, Sands, Permanent Snow and ice	65
N23	Other land (including Towns, Villages, Roads, Waste places, Mines, Industrial sites)	65
N25	Grassland and scrub habitats (general)	65
N26	Woodland habitats (general)	65

4.3 Threats code

CODE	DESCRIPTION	PAGE NO
A01	Cultivation	65
A02	Modification of cultivation practices	65
A03	Mowing / cutting of grassland	65
A04	Grazing	65
A05	Livestock farming and animal breeding (without grazing)	65
A06	Annual and perennial non-timber crops	65
A07	Use of biocides, hormones and chemicals	65
A08	Fertilisation	65
A10	Restructuring agricultural land holding	65
A11	Agriculture activities not referred to above	65
B01	Forest planting on open ground	65
B02	Forest and Plantation management & use	65
B03	Forest exploitation without replanting or natural regrowth	65
B04	Use of biocides, hormones and chemicals (forestry)	65
B06	Grazing in forests/ woodland	65
B07	Forestry activities not referred to above	65
C01	Mining and quarrying	65
C02	Exploration and extraction of oil or gas	65
C03	Renewable abiotic energy use	65
D01	Roads, paths and railroads	65
D02	Utility and service lines	65
D03	Shipping lanes, ports, marine constructions	65
D04	Airports, flightpaths	65
D05	Improved access to site	65
E01	Urbanised areas, human habitation	65
E02	Industrial or commercial areas	65

CODE	DESCRIPTION	PAGE NO
E03	Discharges	65
E04	Structures, buildings in the landscape	65
E06	Other urbanisation, industrial and similar activities	65
F01	Marine and Freshwater Aquaculture	65
F02	Fishing and harvesting aquatic ressources	65
F03	Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)	65
F04	Taking / Removal of terrestrial plants, general	65
F05	Illegal taking/ removal of marine fauna	65
F06	Hunting, fishing or collecting activities not referred to above	65
G01	Outdoor sports and leisure activities, recreational activities	65
G02	Sport and leisure structures	65
G03	Interpretative centres	65
G04	Military use and civil unrest	65
G05	Other human intrusions and disturbances	65
H01	Pollution to surface waters (limnic & terrestrial, marine & brackish)	65
H02	Pollution to groundwater (point sources and diffuse sources)	65
H03	Marine water pollution	65
H04	Air pollution, air-borne pollutants	65
H05	Soil pollution and solid waste (excluding discharges)	65
H06	Excess energy	65
H07	Other forms of pollution	65
I01	Invasive non-native species	65
I02	Problematic native species	65
I03	Introduced genetic material, GMO	65
J01	Fire and fire suppression	65
J02	Human induced changes in hydraulic conditions	65
J03	Other ecosystem modifications	65
K01	Abiotic (slow) natural processes	65
K02	Biocenotic evolution, succession	65
K03	Interspecific faunal relations	65
K04	Interspecific floral relations	65
K05	Reduced fecundity/ genetic depression	65
L05	Collapse of terrain, landslide	65
L07	Storm, cyclone	65
L08	Inundation (natural processes)	65
L10	Other natural catastrophes	65
M01	Changes in abiotic conditions	65
M02	Changes in biotic conditions	65
U	Unknown threat or pressure	65
XO	Threats and pressures from outside the Member State	65

5.1 Designation type codes

CODE	DESCRIPTION	PAGE NO
UK00	No Protection Status	67
UK01	National Nature Reserve	67
UK02	Marine Nature Reserve	67
UK04	Site of Special Scientific Interest (UK)	67

Table B.1: Thames Estuary and Marshes SPA screening matrix

Scheme name	M25 junction 28 improvement scheme	
Natura 2000 Site under Consideration:	Thames Estuary and Marshes SPA (UK9012021)	
Date:	**Author (Name / Organisation):**	**Verified (Name / Organisation):** **Date:**
Initial assessment 23/05/2019. Subsequent minor edits, final update 1/05/2020	Principal Ecologist, Atkins (CEcol, MCIEEM)	Associate Ecologist, Atkins (CEnv, MCIEEM)
Description of scheme: Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans / projects) on the European Site:		
Size and scale	In December 2014, the Department for Transport (DfT) published the Road Investment Strategy (RIS) for 2015-2020. The Scheme involves improvement works to M25 J28 (the A12) between Brentwood and Havering. It includes the provision of a dedicated loop road/link for right-turning traffic and minor improvements of the existing roundabout. The Scheme will be within the M25 junction 28 roundabout and slip-roads and the immediate surrounding habitat. A number of existing structures on site are proposed for demolition and extension, including existing gantries. Based on current preliminary design, the principal construction elements of the Scheme are likely to include the following: • Provision of earthwork slopes at approximately a 1:3.5 gradient • Two single-span bridges passing over the existing watercourses (Weald Brook and River Ingrebourne) with the abutments no less than 8m from the edges of the watercourse • A bridge to carry the new loop road over the M25 on-slip road, with an extension to provide access for landowners. Retaining walls will also be provided at this location to facilitate this access. The DCO boundary is provided in Appendix A (Figure 1). The Scheme is categorised as Nationally Significant Infrastructure and will therefore require DCO.	
Land-take	The DCO boundary is provided in Appendix A (Figure 1), the majority of which is existing highways land. No land take within the European Site is required. The Scheme land take is currently not known as the design is still being finalised.	
Distance from European Site or key features of site	European Site is approximately 35 km down-stream to the west of the Scheme.	
Resource requirements (*from the European Site or from areas in proximity to the site, where of*	No resource requirements from the SPA.	

