Local Transport Plan (LTP5)

Report to Inform Habitats Regulations Assessment

Kent County Council

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Table of Contents

Tables

1. Introduction

Background to the Project

1.1 AECOM was appointed by Kent County Council (KCC) to assist in undertaking a Habitats Regulations Assessment (HRA) for the fifth Local Transport Plan (LTP5). The LTP5 will consider a horizon to at least 2038, to match the horizon of District and Borough Planning Authority Local Plans and will also consider impacts through to 2050 in line with consideration of legislated targets on carbon emissions.

1.2 A Local Transport Plan (LTP) is a statutory requirement for the County Council as Local Transport Authority under the Transport Act 2000 (as amended by the Local Transport Act 2008). LTP5 will provide a key overarching integrated plan for how the transport authority will meet the needs of residents, tourists and businesses travelling to, from and through the county.

1.3 It will provide the detail of the required transport infrastructure for Kent by bringing together and setting out the impact of cumulative growth forecasts from district Local Plans and the district transport strategies that support those plans.

1.4 This HRA is to inform KCC of the potential effects of the LTP5 on European sites (Special Areas of Conservation, SACs, Special Protection Areas, SPAs, and Ramsar sites designated under the Ramsar convention) that are located within or adjacent to Kent.

1.5 The aim of this HRA is to assess whether the implementation of the LTP5 has the potential to cause Likely Significant Effects (LSEs) and, where identified, adverse effects on the integrity on European sites, either in isolation or in combination with other plans and projects, and to determine whether mitigation measures are required.

1.6 LSEs are deemed to be present where the implementation of an outcome or transport intervention might potentially prevent a European site from reaching its conservation objectives.

1.7 The HRA of the LTP5 is required to determine if there are any realistic linking pathways present between a European site and the LTP5 and where LSEs cannot be screened out, an analysis to inform Appropriate Assessment will be undertaken (to be documented separately) to determine if adverse effects on the integrity of the European sites will occur as a result of the LTP5 alone or in combination with other projects and plans.

1.8 The HRA has been updated in November 2024 to take account of two new schemes and to address comments raised by some consultees, particularly CPRE.

Context of the LTP5

1.9 Kent occupies a land area of approximately 1,368 sqm and just over 350 miles of coastline. The county consists of 12 local authority districts and Medway Unitary Authority, of which Medway is excluded from the KCC area. Figure 1 shows a map of Kent and break down of local authority districts.

1.10 As LTP5 is a KCC plan, it will concern local transport in the area for which KCC is authority. This does not therefore include Medway, as transport in Medway is the responsibility of Medway Council.

Figure 1: Kent Local Authority Districts

Legislative Context

1.11 The National Site Network of SACs and SPAs is protected via the Conservation of Habitats and Species Regulations 2017 (as amended, most recently in 2019 to reflect Brexit). These regulations also set out the process for assessing potential adverse effects on such sites, known as Habitats Regulations Assessment (HRA). in England, the HRA process is also applied to another category of internationally important wildlife site called Ramsar sites.

1.12 The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). This established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within our domestic law. During the transition period EU law applies to and in the UK. The UK is no longer a member of the European Union. However, Habitats Regulations Assessment will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[1].

1.13 The HRA process applies the 'Precautionary Principle'[2] to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. Plans and projects with predicted adverse impacts on European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Over-riding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

1.14 To ascertain whether or not site integrity will be affected, an Appropriate Assessment (AA) should be undertaken of the plan or project in question. Box 1 below sets out the legislative basis for HRA.

[1] these don't replace the 2017 Regulations but are just another set of amendments
[2] The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *"When human activities may lead to morally unacceptable harm* [to the environment] *that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis".*

Conservation of Habitats and Species Regulations 2017 (as amended)

The Regulations state that:

"*A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives… The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site*".

Box 1: The legislative basis for Habitats Regulations Assessment

Relevant Case Law

1.15 As a consequence of the UK's exit from the EU, it was necessary for various amendments to be made to the Habitats Regulations. These changes were required to ensure that England and Wales (and Scotland through separate regulations) continue to maintain the same standard of protection afforded to European sites. The Habitats Regulations remain in force, including the general provisions for the protection of European sites and the procedural requirements to undertake HRA. The changes made were only those necessary to ensure that they remain operable following the UK's exit from the EU.

1.16 Although the UK is no longer part of the EU, a series of prior rulings of the Court of Justice of the European Union (CJEU) are relevant and have been considered when preparing this document. These rulings and their implications for this HRA are summarised in Table 1.

Table 1. Case law relevant to the KLTP HRA

Case	Ruling	Relevance to the KLTP HRA
People Over Wind and Sweetman v Coillte Teoranta (C-323/17)	The ruling of the CJEU in this case requires that any conclusion of 'no likely significant effect' on a European site must be made prior to any consideration of measures to avoid or reduce harm to the European site. The determination of likely significant effects should not, in the opinion of the CJEU, constitute an attempt at detailed technical analyses. This should be conducted as part of the appropriate assessment	This ruling clarified that 'mitigation' (i.e., measures that are specifically introduced to avoid or reduce a harmful effect on a European site that would otherwise arise) should not be taken into account when forming a view on likely significant effects. Mitigation should instead only be considered at the Appropriate Assessment stage. This HRA has been cognisant of that ruling.
Waddenzee (C-127/02)	The ruling in this case clarified that appropriate assessment must be conducted using best scientific knowledge, and that there must be no reasonable scientific doubt in the conclusions drawn. The Waddenzee ruling also provided clarity on the definition of 'significant effect', which would be any effect from a plan or project which is likely to undermine the conservation objectives of any European site.	Adopting the precautionary principle, a 'likely' effect in this HRA is interpreted as one which is 'possible' and cannot be objectively ruled out. The test of significance of effects has been conducted with reference to the conservation objectives of relevant European sites.
Holohan and Others v An Bord Pleanála (C-461/17)	The conclusions of the Court in this case were that consideration must be given during appropriate assessment to: • effects on qualifying habitats and/or species of a SAC or SPA, even when occurring outside of the boundary of a European site, if these are relevant to the site meeting its conservation objectives, and • effects on non-qualifying habitats and/or species on which the qualifying habitats and/ or species depend, and which could result in	This relates to the concept of 'functionally-linked habitat', i.e., areas outside of the boundary of a European site which supports its qualifying feature(s). In addition, consideration must be given to non-qualifying features upon which qualifying habitats and/ or species rely.

Case	Ruling	Relevance to the KLTP HRA
	adverse effects on the integrity of the European site.	
T.C Briels and Others v Minister van Infrastructuur en Milieu (C-521/12)	The ruling of the CJEU in this case determined that compensatory measures cannot be used to support a conclusion of no adverse effect on site integrity.	Compensation can only be considered at the relevant stage of HRA and not during appropriate assessment. Compensation must be delivered when appropriate assessment concludes that there will be adverse effects on site integrity.

The Layout of this Report

1.17 Chapter 2 of this report explains the methodology by which this HRA has been carried out, including the three essential tasks that form part of the HRA process. Detailed background on the main impact pathways identified in relation to the LTP5 and European sites is provided in Chapter 3 and Chapter 4 undertakes the screening for LSEs of the LTP5. Chapter 5 undertakes the Appropriate Assessment, Chapter 6 the in-combination assessment and the conclusions and recommendations arising from the HRA are set out in Chapter 7. Detail on the European sites relevant to the LTP5, including an introduction to the sites, a summary of their qualifying habitats/ species, Natural England Conservation Objectives and the current threats and pressures relevant for these sites are provided at Appendix A.

Quality Assurance

1.18 This report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2015 and 14001:2015, ISO 44001:2017 and ISO 45001:2018. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

1.19 All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2017).

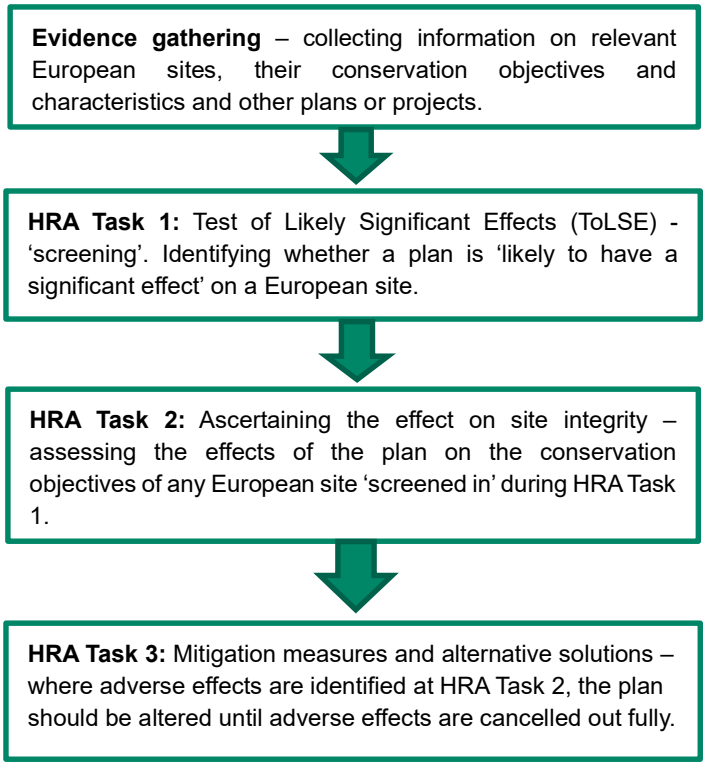
2. Methodology

Introduction

2.1 The HRA has been carried out with reference to the general EC guidance on HRA[3] and that produced in July 2021 by the UK government[4]. These have been referred to in undertaking this HRA.

2.2 Image 1 below outlines the stages of HRA according to current guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

Image 1. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2011.



Description of HRA Tasks

HRA Task 1 – Test of Likely Significant Effects (ToLSE)/ Screening

2.3 Following evidence gathering, the first stage of any Habitats Regulations Assessment is a Test of Likely Significant Effects (ToLSE) test - essentially a brief, high-level assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

> *"Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"*

2.4 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be concluded to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction.

[3] European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
[4] Habitats regulations assessments: protecting a European site - GOV.UK (www.gov.uk)

a. The ToLSE is based on identification of the impact source, the pathway of impact to receptors and then confirmation of the specific European Site receptors. These are normally designated features but also include habitats and species fundamental to those designated features achieving favourable conservation status (notably functionally linked land outside the European site boundary).

b. In the Waddenzee case[5], the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive, including that:

   - An effect should be considered 'likely', *"if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site"* (para 44);
   - An effect should be considered 'significant', *"if it undermines the conservation objectives"* (para 48); and
   - Where a plan or project has an effect on a site *"but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned"* (para 47).

c. The ToLSE consists of two parts: Firstly, determining whether there are any outcomes or transport interventions that could result in negative impact pathways and secondly establishing whether there are any European sites that might be affected. It identifies European designated sites that could be affected by the LTP5 and also those impact pathways that are most likely to require consideration.

d. It is important to note that the ToLSE must generally follow the precautionary principle as its main purpose is to determine whether the subsequent stage of 'Appropriate Assessment' (i.e., a more detailed investigation) is required.

HRA Task 2 – Appropriate Assessment

2.5 Where it is determined that a conclusion of 'no Likely Significant Effects' cannot be drawn, the analysis must proceed to the next stage of HRA known as Appropriate Assessment. Case law has clarified that 'Appropriate Assessment' is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to Appropriate Assessment rather than ToLSE. Appropriate Assessment refers to whatever level of assessment is appropriate to form a conclusion regarding effects on the integrity (coherence of structure and function) of European Sites in light of their conservation objectives.

2.6 By virtue of the fact that it follows the ToLSE process, there is a clear implication that the analysis will be more detailed than undertaken at the previous stage. One of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any policies or allocations that could not be dismissed following the high-level ToLSE analysis and evaluate the potential for an effect in more detail, with a view to concluding whether there would actually be an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the European site(s)).

2.7 In 2018 the Holohan ruling[6] handed down by the European Court of Justice included among other provisions paragraph 39 of the ruling stating that '*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, … typical habitats or species must be included in the appropriate assessment, <u>if they are necessary to the conservation of the habitat types and species listed for the protected area</u>*' [emphasis added].

2.8 The appropriate assessment of the Local Transport Plan follows the section on screening.

Confirming Other Plans and Projects That May Act 'In Combination'

2.9 It is a requirement of the Habitats Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.

[5] Case C-127/02
[6] Case C-461/17

2.10 For example, in the context of the LTP5, a reasonable question might be whether the Local Plans of other nearby authorities might have an in-combination effect with the LTP5. This synergistic effect may potentially lead to higher recreational pressure in European sites or encouraging higher volumes of private car travel along European sites, potentially leading to an increase in atmospheric pollution.

2.11 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation, i.e., to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the project would otherwise be screened out because its individual contribution is inconsequential. The overall approach is to exclude the risk of there being unassessed LSEs in accordance with the precautionary principle. This was first established in the seminal Waddenzee[7] case.