***relevance to consideration of impacts*)**	
Emissions (*e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution*)	There are hydrological links between the Scheme and the European Site. There is a hydrological pathway between the Scheme and the European Site. This is via the River Ingrebourne, a tributary of which runs through the Scheme area, and then approximately 14 km south to the River Thames. The distance of SPA from the Scheme is approximately 36 km via watercourses. There will be no permanent change in the air quality of the SPA due to the Scheme – air quality close to the SPA is likely to be more directly affected by vehicle movements on the road network surrounding the SPA than by conditions in and around the Scheme. With regard to potential risks from road traffic emissions, Natural England and Highways England are in agreement that protected sites falling within 200m of the edge of a road affected by a plan or project need to be considered further[22]. Given that the SPA is located more than 200m of the ARN, this is not considered to represent a potential impact pathway. During the construction period there is no anticipated change in air quality of the European Site due to the distance between the Scheme and the SPA. At operation, there is no anticipated change in air quality at the SPA. The air quality assessment has been undertaken using standard methodologies and data sets. The vehicle emission factors used in the assessment only take into account expected improvements in vehicle emissions technology resulting from the European emission standards, together with the projected vehicle fleet composition up until the year 2030.
Excavation requirements (*e.g. impacts of local hydrogeology*)	All excavations will be contained within the junction and immediate surrounding area, or within the verge of the M25. Due to the distance between the Scheme and the SPA, no impacts on hydrology local to the SPA are anticipated.
Transportation requirements	Access for works transport will be outside (and a considerable distance from) the SPA. Works access will be from the M25 and local roads or access tracks.
Duration of construction, operation, etc.	The construction duration is estimated at approximately 2 years. The construction phase has a start date of Spring 2022.
Other	Not applicable.
Description of avoidance measures **Describe any information on:**	
Nature of proposals	Mitigation measures detailed below have not been relied on for HRA screening conclusions. These measures are not intended to specifically avoid or reduce impacts on any European site and the screening conclusions in this assessment are not reliant on them. The risk of pollution during construction will be reduced by the adoption of good working practices, such as Guidance for Pollution Prevention (GPPs). In general terms, by following

[22] Natural England Internal Guidance - Approach to advising competent authorities on the assessment of road traffic emissions and HRAs V1.4 Final – June 2018

	these guidelines, significant impacts to the water environment should be avoided. In terms of construction dust, best practice mitigation measures would minimise any construction dust effects. Such measures may include, but not necessarily be limited to: • Regular water-spraying and sweeping of unpaved and paved roads to minimise dust and remove mud and debris • Using wheel washes, shaker bars or rotating bristles for vehicles leaving the site where appropriate to minimise the amount of mud and debris deposited on the roads • Sheeting vehicles carrying dusty materials to prevent materials being blown from the vehicles whilst travelling • Enforcing speed limits for vehicles on unmade surfaces to minimise dust entrainment and dispersion • Ensuring any temporary site roads are no wider than necessary to minimise their surface area • Damping down of surfaces prior to their being worked • Storing dusty materials away from site boundaries and in appropriate containment (e.g. sheeting, sacks, barrels etc.). Other ecological mitigation measures for habitats and species will be undertaken within the Scheme but are not relevant to this document.
Location	Avoidance measures will be located in relevant areas within the DCO boundary.
Evidence for effectiveness	The guidelines are adopted as industry standard for pollution prevention. The standard pollution prevention measures to be implemented are proven to be effective in minimising the risk of pollution. Other proposed avoidance measures are also plainly established and uncontroversial and follow relevant best practice guidelines.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	Pollution prevention will be applied in practice through the contractor's Construction Environmental Management Plan (CEMP) or Code of Construction Practice (CoCP). Detailed avoidance measures will be implemented as part of appropriate Construction Method Statements and Construction Environmental Management Plans, in accordance with standard best practice and Design Manual for Roads and Bridges requirements. These documents will form the basis for contractual obligations of the main works contractor, and thus are considered robust mechanisms for delivery.
Characteristics of European Site(s) A brief description of the European Site, including information on:	
Name of European Site and its EU code	Thames Estuary and Marshes SPA (UK9012021).
Location and distance of the European Site from the proposed works	European Site is approximately 35 km down-stream to the west of the Scheme (the relative positions of the Scheme and the European Site are shown in Appendix A, Figure 2).
European Site size	4,838 ha.
Key features of the European Site including the primary reasons for	The Thames Estuary and Marshes SPA is designated for internationally important populations of regularly occurring Annex 1 species; internationally important populations of

selection and any other qualifying interests	regularly occurring migratory species; and an internationally important assemblage of waterfowl[23]. Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC listed for the European Site: • Dunlin • Red knot • (Common) ringed plover • Hen harrier • Black-tailed godwit • Grey plover • (Pied) Avocet • (Common) redshank
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	The vulnerabilities of the Thames Estuary and Marshes SPA identified include: • Coastal squeeze and erosion of intertidal habitat • Disturbance from water borne recreation • Dependence on appropriate grazing and management of water • Continued water supply to grazing marsh • Development pressures.
European Site conservation objectives – where these are readily available	The published conservation objectives of the Thames Estuary and Marshes SPA are: • Subject to natural change, to maintain in favourable condition the habitats for the internationally important populations and assemblages of bird species, in particular intertidal mudflats, saltmarsh and intertidal shingle.
Assessment Criteria **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.**	
The following potential impacts have been considered for this assessment: • Run-off or silt or pollution of watercourses that flow into the SPA. Disturbance to individuals from the qualifying bird populations of the SPA and any direct pressure on the site itself has been discounted due to the distance between the Scheme and the European Site.	
Initial Assessment **The key characteristics and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes arising as a result of:**	
Reduction of habitat area	There will be no reduction of habitat area of the SPA.
Disturbance to key species	Due to the distance between the Scheme and the European Site these potential effects have been discounted.
Habitat or species fragmentation	Due to the distance between the Scheme and the European Site these potential effects have been discounted.
Reduction in species density	Due to the distance between the Scheme and the European Site these potential effects have been discounted. Secondary effects as a result of water pollution are considered in the cell below.

[23] https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9012021.pdf [last accessed 09/03/2020]

Changes in key indicators of conservation value (water quality etc.)	The improvement works will be confined to the existing highways estate and adjacent areas. There is a hydrological pathway between the Scheme and the European designated site. This is via the River Ingrebourne, a tributary of which runs through the Scheme area, and then approximately 14 km south to the River Thames. The European Site is approximately 20 km further downstream. The relative positions of the Scheme and the European Site are shown in Appendix A, Figure 2. In these lower reaches, the River Thames is a large estuarine river subject to tidal flows. As a result of this, there will be considerable mixing and dilution. Therefore, the effects pathway as a result of spillage of pollution on the European Site can be discounted. Standard protection measures will be employed to ensure that water courses are protected from run-off of silt and pollution. However, these measures are not intended to specifically avoid or reduce impacts on any European site and the screening conclusions in this assessment are not reliant on these. Detailed assessment of water quality impacts was undertaken as part of the EIA and is reported in full in ES Chapter 8 (Water Environment and Road Drainage). The relevant results of the Method A and D assessments are summarised in Appendix E (calculated as part of the assessment presented in chapter 8 of the ES). The with 'mitigation values' are presented in Appendix E but are not relied upon in discounting this effect pathway. The element of the water quality assessment which is most relevant to this HRA is Method A which assesses impacts on surface water and rivers. Method A focuses on the dilution of routine runoff and pollutants. The method is a simple assessment and includes the use of Highways Agency Water Risk Assessment Tool (HAWRAT) considering dilution of indicator metals (dissolved zinc and dissolved copper). The HAWRAT tool is designed to make an assessment of the short-term risks related to the intermittent nature of road run-off, also known as Runoff Specific Threshold (RSTs) as well as the long-term risks. All discharges have been tested using HAWRAT. The methodology for routine runoff involves tests to predict future concentrations of zinc and copper in receiving watercourses with addition of discharge from the Scheme. This is based on Annual Average Daily Traffic (AADT) flows, catchment size for the road, dilution flows (Q95) and current water quality (hardness) for each receiving watercourse. This method also takes into account the likelihood of and extent of sediment deposition. Method D which relates to serious spillage risk is also relevant. The overall conclusion of the ES in relation to surface and river quality impacts taking into account committed mitigation is a negligible impact with neutral/insignificant effects anticipated. HRA screening has been undertaken using the 'without mitigation' calculations (as presented in Appendix E). Slight significant effects on local receptors (Ingrebourne River and Weald Brook) without mitigation in Table E.1 can be discounted in the context of the distance of the scheme from the designation (as a result of distance and mixing as described above). The conclusion of no likely significant effect is made based on the relative distance of the Scheme from the European Site, the limited expectation of discharge from the scheme and the nature of the European site. The HAWRAT results has been

	provided to qualify this conclusion. Details of standard water protection measures have been provided for information but are not relied upon for the conclusion.
Climate change	The impact of climate change is not considered relevant when assessing the likely effects of the Scheme.
Describe any likely impacts on the European Site as a whole in terms of:	
Interference with the key relationships that define the structure of the site	No significant impacts.
Interference with key relationships that define the function of the site	No significant impacts.
Indicate significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	No significant impacts.
Disturbance to key species	No significant impacts.
Habitat or species fragmentation	No significant impacts.
Loss	No significant impacts.
Fragmentation	No significant impacts.
Disruption	No significant impacts.
Disturbance	No significant impacts.
Change to key elements of the site	No significant impacts.
Describe where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:	
No significant impacts identified	
Outcome of screening stage	Not likely to be Significant Effects.
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)?	YES – Natural England accepted that no likely significant effects are predicted on the Thames Estuary and Marshes SPA as per email correspondence provided in Appendix F.

Appendix C. Thames Estuary and Marshes Ramsar RIS and screening matrix

C.1 Ramsar Information Sheet (RIS) for Thames Estuary Marshes Ramsar

Also available at: https://rsis.ramsar.org/ris/1025

Information Sheet on Ramsar Wetlands (RIS)

1. Name and address of the compiler of this form:

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

Joint Nature Conservation Committee
Monkstone House
City Road
Peterborough
Cambridgeshire PE1 1JY
UK
Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948
Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:
Designated: 05 May 2000 / Updated: May 2005

3. Country:
UK (England)

4. Name of the Ramsar site:
Thames Estuary and Marshes

5. Map of site included:

a) hard copy (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no*

b) digital (electronic) format (optional): Yes

6. Geographical coordinates (latitude/longitude):
51º 29' 08'' N 00º 35' 47'' E

7. General location:
Nearest town/city: Gravesend

Contains part of the north coast of Kent and part of the southern coast of Essex, straddling the Thames estuary.

Administrative region: Essex; Kent; Medway; Thurrock

8. Elevation (average and/or max. & min.) (metres): **9. Area** (hectares): 5589
Min. -5
Max. 5
Mean No information available

10. Overview:
A complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.

11. Ramsar Criteria:
2, 5, 6

12. Justification for the application of each Criterion listed in 11. above:
Ramsar criterion 2

The site supports more than 20 British Red Data Book invertebrates and populations of the GB Red Book endangered least lettuce (*Lactuca saligna*), as well as the vulnerable slender hare's-ear (*Bupleurum tenuissimum*), divided sedge (*Carex divisa*), sea barley (*Hordeum marinum*), Borrer's saltmarsh-grass (*Puccinellia fasciculata*), and dwarf eelgrass (*Zostera noltei*).

Ramsar criterion 5
Assemblages of international importance:

Species with peak counts in winter:
45,118 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6
Species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in spring/autumn:

Black-tailed godwit , *Limosa limosa islandica*, Iceland/W Europe	1,640 individuals, representing an average of 4.5% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Dunlin , *Calidris alpina alpina*, W Siberia/W Europe	15,171 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
Red knot , *Calidris canutus islandica*, W & Southern Africa (wintering)	7,279 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3)

More contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey Alerts report, which is updated annually. See http://www.bto.org/survey/webs/webs-alerts-index.htm.

13. Biogeography:

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
Council Directive 92/43/EEC

14. Physical features of the site:

Soil & geology	alluvium, mud, shingle
Geomorphology and landscape	coastal, floodplain, intertidal sediments (including sandflat/mudflat), estuary
Nutrient status	eutrophic
pH	no information
Salinity	brackish / mixosaline, fresh, saline / euhaline
Soil	no information
Water permanence	usually permanent, usually seasonal / intermittent

Summary of main climatic features	Annual averages (Greenwich, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/greenwich.html) Max. daily temperature: 14.8° C Min. daily temperature: 7.2° C Days of air frost: 29.1 Rainfall: 583.6 mm Hrs. of sunshine: 1461.0

General description of the Physical Features:
No information available

15. Physical features of the catchment area:
No information available

16. Hydrological values:
Shoreline stabilisation and dissipation of erosive forces, sediment trapping, flood water storage / desynchronisation of flood peaks, maintenance of water quality (removal of nutrients)

17. Wetland types
Marine/coastal wetland

Code	Name	% Area
E	Sand / shingle shores (including dune systems)	0.8
G	Tidal flats	49.6
H	Salt marshes	1.3
O	Freshwater lakes: permanent	0.7
Q	Saline / brackish lakes: permanent	4.2
Ss	Saline / brackish marshes: seasonal / intermittent	3.2
4	Seasonally flooded agricultural land	38.6
Other	Other	1.6

18. General ecological features:
The intertidal flats are mostly fine, silty sediment, though in parts they are sandy. The saltmarsh shows a transition from pioneer communities containing *Zostera* to saltmarsh dominated by, for example, *Atriplex portulacoides*. The grazing marsh grassland is mesotrophic and generally species-poor. It does, however, contain scattered rarities, mostly annuals characteristic of bare ground. Where the grassland is seasonally inundated and the marshes are brackish the plant communities are intermediate between those of mesotrophic grassland and those of saltmarsh. The grazing marsh ditches contain a range of flora of brackish and fresh water. The aquatic flora is a mosaic of successional stages resulting from periodic clearance of drainage channels. The dominant emergent plants are *Phragmites communis* and *Bolboschoenus maritimus*. The saline lagoons have a diverse molluscan and crustacean fauna. Dominant plants in the lagoons include *Ulva* and *Chaetomorpha*.