2.12 The LTP5 will occur alongside the following other strategic planning documents including other transport plans and Local Plans:

- Dartford Borough Council Core Strategy to 2026 (adopted 2011) https://windmz.dartford.gov.uk/media/Inspector%20Approved%20Core%20Strategy.pdf
- The Swale Borough Local Plan (adopted July 2017) https://services.swale.gov.uk/media/files/localplan/adoptedlocalplanfinalwebversion.pdf
- Sevenoaks District Council Core Strategy to 2026 (adopted 2011) https://www.sevenoaks.gov.uk/downloads/file/356/core_strategy_adopted_version_february_2011
- Gravesham Borough Council Local Plan Core Strategy to 2028 (adopted 2014) https://drive.google.com/file/d/1bJTgQLmhbzjqZFibl-5WFb2tbvixXpLk/view
- Tonbridge and Malling Borough Council Core Strategy to 2021 (adopted 2007) - it is noted that at the time of writing this HRA the Tonbridge and Malling Local Plan – Regulation 18 is out for consultation. file:///C:/Users/rigbyl/Downloads/core_strategy_adopted.pdf
- Tunbridge Wells Borough Council Core Strategy to 2026 (adopted 2010) https://tunbridgewells.gov.uk/__data/assets/pdf_file/0003/343353/Core-Strategy-adopted-June-2010.compressed.pdf
- Maidstone Borough Council Local Plan to 2031 (adopted 2017) https://maidstone.gov.uk/__data/assets/pdf_file/0005/171149/Local-Plan-v2-November-2017.pdf
- Ashford Borough Council Local Plan to 2030 (adopted 2019) https://www.ashford.gov.uk/media/jw3nbvq1/adopted-ashford-local-plan-2030.pdf
- Canterbury City Council Local Plan to 2031 (adopted 2017) https://www.canterbury.gov.uk/downloads/planning-and-building/guide-to-planning-permission/local-plan/canterbury-district-local-plan-adopted--july-2017-pdf/
- Folkestone & Hythe District Council Places and Policies Local Plan to 2031 (adopted 2020) https://www.folkestone-hythe.gov.uk/media/4783/Places-and-Policies-Local-Plan-2020/pdf/Places_and_Policies_Local_Plan_2020.pdf?m=637788995597470000
- Dover District Council Core Strategy to 2026 (adopted 2010) – it is noted that at the time of writing this HRA that consultation is open on Regulation 19 Submission Local Plan to 2040 https://www.dover.gov.uk/Planning/Planning-Policy-and-Regeneration/PDF/Adopted-Core-Strategy.pdf
- Thanet District Council Local Plan to 2031 (adopted 2020)
- https://www.thanet.gov.uk/wp-content/uploads/2018/03/LP-adjusted.pdf
- Medway Council Local Plan to 2011 (adopted 2003) - it is noted that Medway plan to publish a draft Local Plan (up to 2041) in 2025 https://www.medway.gov.uk/info/200149/planning_policy/146/current_planning_policies/3

[7] Waddenzee case (Case C-127/02, [2004] ECR-I 7405)

- Thurrock Council Core Strategy to 2026 (adopted 2015) https://www.thurrock.gov.uk/sites/default/files/assets/documents/core_strategy_adopted_2011_amended_2015.pdf
- Thurrock Transport Strategy - Strategy documents | Travel strategies | Thurrock Council
- Bexley Local Plan (currently going through Examination), Local Plan review | London Borough of Bexley
- Bromley Local Plan (adopted 2019), The Bromley Local Plan – London Borough of Bromley
- Tandridge Local Plan (currently going through Examination), Local Plan 2033 - Tandridge District Council
- Mid Sussex District Plan (currently at Regulation 18), Mid Sussex District Plan - Mid Sussex District Council
- Wealden Local Plan (currently preparing for Regulation 18)
- Rother Local Plan (currently preparing for Regulation 18)
- East Sussex Local Transport Plan (being developed)
- The London Plan 2021
- https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf
- Mayor's Transport Strategy – 2018 and 2022 revision
- https://www.london.gov.uk/programmes-strategies/transport/our-vision-transport/mayors-transport-strategy-2018

2.13 Where Local Authorities do not have a separate transport plan to support the Local Plan, sustainable transport policies will be included within the Local Plans for these authorities in the majority of cases. While the focus of these policies is primarily to promote sustainable modes of transport, they also include improvements to the road network that might increase the use of private vehicles. Furthermore, there is the potential that such plans may increase recreational patterns and / or water runoff effects in combination. Therefore, these documents were also considered in this HRA.

3. Relevant Impact Pathways

Introduction

3.1 There are no standard criteria for determining the ultimate physical scope of an HRA. Rather, the source-pathway-receptor model should be used to determine whether there is any potential pathway connecting development to any European sites. Briefly defined, pathways are routes by which a change in activity associated with a development can lead to an effect upon a European site.

3.2 No policies or proposals in the LTP5 will involve direct losses of any European sites. Therefore, the following impact pathways are expected to be relevant to the HRA of the LTP5 given the scope of the interventions.

3.3 Details of each European site can be found at Appendix A.

Air Quality

3.4 The principal pollutant of concern to habitats is oxides of nitrogen (NOx) and ammonia (NH_3) emitted from combustion, or in the case of ammonia from catalytic converters, including vehicle exhausts.

3.1 According to the World Health Organisation, the critical NO_x concentration (critical threshold) for the protection of vegetation is 30 μgm^{-3}, while that for ammonia is 3 μgm^{-3}, falling to 1 μgm^{-3} for sites with a significant lichen interest; In addition, ecological studies have determined 'critical loads'[8] of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH_3) for key habitats within European sites.

3.1 With regard to pollution from road traffic, the Department of Transport's (DoT) Transport Analysis Guidance states that, "*Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant*"[9]. See Figure 2 below.

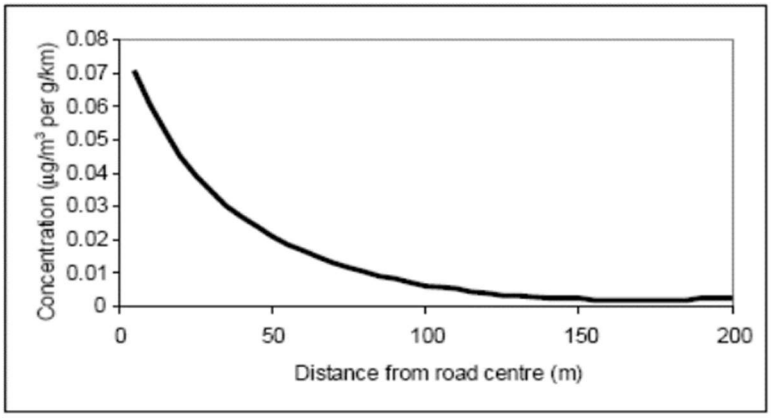


Figure 2: Traffic contribution to concentrations of pollutants at different distances from a road (Source: www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf**)**

3.2 This is therefore the distance that has been used throughout this HRA in order to determine whether European sites have the potential to be significantly affected by road development under the LTP5, in line with DoT guidance and, although not a Highways England scheme, guidance in the Design Manual for Roads and Bridges (DMRB) LA 115 – Habitats Regulations (2020)[10], which states:

"The screening stage of HRA shall be completed for all European sites where a route corridor or project meets any of the following screening criteria:

1. *is within 2km of a European site or functionally linked land;*

[8] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

[9] Transport analysis guidance. Available at: https://www.gov.uk/guidance/transport-analysis-guidance-tag

[10] https://www.standardsforhighways.co.uk/search/e2fdab58-d293-4af7-b737-b55e08e045ae

2. *is within 30km of a SACs, where bats are noted as one of the qualifying interests;*
3. *crosses or lies adjacent to, upstream of, or downstream of, a watercourse which is designated in part or wholly as a European site;*
4. *has a potential hydrological or hydrogeological linkage to a European site containing a groundwater dependent terrestrial ecosystem (GWDTE) which triggers the assessment of European sites; or*
5. *has an affected road network (ARN) which triggers the criteria for assessment of European sites"*

3.1 The following European sites within the LTP5 area lie within 200m of major roads:

- Medway Estuary & Marshes SPA/ Ramsar – adjacent to the A249
- The Swale SPA/ Ramsar - adjacent to the A249 and within 200m of the A299 (Thanet Way)
- Thanet Coast & Sandwich Bay SPA/ Ramsar – adjacent to the A28 (Canterbury Road) and A299, within 200m of the A256 (Ramsgate Road)
- Thanet Coast SAC - adjacent to the A28 (Canterbury Road)
- Sandwich Bay SAC - adjacent to the A299, within 200m of the A256 (Ramsgate Road)
- Thanet Coast & Sandwich Bay Ramsar – bisected by the A258 (at Hacklinge)
- Dover to Kingsdown Cliffs SAC – within 200m of the A2 (Jubilee Way)
- Lydden & Temple Ewell Downs SAC – within 200m of the A2
- Folkestone to Etchinghill Escarpment SAC – bisected by A20 and A260, within 200m of the M20 at junction 13
- Dungeness, Romney Marsh and Rye Bay Ramsar – bisected by the A259 (Dymchurch Road) and the A2070
- North Downs Woodlands SAC – adjacent to the A249 and within 200m of the A229

3.2 The HRA therefore considers the potential for schemes outlined in the LTP5 to either improve air quality on these links (such as by maximising sustainable transport initiatives) or to contribute to a deterioration in air quality.

Disturbance – Noise/ Lighting During Construction and Operation

3.1 The factors that influence a species response to a disturbance are numerous, but three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity. Regarding construction noise impacts on waterfowl and waders, AECOMs professional experience is that noise impacts are unlikely to arise from noise-generating activities located more than c.200m from the qualifying bird species. Studies indicate that noise levels in excess of 84 dB(A) typically elicit a flight response in birds[11] and the same research recommends that construction noise levels are kept below 70 dB to avoid excessive disturbance of birds[12].

3.2 The noisiest construction activity is generally impact piling, where a hammer is dropped on the pile. This has a typical maximum noise level of 100-110dB at 1m from source. Noise attenuates by 6dB for every doubling of distance, such that impact piling typically results in noise levels below 70 dB at distances of more than 100m from source. Therefore, a 200m separation between construction activity and the SPA/Ramsar should generally ensure no disturbance arises through this pathway. This does not obviate the need for project-level HRA for individual applications but will aid in determining whether initiatives are likely to raise conflict with SPAs through this pathway.

[11] Cutts N & Allan J. 1999. Avifaunal Disturbance Assessment. Flood Defence Works: Saltend. Report to Environment Agency).
[12] Cutts, N., Phelps, A. and Burdon, D. (2009) Construction and waterfowl: Defining Sensitivity, Response, Impacts and Guidance. Report to Humber INCA, Institute of Estuarine and Coastal Studies, University of Hull

3.3 The degree of impact that varying levels of noise will have on different species of bird is poorly understood except that a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al (1995) examined the distribution of 43 passerine species (i.e., 'songbirds'), of which 60% had a lower density closer to the roadside than further away. By controlling vehicle usage, they also found that the density generally was lower along busier roads than quieter roads[13].

3.1 Increased road traffic can be accompanied by increased noise impacts although large changes are required. For example, a 25% increase in traffic on an existing road will result in only a 1dB(A) increase in noise even at the roadside, with a 100% increase needed to result in a 3dB(A) increase at the roadside – the lowest increase in noise that is thought to be even perceivable by humans and birds. As such changes in traffic flow or speeds are unlikely to result in increased disturbance of sensitive wildlife unless they are very large: a doubling in total flows is unlikely to materially increase noise exposure even close to the road.

3.2 Disturbance from visual intrusion such as lighting is likely to be most relevant if the road is immediately adjacent to an SPA or certain SACs (e.g., those designated for bat species). Road schemes may result in an increase in roadside lighting. Lighting is only likely to be an issue if the LTP5 results in the introduction of street lighting to roads within close proximity of these European sites which are currently unlit.

3.3 With regard to HRA, noise and lighting are only considered an issue if they affect European sites designated for vulnerable animal interest (particularly birds and bats) rather than their habitats. This potentially applies to the following European sites:

- Medway Estuary & Marshes SPA/ Ramsar
- The Swale SPA/ Ramsar
- Thanet Coast & Sandwich Bay SPA/ Ramsar
- Dungeness, Romney Marsh and Rye Bay Ramsar
- Stodmarsh Marsh SPA/ Ramsar
- Thames Estuary & Marshes SPA/ Ramsar

3.4 The construction of entirely new roads can result in significant disturbance impacts depending on the existing noise and lighting environment. However, no such construction is proposed close to any SPA's or SAC's designated for bat interest features in the LTP5.