19. Noteworthy flora:
Nationally important species occurring on the site:
Higher plants:
The site supports a population of the endangered least lettuce *Lactuca saligna*, and also supports several nationally scarce plants, including bulbous foxtail *Alopecurus bulbosus*, slender hare's-ear *Bupleurum tenuissimum*, divided sedge *Carex divisa*, saltmarsh goosefoot *Chenopodium chenopodioides*, sea barley *Hordeum marinum*, golden samphire *Inula crithmoides*, annual beard grass *Polypogon monspeliensis*, Borrer's saltmarsh-grass *Puccinellia fasciculata*, stiff saltmarsh-grass *P. rupestris*, one-flowered glasswort *Salicornia pusilla*, clustered clover *Trifolium glomeratum*, sea clover *T. squamosum*, narrow-leaved eelgrass *Zostera angustifolia* and dwarf eelgrass *Z. noltei*.

20. Noteworthy fauna:

Birds

Species currently occurring at levels of national importance:

Species with peak counts in spring/autumn:

Common greenshank , *Tringa nebularia*, Europe/W Africa	38 individuals, representing an average of 6.3% of the GB population (5 year peak mean 1998/9-2002/3)
Little egret , *Egretta garzetta*, West Mediterranean	54 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/9-2002/3)
Little grebe , *Tachybaptus ruficollis ruficollis*, Europe to E Urals, NW Africa	251 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , *Philomachus pugnax*, Europe/W Africa	23 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Common shelduck , *Tadorna tadorna*, NW Europe	1238 individuals, representing an average of 1.5% of the GB population (5 year peak mean 1998/9-2002/3)
Gadwall , *Anas strepera strepera*, NW Europe	359 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9-2002/3)
Northern shoveler , *Anas clypeata*, NW & C Europe	288 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)
Pied avocet , *Recurvirostra avosetta*, Europe/Northwest Africa	607 individuals, representing an average of 17.8% of the GB population (5 year peak mean 1998/9-2002/3)
Spotted redshank , *Tringa erythropus*, Europe/W Africa	6 individuals, representing an average of 4.4% of the GB population (5 year peak mean 1998/9-2002/3)
Water rail , *Rallus aquaticus*, Europe	6 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site:
Invertebrates:
The endangered species *Bagous longitarsis* occurs on the site.
The following vulnerable species occur on the site: a groundbug *Henestaris halophilus*, a weevil *Bagous cylindrus*, a ground beetle *Polystichus connexus*, a cranefly *Erioptera bivittata*, a cranefly *Limnophila pictipennis*, a horse fly *Hybomitra expollicata*, a hoverfly *Lejops vittata*, a dancefly *Poecilobothrus ducalis*, a snail-killing fly *Pteromicra leucopeza*, a solitary wasp *Philanthus triangulum* and a damselfly *Lestes dryas*.

The following rare species occur on the site: a ground beetle *Anisodactylus poeciloides*, the water beetles *Aulacochthebius exaratus, Berosus fulvus, Cercyon bifenestratus, Hydrochus elongatus, H. ignicollis, Ochthebius exaratus* and *Hydrophilus piceus*, a beetle *Malachius vulneratus*, a rove beetle *Philonthus punctus*, a fungus beetle *Telmatophilus brevicollis*, a fly *Campsicnemus magius*, a horsefly *Haematopota bigoti*, a soldier fly *Stratiomys longicornis* and a spider *Baryphyma duffeyi*.

21. Social and cultural values:

Aesthetic
Archaeological/historical site
Conservation education
Current scientific research
Fisheries production
Livestock grazing
Non-consumptive recreation
Sport fishing
Sport hunting
Tourism
Transportation/navigation

22. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation	+	+
Local authority, municipality etc.	+	+
Private	+	+
Public/communal	+	

23. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Research	+	+
Fishing: commercial	+	
Fishing: recreational/sport	+	
Gathering of shellfish	+	
Bait collection	+	
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Livestock watering hole/pond	+	+
Grazing (unspecified)	+	+
Permanent pastoral agriculture	+	+
Hunting: recreational/sport	+	
Industrial water supply		+
Industry		+
Sewage treatment/disposal	+	+
Harbour/port	+	+
Flood control	+	
Transport route	+	+
Urban development		+
Military activities	+	

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Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone: **+41 22 999 0170** • Fax: **+41 22 999 0169** • email: **europe@ramsar.org**

24. Factors adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. *Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.*
2. *Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.*

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
Dredging	1		+	+	+
Erosion	2		+		+
Eutrophication	2	Studies by the Environment Agency indicate that the waters in the Thames estuary are hyper-nutrified for nitrogen and phosphorus.	+	+	+
General disturbance from human activities	1		+		+

For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Erosion - The North Kent Coastal Habitat Management Plan (CHaMP) has been produced. The Environment Agency is producing a Flood Defence Strategy for the Thames (Thames 2100) and decisions on future flood risk management will need to take into account the effects on features within the designated sites.
Studies of sediment transport and hydrodynamics within Thames estuary. Investigation of beneficial use of dredgings for mudflat recharge and creation of compensatory habitat.

Eutrophication - Water quality and sources of nutrient inputs are subject to further investigation by the Environment Agency as part of the Agency's review of consents under the Habitats Regulations. Stage 3 of the Review of Consents (appropriate assessment) is scheduled for completion by March 2006, at which point any consented discharges having an adverse effect on site integrity will be identified.