Water Quality

3.5 The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

3.6 At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.

- Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient, and so eutrophication is associated with discharges containing available nitrogen.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

3.7 Sewage and some industrial effluent discharges contribute to increased nutrients in the European sites and particularly to phosphate levels in watercourses. However, these will not be associated with LTP5

[13] Reijnen, R. et al. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. Journal of Applied Ecology 32: 187-202

interventions. Road schemes can, however, result in pollution (such as runoff of sediment, hydrocarbons and salt spray from de-icing) of aquatic, marine and riverine European sites during construction and operation, if they occur within close proximity of that site. This potentially applies to the following European sites:

- Medway Estuary & Marshes SPA/ Ramsar
- The Swale SPA/ Ramsar
- Thanet Coast & Sandwich Bay SPA/ Ramsar
- Thanet Coast SAC
- Dungeness, Romney Marsh and Rye Bay Ramsar
- Stodmarsh SPA/ Ramsar/ SAC
- Thames Estuary & Marshes SPA/ Ramsar

Nutrient Neutrality

3.8 Nutrient neutrality requirements have been imposed by Natural England for some European sites in the UK. This is because the current levels of nutrient input are causing harm to the designated flora and fauna and resulting in a failure to meet the site conservation objectives, primarily due to eutrophication issues. The only site complex in Kent for which this is the case is the Stodmarsh SAC / SPA / Ramsar. It should be noted that nutrient neutrality requirements only extend to new housing developments, which are a major net generator of additional nutrients via the discharge of treated sewage effluent. Generally, nutrient neutrality is not required for transport infrastructure schemes because they do not generate nutrients. As such, transport schemes need only to consider and implement 'standard' mitigation measures in relation to water quality, as required by legislation such as the Environmental Permitting (England and Wales) Regulations 2016[14] which make it an offence to pollute watercourses, irrespective of whether they are European sites or connect to European sites. These include non-structural and structural best management practices, including transport management, control of de-icing agents, street and gully pot cleaning, vegetated controls, ponds / wetlands, infiltration devices and water quality inlets. However, since there is no formal requirement for transport schemes to be nutrient neutral, this sub-element of the water quality impact pathway is not discussed further in this HRA.

Loss of Functionally Linked Land

3.9 While most European sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not always the case. A diverse array of qualifying species including birds, bats and amphibians are not confined to the boundary of designated sites.

3.10 For example, the highly mobile nature of both wildfowl and heathland birds implies that areas of habitat of crucial importance to the maintenance of their populations are outside the physical limits of European sites. Despite not being part of the formal designation, this habitat is still integral to the maintenance of the structure and function of the interest feature on the designated site and, therefore, land use plans that may affect such areas should be subject to further assessment. This has been underlined by a recent European Court of Justice ruling (C-461/17, known as the Holohan ruling[15]) which in paragraphs 37 to 40 confirms the need for an Appropriate Assessment to consider the implications of a plan or project on habitats and species outside the European site boundary provided that those implications are liable to affect the conservation objectives of the site.

3.11 With regards to birds, areas of functionally linked land typically provide habitat for foraging or other ecological functions essential for the maintenance of the designated population e.g., high tide roost on coastal populations. Functionally linked land may extend up to the maximum foraging distance for the designated bird species. However, the number of birds foraging will tend to decrease further away from the

[14] https://www.legislation.gov.uk/uksi/2016/1154/contents
[15] The Holohan ruling also requires all the interest features of the European sites discussed to be catalogued (i.e., listed) in the HRA. That is the purpose of Appendix A.

protected site and thus the importance of the land to the maintenance of the designated population will decrease.

3.12 Natural England Impact Risk Zones identify the typical distances that wintering waterfowl will travel from their SPAs to forage and the guidance that underlies those zones will be utilised in this HRA. The main document reference is:

- Natural England (2019). Impact Risk Zones Guidance Summary Sites of Special Scientific Interest Notified for Birds. Version 1.1

3.13 Relevant Impact Risk Zones are shown in Table 2:

Table 2. Natural England Impact Risk Zones for Designated Bird Features

Assemblage	Impact Risk Zone (foraging distance)
Wintering birds (except wintering waders and grazing wildfowl; wigeon and geese)	Up to 500m
Dabbling ducks such as teal, mallard and gadwall	Home ranges could extend beyond site boundaries at coastal sites, but less likely to do so at inland water bodies.
Wintering waders (except golden plover and lapwing), brent goose & wigeon	Maximum foraging distance is 2km
Wintering lapwing and golden plover	Maximum foraging distance is 15-20km. Golden plover can forage up to 15km from a roost site within a protected site. Lapwing can also forage similar distances. Both species use lowland farmland in winter, and it is difficult to distinguish between designated populations and those present within the wider environment. Developments affecting functionally linked land more than 10km from the site are unlikely to impact significantly on designated populations.
Wintering white-fronted goose, greylag goose, Bewick's swan, whooper swan, pink-footed goose & wintering bean goose	Maximum foraging distance is 10km although studies have shown that pink-footed geese will fly 20km from their roosting site to feed[16]. A bespoke functional land IRZ has replaced the individual Birds 6/7 IRZs for sites supporting the following goose and swan species: pink-footed geese, barnacle goose, Bewick's swan, white-fronted goose and whooper swan. The IRZ is based on GIS distribution records of feeding pink-footed geese from a study undertaken for Natural England by the Wildfowl & Wetlands Trust[17] and the results of work undertaken by the British Trust for Ornithology to identify functionally connected habitat used by barnacle goose, Bewick's swan, white-fronted goose and whooper swan based on WeBS site and BirdTrack data and focuses on only the areas of land that we know are being used as functional habitat by designated populations

Source: Natural England (2019). Impact Risk Zones Guidance Summary Sites of Special Scientific Interest Notified for Birds. Version 1.1

3.14 The aforementioned Natural England document further identifies that for SSSIs designated for wintering waterfowl and waders (other than golden plover and lapwing) a maximum of 2km is appropriate for the identification of potential functionally-linked land for development with the exception of wind energy (3km) and airports (10km).

3.15 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked land[18].

3.16 Generally, the identification of an area as functionally linked land is now a relatively straightforward process, and it is reasonable to assume that a site <2 ha in size is unlikely to support a large enough population of birds (taking sightlines etc., into account) to constitute 1% of an SPA population. However, the importance

[16] https://monitoring.wwt.org.uk/wp-content/uploads/2018/12/Mapping-feeding-Pinkfeet-in-England-Final-report-vFinal.Jan15-2.pdf
[17] Ibid
[18] Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. Natural England Commissioned Reports 207: 73pp.

of non-designated land parcels may not be apparent and could require the analysis of existing data sources to be firmly established. In some instances, data may not be available at all, requiring some further survey work.

3.17 Those SPA/ Ramsar sites whose interest features are primarily coastal birds and off-shore feeders can be **screened out** from this impact pathway.

3.18 The following European sites are considered susceptible to loss of Functionally Linked Land in the context of the LTP5:

- Medway Estuary & Marshes SPA/ Ramsar
- The Swale SPA/ Ramsar
- Thanet Coast & Sandwich Bay SPA/ Ramsar
- Dungeness, Romney Marsh and Rye Bay Ramsar
- Stodmarsh Marsh SPA/ Ramsar
- Thames Estuary & Marshes SPA/ Ramsar.

Recreational Pressure

3.19 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfill conservation objectives while also providing recreational opportunity. Various research reports have provided compelling links between changes in housing and access levels[19], and impacts on European sites[20] [21]. An increase in recreational disturbance may represent an issue for any flora and fauna, but it is of particular significance for European sites that are designated for bird species. Different European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of planning documents tend to focus on recreational disturbance that occurs as a result of new residents[22], but recreational pressure impacts may also be the result of certain infrastructure schemes.

Bird Disturbance

3.20 Human activity can affect birds either directly (e.g. by eliciting flight responses) or indirectly (e.g. by damaging habitat or reducing bird fitness in less obvious ways such as through inducing stress responses). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to much subtler behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub optimal areas etc.) and physiological changes (e.g. an increase in heart rate). While such changes are less noticeable, they might result in major population-level changes by altering the balance between immigration / birth and emigration / death[23].

3.21 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and time spent responding to disturbance is time that is not spent feeding[24]. Disturbance therefore increases energetic expenditure while reducing energetic intake, which can adversely affect the 'condition' and ultimately survival of individual birds. Additionally, displacement of birds from one feeding site to another can increase the pressure on the resources available within alternative foraging sites, which consequently must sustain a greater number of birds[25]. Moreover, the higher proportion of time a breeding

[19] Weitowitz D.C., Panter C., Hoskin R. & Liley D. (2019). The effect of urban development on visitor numbers to nearby protected nature conservation sites. *Journal of Urban Ecology* **5**. https://doi.org/10.1093/jue/juz019
[20] Liley D, Clarke R.T., Mallord J.W., Bullock J.M. (2006a). The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.
[21] Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. (2006b). Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.
[22] The RTPI report 'Planning for an Ageing Population' (2004) which states that 'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.' It also states that 'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.
[23] Riley, J. (2003). Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[24] Riddington, R. *et al*. (1996). The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* **43**:269-279.
[25] Gill, J.A., Sutherland, W.J. & Norris, K. (1998). The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* **12**: 67-72.

bird spends away from its nest, the more likely it is that eggs will cool and the more vulnerable they, or any nestlings, are to predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and nightjar[26] [27].

3.22 Several factors (e.g. seasonality, type of recreational activity) may have pronounced impacts on the magnitude of bird disturbance. Disturbance in winter may be more impactful because food shortages make birds more vulnerable at this time of the year. In contrast, this may be counterbalanced by fewer recreational users in winter months and lower overall sensitivity of birds to disturbance outside the breeding season. Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance compared to hiking[28]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[29]. Furthermore, differences in on-site route lengths and usage patterns obtained in visitor surveys likely imply that key spatial and temporal parameters (such as the area of a site potentially impacted and the frequency of disturbance) will also differ between recreational activities. This suggests that activity type is a factor that ought to be taken into account in HRAs.

Trampling Damage, Nutrient Enrichment and Wildfires

3.23 Most terrestrial habitats (especially heathland, woodland and dune systems) can be affected by trampling and other mechanical damage, which dislodges individual plants, leads to soil compaction and erosion. The following studies have assessed the impact of trampling associated with different recreational activities in different habitats:

- Wilson & Seney)[30] examined the degree of track erosion caused by hikers, motorcyclists, horse riders and cyclists in 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.

- Cole et al[31] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each trampled between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphology was found to explain more variation in response than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. The cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.

- Cole [32] conducted a follow-up study (across four vegetation types) in which shoe type (trainers or walking boots) and trampling weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier tramplers caused a

[26] Clarke R.T., Liley D., Sharp J.M., Green R.E. (2013). Building development and roads: Implications for the distribution of stone curlews across the Brecks. *PLOS ONE*. https://doi:10.1371/journal.pone.0072984.
[27] Liley D. & Clarke R.T. (2003). The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. Biological Conservation **114**: 219-230.
[28] Banks P.B., Bryant J.Y. (2007). Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* **3**: 14pp.
[29] Miller S.G., Knight R.L., Miller C.K. (2001). Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* **29**: 124-132.
[30] Wilson, J.P. & J.P. Seney. (1994). Erosional impact of hikers, horses, motorcycles and off-road bicycles on mountain trails in Montana. *Mountain Research and Development* **14**:77-88
[31] Cole, D.N. (1995a). Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* **32**: 203-214
Cole, D.N. (1995b). Experimental trampling of vegetation. II. Predictors of resistance and resilience. *Journal of Applied Ecology* **32**: 215-224
[32] Cole, D.N. (1995c). Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.

greater reduction in vegetation height than lighter tramplers, but there was no differential impact on vegetation cover.

- Cole & Spildie[33] experimentally compared the effects of off-track trampling by hikers and horse riders (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.

3.24 A major concern for nutrient-poor terrestrial habitats (e.g. heathlands, sand dunes, bogs and fens) is nutrient enrichment associated with dog fouling (addressed in various reviews, e.g.[34]). It is estimated that dogs will defecate within 10 minutes of starting a walk and therefore most nutrient enrichment arising from dog faeces will occur within 400m of a site entrance. In contrast, dogs will urinate at frequent intervals during a walk, resulting in a more spread-out distribution of urine. For example, in Burnham Beeches National Nature Reserve it is estimated that 30,000 litres of urine and 60 tonnes of dog faeces are deposited annually[35]. While there is limited information on the chemical constituents of dog faeces, nitrogen is one of the main components[36]. Nutrient availability is the major determinant of plant community composition and the effect of dog defecation in sensitive habitats is comparable to a high-level application of fertiliser, potentially resulting in a shift towards plant communities that are more typical of improved grasslands.

[33] Cole, D.N., Spildie, D.R. (1998). Hiker, horse and llama trampling effects on native vegetation in Montana, USA. *Journal of Environmental Management* **53**: 61-71
[34] Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. (2005). Dogs, access and nature conservation. English Nature Research Report, Peterborough.
[35] Barnard A. (2003). Getting the facts – Dog walking and visitor number surveys at Burnham Beeches and their implications for the management process. *Countryside Recreation* **11**:16-19.
[36] Taylor K., Anderson P., Liley D. & Underhill-Day J.C. (2006). Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.

4. Test of Likely Significant Effects (ToLSE)

Introduction

4.1 When seeking to identify relevant European sites, consideration has been given primarily to identified impact pathways and the source-pathway-receptor approach, rather than adopting a purely 'zones'-based approach. The source-pathway-receptor approach is a standard tool in environmental assessment. In order for an effect to occur, all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism means there is no possibility for an effect to occur. Furthermore, even where an impact is predicted to occur, it may not result in significant effects (i.e., those which undermine the conservation objectives of a European site). Briefly defined, pathways are routes by which a change in activity can lead to a significant effect upon a European site.

4.2 The likely zone of impact (also referred to as the likely 'zone of influence') of a plan or project is the geographic extent over which significant ecological effects are likely to occur. The zone of influence of a plan or project will vary depending on the specifics of a particular proposal and must be determined on a case-by-case basis with reference to a variety of criteria, including:

- the nature, size / scale and location of the plan;
- the connectivity between the plan and European sites, for example through hydrological connections or because of the natural movement of qualifying species;
- the sensitivity of ecological features under consideration; and,
- the potential for in-combination effects.

4.3 Regarding recreational pressure, any road, junction improvement and public transport scheme theoretically has the potential to increase the overall traffic volume. Any such traffic schemes may also make it easier or faster for people to visit European sites that are sensitive to recreational impacts. This is reflected in Policy Outcome 6, which aims at improving access to and experience of Kent's historic and natural environments. However, as noted in Table 3, this is a very high-level objective and does not specify particular schemes; any links to specific European sites are hypothetical in nature. Therefore, the Policy Outcome 6 cannot be deemed to lead to likely significant effects relation to recreational pressure.

4.4 A hypothetical link regarding recreational pressure potentially applies to all individual schemes. For example, the A2 Lydden Dualling road scheme (discussed further below) will involve the addition of a second lane in both directions over a length of approx. 6.6km. The scheme lies approx. 77m north-east of the Lydden and Temple Ewell Downs SAC, a European site that is sensitive to an increase in recreational pressure. Dualling the A2 in this geographic location means that traffic flows past the SAC are likely to increase. However, there is no basis on which to relate an increase in traffic flows on that road to an increase in recreational burden in the SAC. While some new road users **may** choose to visit the SAC, most are likely to utilise this improved connection solely for commuting between their home and place of work and / or accessing community services. Ultimately any increase in recreational pressure will stem from housing and population growth in the recreational catchment of the European site, rather than improvement in road infrastructure near European sites that are already publicly accessible (rather than new roads which provide access to sites that are not currently accessible).

4.5 Upon scrutiny of the schemes included in the LTP5, it is concluded that there are no proposals for which recreational pressure impacts to European sites are likely. For example, a transport infrastructure scheme that may have recreational pressure links would be a new car park providing direct foot access to, or bus route with a dedicated stop at, a European site. It is noted that the final responsibility for considering recreational pressure impacts and, where those are possible, ensuring that there are no adverse effects on the integrity of European sites, lies at the scheme level. However, recreational pressure impacts at the level of the LTP5 are excluded and this impact pathway is not considered further in this HRA.

Approach to LTP5 Screening

4.6 There are 10 ‘Policy Outcomes’, 25 road schemes and 18 junction improvement works in the LTP5. There are also seven rail network proposals and six bus and multi-modal network proposals. These were screened out of having likely significant effects on a European site where any of the following reasons applied:

- they are environmentally positive;
- they will not themselves lead to any development or other change;
- they make provision for change but could have no conceivable effect on a European site. This can be because there is no linking pathway to qualifying features or a European site, or because any effect would be positive;
- they make provision for change but could have no significant effect on a European site (i.e., the effect would not undermine the conservation objectives of a European site); or,
- the effects on any particular European site cannot be ascertained because the outcome/ scheme/ junction detail is too general at this moment in time and may require further screening as more information becomes available.

4.7 The Likely Significant Effects (LSEs) screening assessment is presented in Tables 2 - 4. Green shading in the ‘Screening Assessment’ column indicates that an outcome/ scheme/ junction have been determined not to lead to LSEs on European sites due to an absence of a linking impact pathway.

4.8 Note that where distances to European site boundaries are given, this represents the shortest straight-line distance to the European site boundary. For specific road-related schemes, the distance to the European site is measured from the scheme itself where this is known. It is to be noted that due to the nature of the transportation schemes / projects, the distances are approximate.

Table 3. Test of LSE for Policy Outcomes

Policy Outcome	Likely Significant Effects Screening Assessment
POLICY OUTCOME 1: The condition of our managed transport network is brought up to satisfactory levels, helping to maintain safe and accessible travel and trade. • POLICY OBJECTIVE 1 A): Achieve the funding necessary to deliver a sustained fall in the value of the backlog of maintenance work over the life of our Local Transport Plan.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise. Maintenance of the transport network will reduce congestion.
POLICY OUTCOME 2: Support delivery of our Vision Zero road safety strategy through all the work we do. • POLICY OBJECTIVE 2 A): Achieve a fall over time in the volume of people killed or very seriously injured on KCC's managed road network, working towards the trajectory set by Vision Zero for 2050.	**No likely significant effect.** KCC has set out its priorities to aim for zero, or as close as possible to zero, fatalities on Kent roads each year by 2050. This outcome is not relevant to European sites.
POLICY OUTCOME 3: International travel becomes a positive part of Kent's economy, facilitated by the county's transport network, with the negative effects of international haulage traffic decreased. • POLICY OBJECTIVE 3 A): Increase resilience of the road network serving the Port of Dover and Eurotunnel by adding holding capacity for HGVs across the southeast region to support establishment of a long term alternative to Operation Brock. • POLICY OBJECTIVE 3 B): Increase resilience of the road network servicing the Port of Dover through delivery of the bifurcation strategy including improvements to the M2 / A2 road corridor and its links to the M20 and a new Lower Thames Crossing for traffic towards the north, and utilising further non-road freight opportunities.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise.
POLICY OUTCOME 4: International rail travel returns to Kent and there are improved public transport connections to international hubs. • POLICY OBJECTIVE 4 A): International rail travel returns to Ashford International and Ebbsfleet International stations, supported by the infrastructure investment needed at Kent's stations to ensure they provide secure and straightforward journeys across the UK-EU border within the entry exit system. • POLICY OBJECTIVE 4 B): A fall in the time it takes by public transport to reach international rail stations compared to conditions in 2023.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise. Overall, development of rail is likely to be positive in reducing overall NO_x emissions.
POLICY OUTCOME 5: Deliver a transport network that is quick to recover from disruptions and future-proofed for growth and innovation, aiming for an infrastructure-first approach to reduce the risk of highways and public transport congestion due to development. • POLICY OBJECTIVE 5 A): Strengthen delivery of our Network Management Duty to deliver the expeditious movement of traffic by using our new moving traffic enforcement powers and modernising the provision of on-street parking enforcement. • POLICY OBJECTIVE 5 B): Reduce the amount of forecast future congestion and crowding on highways and public transport that is associated with demand from development by securing funding and delivery of our Local Transport Plan.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise.

Policy Outcome	Likely Significant Effects Screening Assessment
• POLICY OBJECTIVE 5 C): The prospects for the future of transport increase across the whole county, with new innovations in transport services having a clear pathway to trial or delivery in Kent.	
POLICY OUTCOME 6: Journeys to access and experience Kent's historic and natural environments are improved. • POLICY OBJECTIVE 6 A): Proposals are clearly evidenced in terms of their contribution to providing new, quicker, or more inclusive access to historic and natural environment destinations in the county, with proposals targeting access to such locations where appropriate.	**No likely significant effect.** This is a very broad general statement and any connection to specific European sites is (at this point) hypothetical.
POLICY OUTCOME 7: Road-side air quality improves as decarbonisation of travel accelerates, contributing towards the pursuit of carbon budget targets and net zero in 2050. • POLICY OBJECTIVE 7 A): Reduce the volume of carbon dioxide equivalent emissions entering the atmosphere associated with surface transport activity on the KCC managed highway network by an amount greater than our forecast "business as usual" scenario. This means achieving a greater fall than those currently forecast of 9% by 2027, 19% by 2032 and 29% by 2037. • POLICY OBJECTIVE 7 B): No area in Kent is left behind by the revolution in electric motoring, with charging infrastructure deployed close to residential areas to reduce barriers to adoption. • POLICY OBJECTIVE 7 C): Proposals are clearly evidenced in terms of their contribution to providing lower emissions from transport in Air Quality Management Areas in the county.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise.
POLICY OUTCOME 8: A growing public transport system supported by dedicated infrastructure to attract increased ridership, helping operators to invest in and provide better services. • POLICY OBJECTIVE 8 A): We will aim to obtain further funding to deliver the outcomes of our Bus Service Improvement Plan (or its successor) beyond its current horizon of 2024/25. We will ensure that our Local Transport Plan proposals are clearly evidenced in terms of their contribution towards achieving our Bus Service Improvement Plan. • POLICY OBJECTIVE 8 B): We will identify and support industry delivery of priority railway stations for accessibility improvements and route improvements to reduce journey times and improve reliability.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise.
POLICY OUTCOME 9: Health, air quality, public transport use, congestion and the prosperity of Kent's high streets and communities will be improved by supporting increasing numbers of people to use a growing network of dedicated walking and cycling routes. • POLICY OBJECTIVE 9 A): We will aim to deliver walking and cycling improvements at prioritised locations in Kent to increase activity levels and support Kent's diverse economy, presented in a Kent Cycling and Walking Infrastructure Plan.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) traffic noise.

Policy Outcome	Likely Significant Effects Screening Assessment
POLICY OUTCOME 10: The quality of life in Kent is protected from the risk of worsening noise disturbance from aviation. • POLICY OBJECTIVE 10 A): Where there is evidence of impacts on our communities, we will make representations on airport expansion proposals and argue for measures to mitigate their effects.	**No likely significant effect.** This outcome is likely to be positive for European sites by reducing atmospheric pollution and (potentially) preventing further noise disturbance.

Source: Kent County Council. LTP5 Draft Ambition and Outcomes; Draft LTP5 Update 2024

Table 4. Test of LSE for Proposed Road Schemes

Scheme	Scheme description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
Tunbridge Wells				
A228 Colts Hill bypass	Dual carriageway link 3.3km length Connection to A228 and B2017 via new arm on upgrade roundabout Creation of new roundabout junction on A228 at current junction with Maidstone Road for traffic towards Pembury.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Paddock Wood North West site - link road A228 to B2160	Link 1.5km length Connection with A228 formed by roundabout junction. Connection to B2160 formed by roundabout junction, incorporating Transfesa Road on the eastern side.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Paddock Wood South West site - local roads through development connecting Badsell Road and A229	Link 0.9km length Connection with A228 formed by left-in, left out junction. Connection to Badsell Road formed by all moves unsignalized junction.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Paddock Wood East site - local road through development linking Mascalls Court Road with Church Lane	Link 1.5km length Connection with Mascalls Court Road via all movements unsignalized junction. Connection to Church Lane via all movements unsignalised junction.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Five Oak Green Bypass	Dual carriageway link 1.5km length. Connection to B2017 with roundabout junction. Connection to Colts Hill Bypass with roundabout junction.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Maidstone				
Leeds to Langley Bypass	ingle carriageway link parts total 4km length. Connection to A274 Sutton Road. Connection to A20-M20 junction 8.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.

Scheme	Scheme description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
Lidsing	Single carriageway link 2.5km in length. Connection to M2 junction 4. Connection to North Dane Way.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Bluebell Hill A229 M2 connection	Dual carriageway link 1 km in length. Connection to M2 westbound. Connection to A229 northbound.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Bluebell Hill A229 southbound widening	Addition of third lane to A229 southbound 4.5km in length. Connection at Lord Lees roundabout. Connection to Cobtree roundabout.	Air quality	North Downs Woodlands SAC 190m east of scheme.	**Screened in, potential for likely significant effects.** Site is within 200m of the road and is sensitive to changes in air quality.
Dover				
A2 Lydden Dualling	Addition of second lane in each direction. Running between A2 Lydden Hill junction at northern end to A2 Duke of York roundabout at southern end. C. 6.6km in length.	Air quality	Lydden and Temple Ewell Downs SAC 77m south-west of scheme.	**Screened in, potential for likely significant effects.** Site is within 200m of the road and is sensitive to changes in air quality.
A256 Dualling	Addition of second lane in both directions on A256. Between roundabout junction with Monks Road at northern end running to Cater Road / Lower Street roundabout junction with A256 at its southern end. C. 6.5km in length.	Water quality	Thanet Coast and Sandwich Bay Ramsar 370m east of the scheme.	**Screened in, potential for likely significant effects.** Possible hydrological connection.
Manston Road to Haine Road link	Addition of new single carriage way across range of major development sites – c. 2.5km in length. Connection from Manston Road, near existing Airport terminal. Connection to existing roundabout junction of Haine Road and the A256.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Nash Road widening	Widening of road to two-lane marked carriageway, c.1.7km in length. From Nash Road junction with Turners Close/ to Nash Road junction with Wherry Close.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Clipper Close to Manston Road link	New single lane road c. 1.2km in length. Connecting from Clipper Close arm of Columbus Avenue roundabout. Connecting to Manston Road, Shottendane Road with new roundabout junction including an arm for Margate Hill.	Loss of FLL	Thanet Coast and Sandwich Bay SPA/ Ramsar 2km north of the scheme. Golden, ringed and grey plover are qualifying features. All utilise pasture[37] for foraging and 2km is within the IRZ for these species.	**No likely significant effects.** Screened out as proposed route crosses an arable field therefore habitat sub-optimal.