Is the site subject to adverse ecological change? YES

25. Conservation measures taken:

Conservation measure	On-site	Off-site
SSSI / ASSI	+	
SPA	+	
Land owned by a NGO for nature conservation	+	+
Management agreement	+	

Site management statement/plan implemented	+	
ESA	+	+

26. Conservation measures proposed but not yet implemented:
No information available

27. Current scientific research and facilities:
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl and Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Numbers of breeding waders have been monitored through the BTO/RSPB/English Nature/Defra survey Breeding Waders of Wet Meadows (2002).
Botanical surveys of vegetation of sea wall embankments and grazing marsh ditches have been carried out.
The distribution and extent of saltmarsh habitat has been mapped - North Kent Marshes Saltmarsh Survey (2002) (Blair-Myres 2003)
The RSPB monitors various species groups on its reserves within the site

28. Current conservation education:
The RSPB manages a network of reserves within and adjacent to the site, which are promoted locally through existing community initiatives, and more widely through publications and via the internet. The site forms part of proposals for a north Kent 'Regional Park', being promoted to balance development in Kent Thameside (part of the Thames Gateway growth area). The Management Guidance for the Thames Estuary aims to increase awareness of conservation and is promoted by the Thames Estuary Partnership. The Thames Estuary Partnership has also produced the Tidal Thames Habitat Action Plan to raise awareness of and address biodiversity issues.

29. Current recreation and tourism:
Yachting, angling, wildfowling, jet-skiing, water-skiing and birdwatching. Bird watching occurs throughout the year and wildfowling is restricted to the period September to February. The remaining activities occur year-round but are more prevalent in the summer months. Disturbance from these activities is a current issue but is being addressed through further research, negotiation and information dissemination.

30. Jurisdiction:
Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

31. Management authority:
Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

32. Bibliographical references:

Site-relevant references

Anon. (2002) *North Kent Coastal Habitat Management Plan: Executive summary*. English Nature, Peterborough (Living with the Sea LIFE Project) www.english-nature.org.uk/livingwiththesea/project_details/good_practice_guide/HabitatCRR/ENRestore/CHaMPs/NorthKent/NorthKentCHaMP.pdf

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Table C.1: Thames Estuary and Marshes Ramsar

Scheme name	M25 junction 28 improvement scheme	
Natura 2000 Site under Consideration:	Thames Estuary and Marshes Ramsar (UK11069)	
Date:	**Author (Name / Organisation):**	**Verified (Name / Organisation):** **Date:**
Initial assessment 23/05/2019. Subsequent minor edits, final update 1/05/2020	Principal Ecologist, Atkins (CEcol, MCIEEM)	Associate Ecologist, Atkins (CEnv, MCIEEM)
Description of scheme: Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans / projects) on the European Site:		
Size and scale	In December 2014 the Department for Transport (DfT) published the Road Investment Strategy (RIS) for 2015-2020. The Scheme involves improvement works to M25 J28 (the A12) between Brentwood and Havering. It includes the provision of a dedicated loop road/link for right-turning traffic and minor improvements of the existing roundabout. The Scheme will be within the M25 junction 28 roundabout and slip-roads and the immediate surrounding habitat. A number of existing structures on site are proposed for demolition and extension, including existing gantries. Based on current preliminary design, the principal construction elements of the Scheme are likely to include the following: • Provision of earthwork slopes at approximately a 1:3.5 gradient • Two single-span bridges passing over the existing watercourses (Weald Brook and River Ingrebourne) with the abutments no less than 8m from the edges of the watercourse • A bridge to carry the new loop road over the M25 on-slip road, with an extension to provide access for landowners. Retaining walls will also be provided at this location to facilitate this access. The DCO boundary is provided in Appendix A (Figure 1). The Scheme is categorised as Nationally Significant Infrastructure and will therefore require DCO.	
Land-take	The DCO boundary is provided in Appendix A (Figure 1), the majority of which is existing highways land. No land take within the European Site is required. The Scheme land take is currently not known as the design is still being finalised.	
Distance from European Site or key features of site	European Site is approximately 35km down-stream to the west of the Scheme.	
Resource requirements (*from the European Site or from areas in proximity to*	No resource requirements from the Ramsar site.	

***the site, where of relevance to consideration of impacts*)**	
Emissions (*e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution*)	There are hydrological links between the Scheme and the European Site. There is a hydrological pathway between the Scheme and the European Site. This is via the River Ingrebourne, a tributary of which runs through the Scheme area, and then approximately 14km south to the River Thames. The distance of the Ramsar site from the Scheme is approximately 35km via watercourses (to the Ramsar site). There will be no permanent change in the air quality of the Ramsar site due to the Scheme – air quality close to the Ramsar site is likely to be more directly affected by vehicle movements on the road network surrounding the Ramsar site than by conditions in and around the Scheme. With regard to potential risks from road traffic emissions, Natural England and Highways England are in agreement that protected sites falling within 200m of the edge of a road affected by a plan or project need to be considered further[24]. Given that the Ramsar site is located more than 200m of the ARN, this is not considered to represent a potential impact pathway. During the construction period there is no anticipated change in air quality of the European Site due to the distance between the Scheme and the Ramsar site. At operation there is no anticipated change in air quality at the Ramsar site. The air quality assessment has been undertaken using standard methodologies and data sets. The vehicle emission factors used in the assessment only take into account expected improvements in vehicle emissions technology resulting from the European emission standards, together with the projected vehicle fleet composition up until the year 2030.
Excavation requirements (*e.g. impacts of local hydrogeology*)	All excavations will be contained within the junction and immediate surrounding area, or within the verge of the M25. Due to the distance between the Scheme and the Ramsar site, no impacts on hydrology local to the Ramsar site are anticipated.
Transportation requirements	Access for works transport will be outside (and a considerable distance from) the Ramsar site. Works access will be from the M25 and local roads or access tracks.
Duration of construction, operation, etc.	The construction duration is estimated at approximately 2 years. The construction phase has a start date of Spring 2022.
Other	Not applicable.
Description of avoidance measures **Describe any information on:**	
Nature of proposals	Mitigation measures detailed below have not been relied on for HRA screening conclusions. These measures are not intended to specifically avoid or reduce impacts on any

[24] Natural England Internal Guidance - Approach to advising competent authorities on the assessment of road traffic emissions and HRAs V1.4 Final – June 2018