[37] https://app.bto.org/birdfacts/results/bob4850.htm

Scheme	Scheme description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
Canterbury Road to Minnis link	New single lane road c. 1.1km in length. Connecting from Canterbury Road A28. Connecting to Minnis Road opposite Gore End Close. Part of a major development site.	Loss of FLL	Thanet Coast and Sandwich Bay SPA/ Ramsar 2km north of the scheme. Golden, ringed and grey plover are qualifying features. All utilise pasture[38] for foraging and 2km is within the IRZ for these species.	**No likely significant effects.** Screened out as proposed route crosses an arable field therefore habitat sub-optimal.
Canterbury Road to Park Lane link	New single lane road c. 0.9km in length. Connecting from Canterbury Road A28. Connecting to Park Lane for Manston Road.	Loss of FLL	Thanet Coast and Sandwich Bay SPA/ Ramsar 1.6km north of the scheme. Golden, ringed and grey plover are qualifying features. All utilise pasture[39] for foraging and 1.6km is within the IRZ for these species.	**No likely significant effects.** Screened out as proposed route crosses an arable field therefore habitat sub-optimal.
Canterbury Road West to Manston Road link	New single lane road c. 0.8km in length. Connecting from Canterbury Road West. Connecting to Manston Road.	Loss of FLL	Thanet Coast and Sandwich Bay SPA/ Ramsar 755m south of the scheme. Golden, ringed and grey plover are qualifying features. All utilise pasture[40] for foraging and 755m is within the IRZ for these species.	**No likely significant effects.** Screened out as proposed route crosses an arable field therefore habitat sub-optimal.
Hartsdown Road to Manston Road link	New single lane road c. 0.8km in length. Connecting from Hartsdown Road. Connecting to Manston Road via a new junction with Shottendane Road.	Loss of FLL	Thanet Coast and Sandwich Bay SPA/ Ramsar 920m north of the scheme. Golden, ringed and grey plover are qualifying features. All utilise pasture[41] for foraging and 920m is within the IRZ for these species	**No likely significant effects.** Screened out as proposed route crosses an arable field therefore habitat sub-optimal.
Manston Road to Nash Road link	New single lane road c. 0.5km in length. Connecting from Manston Road. Connecting to Nash Road.	Loss of FLL	Thanet Coast and Sandwich Bay SPA/ Ramsar 1.3km north of the scheme. Golden, ringed and grey plover are qualifying features. All utilise pasture[42] for foraging and 1.3km is within the IRZ for these species	**No likely significant effects.** Screened out as proposed route crosses an arable field therefore habitat sub-optimal.
Ashford				
A28 Great Chart bypass dualling	Road widening to add extra lane in both directions of A28 Great Chart bypass. C. 2km in length. Dualling between roundabout junction with Ashford Road and Chilmington Avenue to roundabout junction with Chart Road at northern end (known as Matalan roundabout).	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.

[38] https://app.bto.org/birdfacts/results/bob4850.htm
[39] Ibid
[40] Ibid
[41] Ibid
[42] Ibid

Scheme	Scheme description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
M25 to M26 East-bound slips	Addition of a M25 northbound to M26 east bound, and a M25 southbound to M26 eastbound set of slip roads. C. 2 km of new dual carriage way.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Additional Road Schemes as per Draft LTP5 Update 2024				
M2 road capacity enhancement	Strategic changes in traffic movements from Lower Thames Crossing and A249 junction 5 are likely to add traffic to corridor. Additional capacity provides additional resilience on a future key route to Channel crossing points, whilst ensuring journey times remain reliable and quick as growth occurs.	None	None	**No likely significant effects.** Screened out as no potential for likely significant effects. Queendown Warren SAC is 315m to the south-west, therefore beyond the 200m buffer for air quality impacts.
A21 Kipping's Cross	The single lane stretch of A21 creates a pinchpoint. Improvements to take place to Kipping's Cross roundabout to support future growth.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Malling Road to Ashton Road (A26 and A228 stretches) and A228 Seven Mile	Lane stretch capacity enhancement – widening of corridor	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Sittingbourne Southern Relief Road	A new road corridor, with public transport and walking and cycling provision along much of its length, between the A2 and M2, including creation of a new M2 junction (all movements), known as 5a.	Loss of FLL	The Swale SPA/ Ramsar 1.6km north-west	**Screened in, potential for likely significant effects.** 1.6km is within the IRZ for several of the qualifying bird species that utilise agricultural land.
Galley Hill Road	Reinstatement of Galley Hill Road for traffic, which may involve the construction of a new parallel road as an alternative (with Galley Hill Road being removed due to its compromised underlying geology).	Loss of FLL	Thames Estuary & Marshes SPA / Ramsar 6.1km and 6.8km east respectively	**No likely significant effects.** Redevelopment of the Galley Hill Road itself (existing brownfield land) would involve no potential risk in relation to FLL loss. However, semi-improved grassland to the north and south of the road could theoretically function as high-tide roosts. Notwithstanding this, Galley Hill Road and the surrounding area lies beyond the IRZ (2km) for the wintering waders in the Thames Estuary & Marshes SPA / Ramsar.

Source: IDP Scheme Maps_DRAFT_V1; Draft LTP5 Update 2024

Table 5. Test of LSE for Proposed Junction Improvement Works

Scheme	Impact pathways	Relevant European site and distance at closest point	Likely Significant Effects Screening Assessment
Dartford			
Junction 1A of M25	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Sevenoaks			
Junction 3 of M25	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Bat and ball junction	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Tunbridge Wells			
Halls Hole Road/ A264 Pembury Road/ Blackhurst Lane junction improvement (roundabout scheme) Signalisation of junctions at Sandrock Road and Sandhurst Road on A264	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Tonbridge and Malling			
Hermitage Lane/St Andrews Road/Fountain Lane improvements including junction upgrades	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Maidstone			
Willington Street and Wallis Avenue junction improvements Willington Street and A20	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
M20 Junction 7 A229	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Swale			
Brenley Corner	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Canterbury			
New A2 junction near Mountfield Park development	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Thanet			
Coffin House Corner Traffic Lights & Nash Road arm closure	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Dover			
Whitfield roundabout Duke of York roundabout	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites

Scheme	Impact pathways	Relevant European site and distance at closest point	Likely Significant Effects Screening Assessment
A257 / Sandwich Bypass / Ash Rd	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
A256 Sandwich Bypass / A258 Deal Rd / A256 (S)	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
Folkestone			
A20 A260 Spitfire Way junction Alkham Valley Road A260 junction Alkham Valley Road / A20 London Bound on-slip / A20 London Bound off-slip – Widening of Alkham Valley Road arm	None	None	**No likely significant effects.** The closest works are at Alkham Valley Road A260 junction, which is c.230 m from Folkestone and Etchinghill Escarpment SAC. Screened out due to being >200m away and small scale of works.
Additional Junction Improvement Works as per Draft LTP5 Update 2024			
M2 Junction 1 capacity upgrade	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
M25 Junction 3 capacity enhancement	None	None	**No likely significant effects.** Screened out due to a lack of impact pathways associated with proposed measures (i.e. improved lane marking, directions and smart traffic control signalling) and remote location in relation to European sites.
M25 – M26 – A21 junction – two new east facing slips	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites
A2 Gravesend Local Junctions – three sets of junctions, junction performance concern	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites
Sittingbourne Northern Relief Road - entails two new junctions onto the A2.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites

Source: Junction Locations_DRAFT_V1; DRAFT LTP5 Update 2024

Table 6. Test of LSE for Network Wide Public Transport/ Multi-modal Proposals

Proposal	Description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
Rail Network Proposals				
R1. Freight gauge enhancement for international traffic	Kent has repeatedly carried objectives and proposals to reduce the impact of international freight traffic. Managing road-based freight traffic has rightly been the focus – this proposal supplements that	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites. Likely to be positive for European sites in

Proposal	Description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
	with a focus on reducing road-based freight by shifting to rail.			the long-term by reducing atmospheric pollution.
R2. Maidstone journey time improvements	Proposal seeks to put forward a case for increased High-Speed services during the day and at weekends.	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites.
R3. Gatwick Access improvements	Gatwick are considering supporting coach services from Chatham via Maidstone and Sevenoaks to support access to the airport. Whilst these would be easiest to deliver, they are likely to be less reliable than rail and do not provide the advantage of being widely accessible to all existing rail users on the routes under consideration. KCC and stakeholders should address the Gatwick proposals and further the Network Rail case for trialling rail services by lobbying Government.	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites.
R4. Dover / Folkestone High Speed journey time improvements	The scheme would be dependent on growing the domestic High Speed service frequencies, and possibly require fleet expansion, so as not to conflict with Otterpool Park proposals for stopping High Speed services.	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites.
R5. International rail services for Kent	KCC will continue its work to establish the strategic and economic case for international rail services stopping in Kent. This will provide the public interest argument for public funds if needed to upgrade the stations to accommodate new border control arrangements.	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites.
R6. Sturry and Canterbury West Improvements	Network Rail plans to undertake a programme of re-signalling, to reduce block size on the route and enable trains to run closer together which may provide some capacity gains and improve route performance. At Canterbury West, there is the potential to transform the land around the rail tracks and create a high-quality station quarter, boosting the local area's prosperity and amenities. This aspect is dependent on sidings becoming redundant from the re-signalling projects, enabling land release.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites.
R7. Local services	Proposal seeks to increase the frequency of services to support the high street and local attractions.	None	None	**No likely significant effects.** Screened out as likely to be positive for European sites in the long-term by

Proposal	Description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
				reducing atmospheric pollution.
Bus and Multi-modal Network Proposals				
PT1. Bus Service Improvement Plan (1)	The KCC BSIP is now in delivery, supported by £35.1m of grant funding lasting until 2025/26. Beyond this, KCC will continue to focus efforts on building on the improvements from the initial BSIP funding, to deliver its strategy.	None	None	**No likely significant effects.** A bus service with higher use will help operators to fund investment in their fleets and services, delivering lower emission vehicles with a direct benefit to local air quality and ultimately European sites.
PT1. Bus Service Improvement Plan (2)	The LTP will set out clearly the outcomes desired for Kent's bus network, in recognition of the high uncertainty over industry structure and funding	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites.
PT2. Thameside Fastrack Network Growth	The Thameside Fastrack network is nationally recognised as a best-practice case of integrated transport alongside new development, coupled with supporting existing communities.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites. Likely to be positive for European sites in the long-term by reducing atmospheric pollution.
PT3. Dover Fastrack Network Growth	The Dover Fastrack network has been designed to provide public-transport oriented development within the largest growth area of the District, at Whitfield.	None	None	**No likely significant effects.** Screened out due to remote location in relation to European sites. Likely to be positive for European sites in the long-term by reducing atmospheric pollution.
PT4. Mobility as a Service	Mobility as a Service (MaaS) is a new type of service to plan, book and pay for integrated multimodal journeys in one MaaS account that is not currently possible. KCC will aim to develop and obtain the necessary external funding to deliver a Thameside MaaS platform to evaluate its effectiveness, alongside learning from other MaaS rollouts across the UK.	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking pathway to European sites.
PT5. Cycle hire trials	Locations have been identified in Kent, principally by developers, to implement cycle hire schemes (Otterpool Park, Ebbsfleet Garden City, Aylesford, Highsted Park Sittingbourne).	None	None	**No likely significant effects.** This proposal is one of intent therefore there is no linking

Proposal	Description	Impact pathways	Relevant European Sites and distance at closest point.	Likely Significant Effects Screening Assessment
	KCC will support developers and Districts with the delivery of cycle hire schemes, to understand user needs and identify any further improvements that could be implemented to improve their attractiveness.			pathway to European sites.
PT6. Mobility hubs	The term hub is used to indicate that more than one type of transport is co-located in a single place, acting as an access point. A hub could be a bus stop co-located with car hire spaces, or car hire spaces co-located with cycle hire spaces, or even all three together. The more types of transport that are provided in an area, the more choice there is to co-locate into a hub. KCC will work with developers and Districts with the planning of mobility hub networks	None	None	**No likely significant effects.** This proposal is one intent therefore there is no linking pathway to European sites.

Screening Conclusion

4.9 Of the 10 Policy Outcomes, none are considered to result in likely significant effects on the integrity of European sites due to one, or more, of the reasons described in paragraph 4.3.

4.10 Similarly, of the 18 proposed junction improvement works, seven rail network proposals and six bus and multi-modal network proposals none are considered to result in likely significant effects on the integrity of European sites due to their remoteness from European sites and/ or absence of impact pathway. This also applies to 21 of the 25 proposed road schemes.

4.11 It was not possible to draw a conclusion of 'no likely significant effects' for four of the proposed road schemes due to the presence of potential impact pathways:

- Bluebell Hill A229 southbound widening – North Downs Woodlands SAC lies within 200m of the scheme and is sensitive to changes in air quality.
- A2 Lydden Dualling - Lydden and Temple Ewell Downs SAC lies within 200m of the scheme and is sensitive to changes in air quality.
- A256 Dualling - Thanet Coast and Sandwich Bay Ramsar lies approximately 370m east of the scheme. Review of Ordnance Survey mapping shows a possible hydrological connection via a network of drains and ditches.
- Sittingbourne Southern Relief Road – The Swale SPA/ Ramsar lies approximately 1.6km north-west of the scheme, which is within the IRZ for several qualifying species. Review of aerial photography shows the proposed route to cross agricultural land which could serve as FLL.

4.12 As impact pathways and the potential for likely significant effects cannot be ruled out, either alone or in-combination with other plans and/ or projects, these four schemes will need to be taken to the next stage in the HRA process – Appropriate Assessment (AA).

5. Appropriate Assessment

North Downs Woodlands SAC

5.1 Section 4 of this HRA identifies that LSEs of the proposed Bluebell Hill A229 southbound widening scheme on qualifying SAC habitats with regard to changes in air quality could not be excluded. The proposed scheme is approximately 169m to the west of the North Downs Woodlands SAC at its closest point, with approximately 600m^2 of the SAC (0.02% of the total area) lying within 200m of the existing A229. The entire area in question constitutes the south-west corner of Unit 15 of Wouldham to Detling Escarpment SSSI. In Figure 2, North Downs Woodlands SAC is hatched purple and the area within 200m of the existing A229 is shown as a black dotted line. The Channel Tunnel Rail Link can be seen in the middle of Figure 2, located between the A229 and the SAC.

Figure 2 Proximity of North Downs SAC to the existing A229

5.2 The North Downs Woodlands SAC is designated for its beech forest, yew woodland and calcareous grassland. The SAC areas within 200m of the proposed scheme and ARN, i.e., the A229 itself, are woodland. The sensitivity of different habitats to atmospheric pollution is provided on the UK Air Pollution Information System (APIS) (www.apis.ac.uk). APIS provides a critical load range for coniferous woodland of 5 - 15 kgN/ha/yr in the Site Critical Levels and Loads tab for the North Downs Woodlands SAC. However, the range for coniferous woodland is derived from research into pine and spruce forests[43]. In addition, review of aerial photography has confirmed that the small section of woodland within 200m of the existing A229 is predominantly broadleaved. The 10 - 15 kgN/ha/yr range for beech woodland is therefore considered to be the most appropriate critical load for this part of the North Downs Woodlands SAC.

5.3 According to APIS the North Downs Woodlands SAC, like most European sites, exceeds its critical load for nitrogen deposition, with the average deposition to forest within the 5km grid square in which the SAC is situated being 26.4 kgN/ha/yr. However, as is made clear in paragraph 5.26 of Natural England guidance[44] "*An exceedance alone is insufficient to determine the acceptability (or otherwise) of a project*". The question

[43] This can be seen from the entry for coniferous woodland on the following page on APIS where it directs the reader to use 10 kgN/ha/yr unless lichens/ free-living algae are important features of the site http://www.apis.ac.uk/indicative-critical-load-values

[44] http://publications.naturalengland.org.uk/publication/4720542048845824

when assessing new plans and projects is whether the nitrogen dose they may contribute 'in combination' to a European site that already exceeds its critical load is greater than imperceptible/ nugatory (typically defined as equivalent to 1% of the critical load (0.1 kgN/ha/yr) or below). In accordance with DMRB LA105 (air quality)[45], even if nitrogen deposition is likely to exceed 1% of the critical load, it may still lead to a conclusion of no adverse effects on integrity if the nitrogen dose does not exceed 0.4 kgN/ha/yr.

5.4 This project has been in development in some form for a number of years, and therefore some data already exists, although it will be superseded by new data produced for a planning application. Preliminary air quality modelling of impacts on the SAC was carried out previously in 2019 to inform a HRA for an earlier iteration of this scheme (the Kent County Council (KCC) Blue Bell Hill Improvement Scheme comprising two realignment options), which also involved the widening of the A229. The modelling was undertaken to determine whether any change in nitrogen dose is positive or negative and whether imperceptible or not, alone and in combination with other projects.

5.5 The results of the air quality modelling undertaken in 2019 are contained in Appendix B. They show that whichever option being considered at that time was chosen, the total 'in combination' change in nitrogen deposition (column DS-Future Base) within 200m of the A229, compared to a hypothetical situation with no traffic growth (column Future Baseline in Appendix B), was forecast to be well over 1% of the critical load, being a maximum of 1.9 kgN/ha/yr (19% of the critical load). However, it is also clear that the Blue Bell Hill Improvement Scheme itself made a nugatory contribution to that nitrogen dose, amounting to a maximum of 0.06 kgN/ha/yr (under Option 1) or 0.07 kgN/ha/yr (under Option 2) i.e. 0.6% to 0.7% of the critical load at most. In other words, with or without the Blue Bell Hill Improvement Scheme, forecast future nitrogen deposition rates at the closest part of the SAC to the Scheme are effectively identical (29.36 kgN/ha/yr without the Scheme compared to 29.43 kgN/ha/yr under Option 1 or 29.42 kgN/ha/yr under Option 2).

5.6 This is because the main contributor to the large 'in combination' nitrogen dose is background traffic growth due for example to surrounding Local Plans such as those for Maidstone, Tonbridge & Malling and Medway, which would still arise without the Scheme. This is reflected in the HRA for Maidstone Local Plan (for example) which states regarding Policy LPR SP4b Lidsing that '*The impact of new development on the integrity of the North Downs Woodlands SAC requires careful consideration, with reference to Policy LPRSP14(A). Traffic modelling of the proposed development will be required to quantify the predicted nitrogen deposition on roads passing the SAC. If nitrogen deposition exceeds the screening criteria set out in IAQM guidance (1% of the SAC's critical load for nitrogen deposition), then mitigation will be required. Mitigation measures must be set out in a Mitigation Strategy, to be agreed by the Council and Natural England, in consultation with the highway authorities, where relevant. Applications must clearly demonstrate through project-level HRA that the Mitigation Strategy is appropriate, can be feasibly implemented and will be sufficient to fully mitigate any identified adverse effects on the SAC. Mitigation measures may be provided on and/or off-site as appropriate and necessary'.*

5.7 Most importantly, the area of SAC potentially affected by the nugatory dose from the Scheme amounts to an area of approximately 600m^2 (i.e. approximately 0.02% of the total area of the SAC). On the basis of the preliminary air quality modelling results and the small area affected to a small extent it can be concluded at the plan level that it should be possible to avoid adverse effects on the integrity of the North Downs Woodlands SAC as a result of the proposed Bluebell Hill A229 southbound widening scheme (separate from traffic growth itself due to surrounding housing and employment growth), if it should prove necessary following planning application modelling.

5.8 It should be noted that this work for the A229 project is currently being updated. The project-level assessment will ultimately supersede that for this plan HRA. In particular, the modelling undertaken previously did not include ammonia emissions because that wasn't part of the methodology at the time. **Therefore, it is recommended that the LTP5 inserts a requirement for a full HRA to be produced for any planning application including updated air quality modelling, and any necessary mitigation measures depending on the outcome of that modelling.**

Lydden and Temple Ewell Downs SAC

5.9 Section 4 of this HRA identifies that LSEs of the proposed Lydden Dualling on qualifying SAC habitats with regard to changes in air quality could not be excluded. The proposed scheme is approximately 84m to the north of Lydden and Temple Ewell Downs SAC at its closest point, with approximately 2.3ha of the SAC

[45] https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90

(3.6% of the total area) lying within 200m of the existing A2. The project is too early in design and development for any data to exist and will be developed as a scheme by National Highways rather than Kent County Council. Therefore, it is included in the LTP for completeness but will not actually be delivered through it or through Kent County Council. Rather it will be developed by National Highways and is likely to be subject to a Development Consent Order application determined by The Planning Inspectorate. Due to its early stage of development, detailed air quality data are not likely to be available until 2027.

5.10 The Lydden and Temple Ewell Downs SAC is designated for semi-natural dry grasslands and scrubland facies on calcareous substrates. APIS provides a critical load range for this feature of 10 – 20 kgN/ha/yr in the Site Critical Levels and Loads tab for Lydden and Temple Ewell Downs SAC.

5.11 According to APIS the Lydden and Temple Ewell Downs SAC is within its critical load for nitrogen deposition of 15 kgN/ha/yr. Indeed, according to APIS the annual trends have shown a marked decrease in nitrogen deposition as show in in Figure 3. APIS also shows the main contributing factor to be from livestock (20.6%), with road transport only contributing 8.71% (Figure 4).

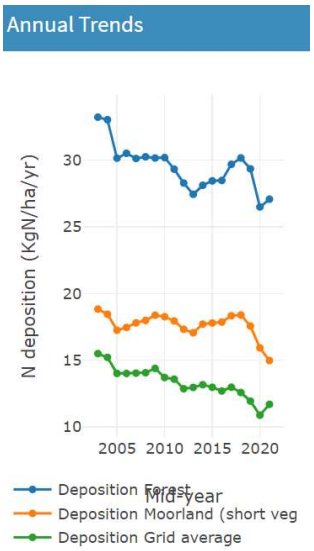


Figure 3 Annual trends showing Nitrogen deposition moorland (short vegetation)

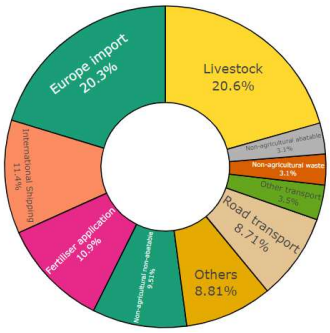


Figure 4 Local contributions to Nitrogen deposition (KgN/ha/yr) from sources (UK)

5.12 With regard to the qualifying habitat, the Supplementary Advice on Conservation Objectives document[46] states *"This habitat type is considered sensitive to changes in air quality. Exceedance of these critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it."*. The document goes on to set the following air quality target *"Maintain as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).*

5.13 Although Figure 4 shows that traffic makes a relatively small contribution compared to livestock and the contribution from traffic is improving (Figure 3), it should be noted that this is based on grid averages and

[46] https://designatedsites.naturalengland.org.uk/TerrestrialAdvicePDFs/UK0012834.pdf

close to the road there might be a negative effect; plus, even a slowing of the rate of improvement might be considered an adverse effect on integrity by Natural England. **Therefore, it is recommended that the LTP5 inserts a requirement for a full HRA to be produced for any planning application including updated air quality modelling, and any necessary mitigation measures depending on the outcome of that modelling.**

Thanet Coast and Sandwich Bay Ramsar

5.14 Section 4 of this HRA identifies that LSEs of the proposed A256 Dualling on qualifying Ramsar features with regard to changes in water quality could not be excluded. The proposed scheme is approximately 370m to the west of the scheme. Review of Ordnance Survey mapping shows a possible hydrological connection via a network of drains and ditches.

5.15 However, the Environmental Permitting (England and Wales) Regulations 2016[47] make it an offence to pollute watercourses, irrespective of whether they are European sites or connect to European sites.

5.16 Therefore, the construction, period on every project must have a duty of care to the water environment and produce and implement plans and procedures to prevent discharge from works entering surface, groundwater, wetlands or coastal waters. This is usually undertaken in the form of a Construction Environment Management Plan (CEMP) which includes measures for the protection of ground and surface waters, pollution prevention measures (Guidance for Pollution Prevention (GPP) methods) and an emergency response plan for pollution events. This may include, although certainly not limited to, the following measures:

- A temporary drainage system developed to prevent runoff contaminated with fine particulates from entering surface water drains without treatment;
- Undertaking earthworks during the drier months of the year;
- Storing topsoil/subsoil will be a minimum of 20 m from watercourses on flat lying land;
- Washing out and cleaning equipment and plant in designated areas;
- Storing fuel and other potentially polluting chemicals will either be in self-bunded leak proof containers or stored in a secure impermeable and bunded area; and
- Refuelling, oiling and greasing of plant taking place above drip trays or plant nappies, or on an impermeable surface.