	European site and the screening conclusions in this assessment are not reliant on them. The risk of pollution during construction will be reduced by the adoption of good working practices, such as Guidance for Pollution Prevention (GPPs). In general terms, by following these guidelines, significant impacts to the water environment should be avoided. In terms of construction dust, best practice mitigation measures would minimise any construction dust effects. Such measures may include but not necessarily be limited to: • Regular water-spraying and sweeping of unpaved and paved roads to minimise dust and remove mud and debris • Using wheel washes, shaker bars or rotating bristles for vehicles leaving the site where appropriate to minimise the amount of mud and debris deposited on the roads • Sheeting vehicles carrying dusty materials to prevent materials being blown from the vehicles whilst travelling • Enforcing speed limits for vehicles on unmade surfaces to minimise dust entrainment and dispersion • Ensuring any temporary site roads are no wider than necessary to minimise their surface area • Damping down of surfaces prior to their being worked • Storing dusty materials away from site boundaries and in appropriate containment (e.g. sheeting, sacks, barrels etc.). Other ecological mitigation measures for habitats and species will be undertaken within the Scheme but are not relevant to this document.
Location	Avoidance measures will be located in relevant areas within the DCO boundary.
Evidence for effectiveness	The guidelines are adopted as industry standard for pollution prevention. The standard pollution prevention measures to be implemented are proven to be effective in minimising the risk of pollution. Other proposed avoidance measures are also plainly established and uncontroversial and follow relevant best practice guidelines.
Mechanism for delivery (legal conditions, restrictions or other legally enforceable obligations)	Pollution prevention will be applied in practice through the contractor's Construction Environmental Management Plan (CEMP) or Code of Construction Practice (CoCP). Detailed avoidance measures will be implemented as part of appropriate Construction Method Statements and Construction Environmental Management Plans, in accordance with standard best practice and Design Manual for Roads and Bridges requirements. These documents will form the basis for contractual obligations of the main works contractor, and thus are considered robust mechanisms for delivery.
Characteristics of European Site(s) A brief description of the European Site, including information on:	
Name of European Site and its EU code	Thames Estuary and Marshes Ramsar (UK11069).

Location and distance of the European Site from the proposed works	European Site is approximately 35km down-stream to the west of the Scheme (the relative positions of the Scheme and the European Site are shown in Appendix A, Figure 2).
European Site size	4,838 ha.
Key features of the European Site including the primary reasons for selection and any other qualifying interests	The Thames Estuary and Marshes Ramsar site is described in the Ramsar Information Sheet[25] as: "*a complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.*" It is designated for the following reasons: • Ramsar criterion 2 – the site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates • Ramsar criterion 5 – assemblages of international importance: Species with peak counts in winter: 45,118 waterfowl (5-year peak mean 1998/99-2002/2003) • Ramsar criterion 6 – species/populations occurring at levels of international importance. Qualifying bird species listed against Ramsar criterion 6 are: • Spring/summer: black-tailed godwit; and • Winter: dunlin and red knot.
Vulnerability of the European Site – any information available from the standard data forms on potential effect pathways	Factors affecting the site's ecological character are listed in section 26 of the Ramsar Information Sheet as, dredging, erosion, eutrophication and general disturbance from human activities. The document indicated that the waters in the Thames estuary have been identified as hyper-nutrified for nitrogen and phosphorous.
European Site conservation objectives – where these are readily available	No specific conservation objectives for the Ramsar Site are available.
Assessment Criteria **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.**	
The following potential impacts have been considered for this assessment: • Run-off or silt or pollution of watercourses that flow into the Ramsar site. Disturbance to individuals from the qualifying bird populations of the Ramsar site and any direct pressure on the site itself has been discounted due to the distance between the Scheme and the European Site.	
Initial Assessment **The key characteristics and the details of the European Site should be considered in identifying potential impacts. Describe any likely changes arising as a result of:**	
Reduction of habitat area	There will be no reduction of habitat area of the Ramsar site.
Disturbance to key species	Due to the distance between the Scheme and the European Site these potential effects have been discounted.

[25] https://rsis.ramsar.org/RISapp/files/RISrep/GB1025RIS.pdf [last accessed 09/03/2020]

Habitat or species fragmentation	Due to the distance between the Scheme and the European Site these potential effects have been discounted.
Reduction in species density	Due to the distance between the Scheme and the European Site these potential effects have been discounted. Secondary effects as a result of water pollution are considered in the cell below.
Changes in key indicators of conservation value (water quality etc.)	The improvement works will be confined to the existing highways estate and adjacent areas. There is a hydrological pathway between the Scheme and the European Site. This is via the River Ingrebourne, a tributary of which runs through the Scheme area, and then approximately 14 km south to the River Thames. The European Site is approximately 20 km further downstream. The relative positions of the Scheme and the European Site are shown in Appendix A, Figure 2. In these lower reaches, the River Thames is a large estuarine river subject to tidal flows. As a result of this there will be considerable mixing and dilution. Therefore, the effects pathway as a result of spillage of pollution on the European Site can be discounted. Hyper-eutrification from nitrogen and phosphorous and water management are identified risks for the Ramsar designation, the Scheme will not cause any negative effects in relation to these factors. Standard protection measures will be employed to ensure that water courses are protected from run-off of silt and pollution. However, the screening conclusions in this assessment are not reliant on these. Standard protection measures will be employed to ensure that water courses are protected from run-off of silt and pollution. However, these measures are not intended to specifically avoid or reduce impacts on any European site and the screening conclusions in this assessment are not reliant on these. Detailed assessment of water quality impacts was undertaken as part of the EIA and is reported in full in ES Chapter 8 (Water Environment and Road Drainage). The relevant results of the Method A and D assessments are summarised in Appendix E (calculated as part of the assessment presented in chapter 8 of the ES). The with 'mitigation values' are presented in Appendix E but are not relied upon in discounting this effect pathway. The element of the water quality assessment which is most relevant to this HRA is Method A which assesses impacts on surface water and rivers. Method A focuses on the dilution of routine runoff and pollutants. The method is a simple assessment and includes the use of Highways Agency Water Risk Assessment Tool (HAWRAT) considering dilution of indicator metals (dissolved zinc and dissolved copper). The HAWRAT tool is designed to make an assessment of the short-term risks related to the intermittent nature of road run-off, also known as Runoff Specific Threshold (RSTs) as well as the long-term risks. All discharges have been tested using HAWRAT. The methodology for routine runoff involves tests to predict future concentrations of zinc and copper in receiving watercourses with addition of discharge from the Scheme. This is based on Annual Average Daily Traffic (AADT) flows, catchment size for the road, dilution flows

	(Q95) and current water quality (hardness) for each receiving watercourse. This method also takes into account the likelihood of and extent of sediment deposition. Method D which relates to serious spillage risk is also relevant. The overall conclusion of the ES in relation to surface and river quality impacts taking into account committed mitigation is a negligible impact with neutral/insignificant effects anticipated. Slight significant effects on local receptors (Ingrebourne River and Weald Brook) without mitigation in Table E.1 can be discounted in the context of the distance of the scheme from the designation (as a result of distance and mixing as described above). The conclusion of no likely significant effect is made based on the relative distance of the Scheme from the European Site, the limited expectation of discharge from the scheme and the nature of the European site. The HAWRAT results has been provided to qualify this conclusion. Details of standard water protection measures have been provided for information but are not relied upon for the conclusion.
Climate change	The impact of climate change is not considered relevant when assessing the likely effects of the Scheme.
Describe any likely impacts on the European Site as a whole in terms of:	
Interference with the key relationships that define the structure of the site	No significant impacts.
Interference with key relationships that define the function of the site	No significant impacts.
Indicate significance as a result of the identification of impacts set out above in terms of:	
Reduction of habitat area	No significant impacts.
Disturbance to key species	No significant impacts.
Habitat or species fragmentation	No significant impacts.
Loss	No significant impacts.
Fragmentation	No significant impacts.
Disruption	No significant impacts.
Disturbance	No significant impacts.
Change to key elements of the site	No significant impacts.
Describe where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:	
No significant impacts identified	
Outcome of screening stage	Not likely to be Significant Effects.
Are the appropriate statutory environmental	YES – Natural England accepted that no likely significant effects are predicted on the Thames Estuary and Marshes

bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)?	Ramsar site as per email correspondence provided in Appendix F.

Appendix D. Finding of No significant effects report (screening)

D.1.1 The following finding of no significant effects report has been produced, based on DMRB guidance (HD 44/09).

Table D.1: Finding of No significant effects report (screening)

Project Name:	M25 junction 28 improvement scheme	
Natura 2000 Site under Consideration:	Thames Estuary and Marshes SPA Thames Estuary and Marshes Ramsar site	
Date:	**Author (Name / Organisation):**	**Verified (Name / Organisation):**
Initial assessment 23/05/2019. Subsequent minor edits, final update 1/05/2020	Principal Ecologist, Atkins	Principal Ecologist, Atkins
Name and location of European Site	Thames Estuary and Marshes SPA and Thames Estuary and Marshes Ramsar site in the lower Thames estuary.	
Description of the project	Consideration of options proposed to alleviate congestion and improve traffic flow at junction 28 of the M25. The options considered include new free-flowing link roads to take traffic between the M25 and A12 avoiding the junction. Construction would require land take outside the existing highway boundary.	
Is the project directly connected with or necessary to the management of the site?	No	
Are there other projects or plans that together with the project being assessed could affect 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.	There are no likely significant effects on any European Site.	
Explain why these effects are not considered significant.	There are no European Sites within 2 km of the Scheme, and no European Sites where bats are one of the qualifying features within 30 km of the Scheme. Due to the distance from the Scheme to the Thames Estuary and Marshes SPA and Ramsar site, approximately 35 km via watercourses, the impacts of any water-borne pollution instances due to the Scheme will be sufficiently diluted so have a negligible effect on these designated sites.	

	There are no European Sites within 200m of the ARN.
List of agencies consulted: provide contact name and telephone or email address:	Natural England consultations@naturalengland.org.uk Natural England consultation service Hornbeam House Electra Way Crewe Business Park Crewe Cheshire CW1 6GJ
Response to consultation.	YES – Natural England accepted that no likely significant effects are predicted on the Thames Estuary and Marshes SPA and Ramsar site as per email correspondence provided in Appendix F.

Data collected to carry out the Assessment

Who carried out the assessment?	Sources of data	Level of assessment completed	Where can the full results of the assessment be accessed and viewed?
Principal Ecologist, Atkins	MAGIC website JNCC website http://bd.eionet.europa.eu/activities/Natura_2000/reference_portal	Screening – identification of potential constraints on European Sites.	M25 junction 28 improvements Habitat Regulations Assessment: No significant effects report

Appendix E. HAWRAT results – Method A and Method D

Table E.1: Method A effects of routine runoff on surface waters – cumulative assessment

Catchments reference	Receiving watercourse	Without mitigation							With mitigation						
		RST		EQS (µg/l)		SS test (Tier 1)	Magnitude	Significance	RST		EQS (µg/l)		SS test (Tier 1)	Magnitude	Significance
		Copper	Zinc	Copper*	Zinc**				Copper	Zinc	Copper*	Zinc**			
1+2	Weald Brook	Pass	Pass	0.26	0.63	Fail	Negligible	Slight	Pass	Pass	0.24	0.58	Pass	Negligible	Neutral insignificant
1+2+3	Weald Brook	Pass	Pass	0.34	0.81	Fail	Minor	Slight	Pass	Pass	0.31	0.75	Pass	Negligible	Neutral insignificant
1+2+3+6A +6B+6C	Weald Brook	Pass	Pass	0.44	1.04	n.a	Negligible	Neutral in-significant	Pass	Pass	0.39	0.94	n.a	Negligible	Neutral insignificant
6A+6B+6 C	Weald Brook	Pass	Pass	0.16	0.39	Pass	Negligible	Neutral in-significant	Pass	Pass	0.13	0.34	Pass	Negligible	Neutral insignificant
4+5A+5B	Ingrebourne River	Pass	Pass	0.35	0.86	Pass	Negligible	Neutral in-significant	Pass	Pass	0.35	0.86	Pass	Negligible	Neutral insignificant
5A+5B	Ingrebourne River	Pass	Pass	0.30	0.74	Fail	Minor	Slight	Pass	Pass	0.30	0.74	Pass	Negligible	Neutral insignificant
4+5A+5B +7	Ingrebourne River	Pass	Pass	0.45	0.45	n.a	Negligible	Neutral in-significant	Pass	Pass	0.44	1.05	n.a	Negligible	Neutral insignificant

Key: EQS = Environmental Quality Standards; RST= Run-off Specific Threshold; *copper threshold at high hardness (>200 mg/l caco3) is 10 µg/l;**zinc threshold 7.8; n.a = non applicable as >100m in distance from outfalls.