5.17 Whilst it is considered that new infrastructure can be constructed in a way to prevent pollution to the water environment to ensure no adverse effects from water pollution on any European site at a plan level, **it is recommended that the LTP5 inserts a requirement for a full project level HRA to be produced before this scheme can be consented.**

The Swale SPA/ Ramsar

5.18 Section 4 of this HRA identifies that LSEs of the proposed Sittingbourne Southern Relief Road on qualifying SPA/ Ramsar species with regard to loss of FLL could not be excluded. The proposed scheme is approximately 1.6km to the south-east of The Swale SPA/ Ramsar at its closest point, which is within the IRZ for the following qualifying species – dark-bellied brent-goose, white-fronted goose, wintering golden plover, curlew and lapwing. Review of aerial photography shows the proposed route to pass through agricultural land, primarily arable.

5.19 The IRZ for dark-bellied brent goose is 2km (refer to Table 2). Brent geese prefer large open sites where they have clear sightlines and short, lush grass for grazing. They use a great deal of energy travelling between feeding areas, so tend to preferentially select sites adjacent to the coast[48], typically saltmarshes and adjoining grassy habitats around most of the coast[49]. Similarly white-fronted goose, whose IRZ can be up to 10km (refer to Table 2), prefer wetlands and coastal marshes[50]. As there are no clear sightlines

[47] https://www.legislation.gov.uk/uksi/2016/1154/contents
[48] https://solentwbgs.wordpress.com/wp-content/uploads/2021/03/solent-waders-brent-goose-strategy-2020.pdf
[49] https://www.bto.org/understanding-birds/birdfacts/brent goose#:~:text=Brent%20Geese%20are%20locally%20numerous,around%20most%20of%20the%20coast.
[50] https://www.bto.org/understanding-birds/birdfacts/white-fronted-goose#:~:text=This%20small%2C%20grey%20goose%20with,to%20wetlands%20and%20coastal%20marshes.

between the proposed scheme and the SPA and based on the preferred habitat types of these two species it is reasonable to conclude that there will be no loss of FLL for these qualifying features.

5.20 Golden plovers move down from the uplands to overwinter on lower agricultural land or the coast. They prefer to feed on permanent pastures because of the larger densities of soil invertebrates but will roost in the centre of large bare fields that have been ploughed[51]. A recent study[52] found that wintering curlew would occasionally forage in farmland habitats up to 3.5 km from the shoreline. Lapwing, with an IRZ of 15-20km (refer to Table 2) are known to flock on pasture and ploughed fields in winter[53]. It is therefore feasible that the proposed scheme may result in the loss of FLL for these qualifying species.

5.21 The proposed scheme is part of large-scale mixed-use development, highways infrastructure and provision of open space planning application (not yet determined at the time of writing this report). Wintering bird surveys were undertaken between 2017 and 2020 to inform the Environmental Statement (ES) that was submitted as part of the planning application (application reference: 21/503914/EIOUT), and again by Aspect Ecology in 2021/22[54] to inform an addendum to the ES. This survey data was also used to inform the HRA[55] for the wider development.

5.22 During the surveys, no species listed as an individual qualifying feature for The Swale SPA (under the European Site Conservation Objectives document) were recorded within the survey area, Similarly, no species listed as a qualifying species for The Swale Ramsar were recorded.

5.23 A number of species supported by the SPA/Ramsar were recorded during the wintering bird surveys, although several of these (namely mallard, gadwall, teal, cormorant, moorhen, coot and black-headed gull) are only of importance as part of the waterbird assemblage supported by the SPA/Ramsar, and do not form an individually important feature. For these species, the winter peak counts associated with the Swale Estuary are below the threshold for national importance (i.e. 1% of the estimated national population).

5.24 Four species were recorded which are present within the Swale Estuary at nationally important numbers, namely lapwing, curlew, redshank and Mediterranean gull. Mediterranean gull is also an Annex I species under the Birds Directive, such that it individually qualifies as a reason for SPA site selection on this basis. Only a single individual redshank was recorded from arable fields during the January 2017 wintering bird survey visit. This represents only very occasional use of the area by very small numbers of redshank, substantially below 1% of the Swale Estuary wintering peak count, such that the sites are not considered to form important habitat in relation to this species.

5.25 Similarly, the area is not considered to be of importance for lapwing, supporting less than 1% of the wintering peak counts for the Swale Estuary, and with birds only recorded on a single occasion in January 2017 and in November 2021. Further discussion in relation to curlew and Mediterranean gull is set out below.

Curlew

5.26 During the winter, curlew is generally associated with marine coastal habitat, particularly mudflats and sands exposed at low tide[56]. However, it also makes use of grasslands, particularly at high tide and can winter inland[57]. Use of inland habitats also appears to be linked to temperature and relative availability of food, with evidence indicating that foraging within farmland is most profitable at temperatures between around 3°C and 7°C[58]. Studies of wintering curlew in Cheshire and Wirral[59] recorded the majority of locations supporting curlew to comprise farmland (56%), mostly improved (34%) or unimproved (11%) grassland, with the remainder (34%) comprising tidal sites or saltmarsh. However, large flocks were largely associated with the tidal areas, such that these areas supported the most birds in total. Another study of curlew in different farmland habitats in central Sweden[60] indicated that within these habitats, earthworms were the most

[51] Natural England. Climate Change Adaptation Manual Second Edition 2020 - Golden plover
[52] https://www.tandfonline.com/doi/epdf/10.1080/00063657.2022.2144129?needAccess=true
[53] https://www.fas.scot/environment/biodiversity/how-to-provide-for-wading-birds/farmland-wading-birds-information-note-lapwing-vanellus-vanellus/#:~:text=Habitat%20preferences,they%20forage%20on%20worms%20%26%20insects.
[54] 21_530914_EIOUT-Environmental_Statement_Vol_2_Appx.11.4_-_Wintering_Bird_Survey-5739258
[55] 21_530914_EIOUT-Environmental_Statement_Vol_2_Appx.11.2_-_Habitat_Regulations-5739260
[56] Snow, D.W. and Perrins, C.M. (1998) The Birds of the Western Palearctic. Oxford University Press.
[57] European Communities (2007) Management Plan for Curlew Numenius arquata 2007-2009
[58] Evans, D. (1988) Individual differences in foraging behaviour, habitat selection and bill morphology of wintering curlew, *Numenius arquata*. PhD Thesis, University of Edinburgh.
[59] Cheshire and Wirral Ornithological Society (2008) Birds in Cheshire and Wirral: a breeding and wintering atlas. http://www.cheshireandwirralbirdatlas.org/species/curlew-wintering.htm
[60] Berg, A. (1993) Food resources and foraging success of Curlews *Numenius arquata* in different farmland habitats. Ornis Fennica 70: 22-31.

important food organism during the pre-breeding period, with a significantly higher number of earthworms caught per minute in sown grassland than in tillage. This appears to be due to the intact burrow systems present within grassland assisting with catching rates.

5.27 Given the above, it is evident that arable land is not typically of particular importance as winter foraging habitat for curlew, with the majority of birds associated with coastal and intertidal habitats, whilst in terms of farmland, grassland is more typically used, likely due to higher catching rates of earthworm. In this regard, it is notable that curlew was only recorded during the surveys within stubble fields, with subsequent ploughing damaging earthworm populations. As such, the fields are only likely to support suitable habitat for a limited period each year between harvest and ploughing.

5.28 The relative separation of the survey areas from the SPA/Ramsar is also of relevance. A study of wintering curlew in south-east Scotland[61] determined feeding ranges for a number of ringed or radio-tracked birds. The study indicated a division between birds which specialised on the intertidal zone, field feeders, and generalists which switched between the two. Birds associated with the intertidal zone had relatively small feeding ranges, whilst mean feeding ranges of c.60 ha and 110 ha were recorded for field feeders and generalists, with a range of up to 545 ha for one radio-tracked bird. Taken as a circle drawn from a central point, this equates to radii of c.500m and c.600m for the mean feeding ranges for field feeders and generalists respectively, and c.1300m for the maximum range. The fields recorded to support wintering curlew are located approximately 2km from the nearest part of the SPA/Ramsar, and 3km from the main area of saltmarsh/estuarine habitat within the SPA/Ramsar. As such, the area appears to be outside of the typical feeding range that can be expected for birds associated with the SPA/Ramsar and would not form a core area of habitat. This accords with the sporadic nature of activity recorded during the surveys, with large flocks only recorded on three occasions, likely due to poor weather conditions.

5.29 On this basis, given that the survey area was recorded to support flocks of wintering curlew on only a sporadic basis, whilst the area of habitat used is located some distance from the SPA/Ramsar outside of the likely core area of supporting habitat and comprised arable land, not typically of importance for this species, the HRA of the wider development considered that the area is not of importance in terms of maintaining the population of curlew associated with the SPA/Ramsar.

Mediterranean gull

5.30 Mediterranean gull was typically recorded in small numbers during the wintering bird surveys in association with larger flocks of black-headed gull, either flying over the survey areas or foraging within fields. A maximum of 55 birds was recorded during the March 2022 survey, although usually fewer than 10 birds were recorded.

5.31 Wintering numbers of Mediterranean gull have substantially increased within the Swale Estuary in recent years, having only been recorded since 1995 and with peak counts generally below 20 prior to 2014. As such, it does not appear to be impacted by habitat losses associated with new development within the surrounds of the estuary. Also, gull species typically forage over wide areas and are adaptable in their behaviour, feeding on a wide variety of foods.

5.32 As such, the HRA of the wider development concluded that habitat losses associated with the proposed development would not have an impact on the wintering population of Mediterranean gull associated with the SPA/Ramsar.

5.33 On the basis of the wintering bird survey data and the conclusions drawn from the HRA of the wider development it is considered that there would not be any adverse effect on the integrity of the SPA/Ramsar associated with loss of functionally linked land as a result of the proposed scheme either alone or in-combination with other plans and/ or projects.

[61] Evans, D. (1988) Individual differences in foraging behaviour, habitat selection and bill morphology of wintering curlew, *Numenius arquata*. PhD Thesis, University of Edinburgh.

6. In-Combination Assessment

6.1 Consideration was given for the potential for 'in combination' effects with other plans and projects, particularly the plans mentioned in paragraph 2.5 of this report.

6.2 All of the Policy Outcomes, junction improvement works, rail network proposals, multi-modal network proposals and 36 proposed road schemes in the LTP5 were screened out due to their non-specific nature, remoteness from European sites and/ or absence of impact pathways. As such, no [adverse] 'in combination' effects have been identified. Indeed, any cumulative and in combination effects that do exist are likely to be positive as the primary theme of the LTP5 is to maximise sustainable transport.

6.3 However, impact pathways to European sites have identified four proposed road schemes that may act in-combination with improvements to the road network proposed in the identified plans, which may result in an increase in the use of private vehicles.

6.4 Increased residential and employment development resulting from the Local Plans would likely lead to a greater number of vehicles within Kent. Regarding air quality impacts from traffic, the extent to which this can be explored in detail at the plan level depends upon the availability of traffic and air quality modelling for the intended growth scenario(s) therefore in-combination effects between the Local Plans, the proposed Bluebell Hill A229 southbound widening, A2 Lydden Dualling and A256 Dualling cannot be ruled out at this stage.

6.5 Both the Swale Borough Local Plan and the Medway Council Local Plan allocate sites for new development, both residential and employment allocations. These allocated sites may serve as functionally linked land for The Swale SPA/ Ramsar qualifying species. However, as discussed in Chapter 6 above, on the basis of wintering bird survey data there would not be any adverse effect on the integrity of the SPA/Ramsar associated with loss of functionally linked land as a result of the proposed Sittingbourne Southern Relief Road either alone or in-combination with other plans and/ or projects.

I

7. Conclusions and Recommendations

7.1 This HRA discussed potential implications of the LTP5 on European sites located within or adjacent to Kent. The following European sites have been considered within this HRA:

- Medway Estuary & Marshes SPA/ Ramsar;
- The Swale SPA/ Ramsar;
- Thanet Coast & Sandwich Bay SPA/ Ramsar;
- Thanet Coast SAC;
- Sandwich Bay SAC;
- Dover to Kingsdown Cliffs SAC;
- Lydden & Temple Ewell Downs SAC;
- Folkestone to Etchinghill Escarpment SAC;
- Dungeness, Romney Marsh and Rye Bay Ramsar;
- North Downs Woodland SAC;
- Stodmarsh SPA/ Ramsar;
- Stodmarsh SAC; and
- Thames Estuary & Marshes SPA/ Ramsar.

7.2 Based on an analysis of the threats and pressures that are relevant to these European sites, as specified in their respective SIPs, SACOs, and professional judgement several impact pathways were identified to be relevant to the LTP5, including changes in air quality, disturbance, changes in water quality and loss of functionally linked land.

7.3 The Test of LSE undertaken of the LTP5 identified four proposed road schemes with potential linking impact pathways to European sites:

- Bluebell Hill A229 southbound widening – North Downs Woodlands SAC, changes in air quality;
- A2 Lydden Dualling – Lydden and Temple Ewell Downs SAC, changes in air quality;
- A256 Dualling – Thanet Coast and Sandwich Bay Ramsar, changes in water quality; and
- Sittingbourne Southern Relief Road – The Swale SPA/ Ramsar, loss of functionally linked habitat.