Table E.2: Method D pollution impacts from accidental spillages

Scenario	Receiving watercourse	Baseline/existing			With mitigation		
		Return period	Magnitude	Significance	Return period	Magnitude	Significance
Existing	River Ingrebourne	474	Negligible	Neutral insignificant	-	-	-
Existing	Weald Brook	1435	Negligible	Neutral insignificant	-	-	-
Existing	River Ingrebourne +Weald Brook	497	Negligible	Neutral insignificant	-	-	-
Proposed	River Ingrebourne	-	Negligible	Neutral insignificant	434	Negligible	Neutral insignificant
Proposed	Weald Brook	-	Negligible	Neutral insignificant	701	Negligible	Neutral insignificant
Proposed	River Ingrebourne +Weald Brook	-	Negligible	Neutral insignificant	233	Negligible	Neutral insignificant
Key:*1 in 100 year threshold							

Appendix F. Stakeholder feedback on HRA screening

F.1 Natural England comments

F.1.1 A draft of the HRA Screening was issued to Natural England for comment on the 20 November 2019.

F.1.2 Natural England responded on 9 December 2019 requesting minor amendments to the HRA Screening with regards to the removal of superfluous air quality information for the Thames Estuary and Marshes SPA and a request to include Epping Forest SAC. This was responded to on December 10 2019 to accept the suggested edits to the Thames Estuary and Marshes SPA. However, with regards to the inclusion of Epping Forest SAC, it was noted that the DMRB HRA guidance sets the air quality scoping cut off from the ARN at 200 m. Therefore, taking into account that Epping Forest SAC is 12 km from the ARN and Scheme DCO boundary, there is no potential impact to screen and Epping Forest SAC was not included.

F.1.3 Natural England replied on the 18 December 2019 accepting the approach. Full (redacted) correspondence copied below.

[redacted]

From: [redacted]
Sent: 18 December 2019 10:41
To: [redacted]
Cc: [redacted]
Subject: RE: M25 J28 - HRA

Hi all,

Thank you for accepting the comments I provided on the HRA.

I can confirm that at the distances you have stipulated there should be no LSE to Epping Forest as a result of changes to air quality. The approach you've outlined is suitable, as you've said, I would recommend including the rationale within the scoping document. I double checked our stance on this with other junction improvement schemes and Natural England take the position that junction changes don't generate new motor movements, and should improve congestion and idling, which results in the net benefit effect I referred to in my previous email.

If the N2k sites were much closer to the changes, then it might be necessary to see more data or modelling, but in this case you are correct in scoping out due to the large distance between the development and Epping Forest.

Many thanks,

[redacted] *Lead Adviser*
Thames Team
Natural England

4th Floor
Eastleigh House
Upper Market Street
Eastleigh
Hampshire
SO50 9YN

From: [redacted]
Sent: 10 December 2019 17:02
To: [redacted]
Cc: [redacted]
Subject: RE: M25 J28 - HRA

Hi [redacted]

Thank you for your email regarding the HRA.

We accept your comment regarding the Thames Estuary and Marshes SPA and the additional information included in Table B.1. We can remove it and state is it more than 200m from the Affected Road Network (ARN).

With regards to Epping Forest, DMRB HRA guidance is fairly rigid on the 200m air quality scoping cut off from the ARN. In the extracted figure from our HRA below, the black line shows the ARN plus 200m. The ARN is the extent of the road network where traffic flow will be altered above a certain threshold so may be greater or smaller than the

1

red line. In this case, the ARN is actually fairly small because it is a very busy junction and the improvements are seen locally. We included Epping Forest on the figure because it was in the figure frame. However, it is well beyond any of our scoping zones. At that distance, there is no potential impact to screen. We could add something into section 3.1 of our HRA to state that Epping Forest is 12km from the redline and ARN and therefore has not been considered at the screening stage.

Is this an acceptable approach?

Many thanks

[redacted]

[redacted]
Principal Ecologist, Infrastructure
UK & Europe
Engineering, Design and Project Management

[redacted]

Woodcote Grove, Ashley Road, Epsom, Surrey KT18 5BW

From: [redacted]
Sent: 09 December 2019 12:07
To: [redacted]
Cc: [redacted]
Subject: RE: M25 J28 - HRA

Dear [redacted]

Thanks for sending through the HRA Screening Report to review. Apologies once again that it took longer than anticipated.

What's in there at the moment is all good. The only comment I had to make regarding the Thames Estuary and Marshes SPA is in Table B.1.
Under the emissions section it may just be worth clarifying that the site is not vulnerable to changes in air quality as it is over 200m from the ARN. Obviously this is stated, but the inclusion of extra information such as distance from the development, and details about the modelling used are potentially superfluous. It just confuses the point slightly if the main reason that it can be screened out is due to a complete lack of impact pathway.

With that said, I think we would recommend the inclusion of Epping Forest SAC. This is somewhat closer to the development than the Thames Marshes and has received a lot of concern and attention due to air quality impacts. The inclusion of Epping Forest would give you an opportunity to provide more detail on the overall impacts of the scheme for congestion and air quality impacts. This may then be used at a later stage when we consider impacts to SSSIs as well.
Presumably the scheme will have a net benefit impact to congestion(?) and impacts could be screened out this way. However we would like to see the evidence for this. Given the scheme affects extremely busy roads, which are dealing with huge volumes of traffic, it is conceivable that road traffic impacts could be seen extremely far away from the scheme. We just want to make sure that we're doing our due diligence here, and see the arguments and data to show that there would be no impact to Epping Forest.

Does this sound reasonable to you? Happy to discuss.

Many thanks,

[redacted] *Lead Adviser*
Thames Team
Natural England

4th Floor
Eastleigh House
Upper Market Street
Eastleigh

From: [redacted]
Sent: 20 November 2019 18:07
To: [redacted]
Cc: [redacted]
Subject: M25 J28 - HRA

Hi [redacted]

Thank you for taking the time to meet with us today to allow us to introduce you to the M25 J28 scheme.

As promised, attached is the HRA screening for the scheme. Following guidance for road schemes, there is a final section in Appendix D relating to the 'finding of no significant effects'. In that we list what agencies were consulted and the response received. This will be updated with you response, when available. If you are able to provide a response by email, we can add this to the document.

As mentioned in the meeting today, since this document was authored, Highways England have updated their advice on HRA (previously HD44/09) and it is now LA115. This doesn't change the content or assessment within the document.

If you have any queries about this document or content, please get in touch.

Thanks

[redacted]

[redacted]
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