7.4 As impact pathways and the potential for likely significant effects could not be ruled out, either alone or in-combination with other plans and/ or projects, these four schemes were taken through to Assessment.

7.5 On the basis of available wintering bird surveys, the AA concluded that no adverse effects on the integrity of any European sites would occur as a result of the proposed Sittingbourne Southern Relief Road, either alone or in-combination with other plans and/ or projects.

7.6 The AA could not rule out adverse effects on the integrity of any European sites as a result of the proposed Bluebell Hill A229 southbound widening, A2 Lydden Dualling or A256 Dualling at the plan level. It is therefore recommended that the following be inserted to the LTP5:

7.7 Bluebell Hill A229 southbound widening:

- **There is a requirement for a full HRA to be produced for any planning application including updated air quality modelling, and any necessary mitigation measures depending on the outcome of that modelling.**

7.8 A2 Lydden Dualling:

- **There is a requirement for a full HRA to be produced for any planning application including updated air quality modelling, and any necessary mitigation measures depending on the outcome of that modelling.**

7.9 A256 Dualling:

- **There is a requirement for a full project level HRA to be produced before this scheme can be consented.**

7.10 With the insertion of such wording, or similar, it can be concluded the Kent LTP5 will have no adverse effects on the on the integrity of any European sites.

Appendix A

A.1 European Site Information

Medway Estuary & Marshes SPA/ Ramsar

Introduction

The Medway Estuary & Marshes SPA/ Ramsar is a wetland of international importance comprising grazing marshes, inter-tidal flats and saltmarshes. The site provides breeding and wintering habitats for important assemblages of wetland bird species, particularly wildfowl and waders.

The Ramsar information sheet[62] also states that *"The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates".*

Reason for Designation

The **SPA** is designated for[63]:

Supporting in summer:

- Avocet *Recurvirostra avosetta*
- Little tern *Sterna albifrons*

Supporting over winter:

- Avocet

Supporting wintering populations of migratory waterfowl: dark-bellied brent geese *Branta bernicla bernicla,* shelduck *Tadorna tadorna*, pintail *Anas acuta*, ringed plover *Charadrius hiaticula*, grey plover *Pluvialis squatarola,* knot *Calidris canutus*, dunlin *Calidris alpina*, redshank *Tringa tetanus*, great crested grebe *Podiceps cristatus,* wigeon *Anas penelope*, teal *Anas crecca*, shoveler *Anas clypeata*, oystercatcher *Haematopus ostralegus,* black-tailed godwit *Limosa limosa,* curlew *Numenius arquata,* spotted redshank *Tringa erythropus,* greenshank *Tringa nebularia* and turnstone *Arenaria interpres.*

Supporting breeding migratory waterfowl: oystercatcher, lapwing *Vanellus vanellus*, ringed plover, redshank, shelduck, mallard *Anas platyrhynchos*, teal, shoveler, pochard *Aythya farina* and common tern *Sterna hirundo*.

Supporting wintering species: red-throated diver *Gavia stellata*, great crested grebe, cormorant *Phalacrocorax carbo*, shelduck, mallard, teal, shoveler, pochard, oystercatcher, ringed plover, dunlin, redshank, Bewick's swan *Cygnus columbianus bewickii*, hen harrier *Circus cyaneus*, merlin *Falco columbarius*, golden plover *Pluvialis apricaria*, short-eared owl *Asio flammeus* and kingfisher *Alcedo atthis.*

The **Ramsar** is designated for[64]:

Criterion 2:
The site supports a number of species of rare plants and animals. The site holds several nationally scarce plants, including sea barley *Hordeum marinum*, curved hard-grass *Parapholis incurva,* annual beard-grass *Polypogon monspeliensis,* Borrer's saltmarsh-grass *Puccinellia fasciculata,* slender hare`s-ear *Bupleurum tenuissimum*, sea clover *Trifolium squamosum,* saltmarsh goose-foot *Chenopodium chenopodioides,* golden samphire *Inula crithmoides*, perennial glasswort *Sarcocornia perennis* and one-flowered glasswort *Salicornia pusilla.* A total of at least twelve British Red Data Book species of wetland invertebrates have been recorded on the site. These include a ground beetle *Polistichus connexus,* a fly *Cephalops perspicuus,* a dancefly *Poecilobothrus ducalis*, a fly

[62] https://jncc.gov.uk/jncc-assets/RIS/UK11040.pdf
[63] http://publications.naturalengland.org.uk/publication/6672791487119360
[64] https://jncc.gov.uk/jncc-assets/RIS/UK11040.pdf

Anagnota collini, a weevil *Baris scolopacea,* a water beetle *Berosus spinosus*, a beetle *Malachius vulneratus,* a rove beetle *Philonthus punctus*, the ground lackey moth *Malacosoma castrensis*, a horsefly *Atylotus latistriatuus*, a fly *Campsicnemus magius*, a solider beetle, *Cantharis fusca*, and a cranefly *Limonia danica.* A significant number of non-wetland British Red Data Book species also occur.

Criterion 5: Assemblages of international importance.

Criterion 6: Species/ populations occurring at levels of international importance.

Species with peak counts inspiring/ autumn:

- Grey plover
- Common redshank

Species with peak counts in winter:

- Dark-bellied brent goose
- Common shelduck
- Northern pintail
- Ringed plover
- Red knot *Calidris canatus islandica*
- Dunlin

Conservation Objectives[65]

"With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site."*

Current Pressures and Threats

The Site Improvement Plan[66] identifies the following pressures and threats to the SPA:

- Coastal squeeze
- Public access/ disturbance
- Invasive species
- Changes in species distributions
- Fisheries: Commercial marine and estuarine
- Vehicles: illicit

[65] http://publications.naturalengland.org.uk/publication/6672791487119360
[66] http://publications.naturalengland.org.uk/publication/6270737467834368

- Air Pollution: risk of atmospheric nitrogen deposition

The Ramsar information sheet[67] identifies the following adverse factors:

- Water diversion for irrigation/domestic/industrial use
- Dredging
- Erosion
- Eutrophication
- Recreational/tourism disturbance (unspecified)
- Transport infrastructure development

The Swale SPA/ Ramsar

Introduction

The Swale SPA/ Ramsar is a wetland of international importance, comprising intertidal mudflats, shell beaches, saltmarshes and extensive grazing marshes. It provides habitats for important assemblages of wintering wildfowl, and also supports notable breeding bird populations.

The Ramsar information sheet[68] states that The Swale comprises, *"A complex of brackish and freshwater, floodplain grazing marsh with ditches, and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. Rare wetland birds breed in important numbers. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates".*

Reason for Designation

The **SPA** is designated for[69, 70]:

<u>During the breeding season:</u>

- Avocet *Recurvirostra avosetta*
- Marsh harrier *Circus aeruginosus*
- Mediterranean gull *Larus melanocephalus*

<u>Over winter:</u>

- Avocet *Recurvirostra avosetta*
- Bar-tailed godwit *Limosa lapponica*
- Golden plover *Pluvialis apricaria*
- Hen harrier *Circus cyaneus*
- Black-tailed godwit *Limosa limosa islandica*
- Grey plover *Pluvialis squatarola*
- Knot *Calidris canutus*
- Pintail *Anas acuta*

[67] https://jncc.gov.uk/jncc-assets/RIS/UK11040.pdf
[68] https://jncc.gov.uk/jncc-assets/RIS/UK11071.pdf
[69] 1993 citation: https://publications.naturalengland.org.uk/publication/5745862701481984
[70] JNCC 2001 Review: https://webarchive.nationalarchives.gov.uk/ukgwa/20190301174943/http://jncc.defra.gov.uk/default.aspx?page=2041

- Redshank *Tringa totanus*
- Shoveler *Anas clypeata*

On passage:

- Ringed plover *Charadrius hiaticula*

Assemblage qualification:

The SPA also qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl over winter including: white-fronted goose *Anser albifrons albifrons*, golden plover *Pluvialis apricaria*, bar-tailed godwit *Limosa lapponica*, pintail *Anas acuta*, shoveler *Anas clypeata*, grey plover *Pluvialis squatarola*, knot *Calidris canutus*, black-tailed godwit *Limosa limosa islandica*, redshank *Tringa totanus*, avocet *Recurvirostra avosetta*, cormorant *Phalacrocorax carbo*, curlew *Numenius arquata*, dark-bellied brent goose *Branta bernicla bernicla*, shelduck *Tadorna tadorna*, wigeon *Anas penelope*, gadwall *Anas strepera*, teal *Anas crecca*, oystercatcher *Haematopus ostralegus*, lapwing *Vanellus vanellus*, dunlin *Calidris alpina alpina*, little grebe *Tachybaptus ruficollis*.

The **Ramsar** site is designated for:

Ramsar criterion 2: The site supports nationally scarce plants and at least seven British Red data book invertebrates.

Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter.

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

Species with peak counts in spring/autumn:

- Common redshank *Tringa totanus tetanus*

Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*
- Grey plover *Pluvialis squatarola*

Species/populations identified subsequent to designation for possible future consideration under criterion 6:

Species with peak counts in spring/autumn:

- Ringed plover *Charadrius hiaticula*,

Species with peak counts in winter:

- Eurasian wigeon *Anas penelope*
- Northern pintail *Anas acuta*
- Northern shoveler *Anas clypeata*
- Black-tailed godwit *Limosa limosa islandica*

Conservation Objectives[71]

"With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed above*), and subject to natural change;*

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

[71] https://publications.naturalengland.org.uk/publication/5745862701481984

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site."*

Current Pressures and Threats

The Site Improvement Plan[72] identifies the following pressures and threats to the SPA:

- Coastal squeeze
- Public access/ disturbance
- Invasive species
- Changes in species distribution
- Fisheries: commercial marine and estuarine
- Vehicles: illicit
- Air pollution: risk of atmospheric nitrogen deposition

Thanet Coast & Sandwich Bay SPA/ Ramsar

Introduction

The Thanet Coast SPA includes a wide variety of coastal habitats including areas of chalk cliff, rocky shore, shingle, sand and mudflats, saltmarsh and sand dunes. As well as its value for breeding and wintering birds, the site supports outstanding communities of terrestrial and marine plant species, a significant number of rare invertebrate species, and is of considerable geological importance.

Reason for Designation

The **SPA** is designated for[73]:

Breeding:

- Little tern *Sterna albifrons*

Over winter:

- Golden plover *Pluvialis apricaria*
- Turnstone *Arenaria interpres*
- Ringed plover *Charadrius hiaticula*
- Grey plover *Pluvialis squatarola*
- Sanderling *Calidris alba*
- Lapland bunting *Calcarius lapponicus*

The **Ramsar** is designated for[74]:

[72] http://publications.naturalengland.org.uk/publication/6270737467834368
[73] http://publications.naturalengland.org.uk/file/4517156041523200
[74] https://jncc.gov.uk/jncc-assets/RIS/UK11070.pdf

Criterion 2: Supports 15 British Red Data Book wetland invertebrates

Criterion 6: Species/populations occurring at levels of international importance.

Species with peak counts in winter:

- Ruddy turnstone *Arenaria interpres interpres*

Conservation Objectives[75]

"With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed above*), and subject to natural change;*

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site."*

Current Pressures and Threats

The Site Improvement Plan[76] identifies the following pressures and threats to the SPA:

- Changes in species distributions
- Invasive species
- Public access/ disturbance
- Water pollution
- Fisheries: Commercial marine and estuarine

The Ramsar information sheet[77] identifies the following adverse factors:

- Vegetation succession
- Water diversion for irrigation/domestic/industrial use
- Pollution – pesticides/agricultural runoff
- Recreational/tourism disturbance (unspecified)
- Unspecified development: urban use

Thanet Coast SAC

Introduction

The Thanet Coast is the longest continuous stretch of coastal chalk in the UK. The site contains subtidal chalk reefs that extend into the intertidal zone and form chalk cliffs. The subtidal reefs within the site are comparatively impoverished, owing to the harsh environmental conditions in the southern North Sea, but are an unusual feature because of the scarcity of hard substrates in the area. The reefs extend offshore in a series of steps dissected by

[75] http://publications.naturalengland.org.uk/publication/6009926887407616
[76] http://publications.naturalengland.org.uk/publication/6259686785417216
[77] https://jncc.gov.uk/jncc-assets/RIS/UK11070.pdf

gullies. Species present include an unusually rich intertidal algal flora, essentially of chalk-boring algae, which may extend above high-water mark into the splash zone in wave-exposed areas.

The site contains the second most extensive representation of chalk caves in the UK and is situated on the extreme south-east coast of England. The site is bordered by about 23 km of chalk cliffs with around 90 caves or cave-like features and some stack and arch formations. The caves around Thanet are mostly natural but include a few man-made features. They vary considerably in depth, height and aspect and hence in the algal communities present. Some caves extend for up to 30 m into the cliffs and reach 6-10 m in height, although many are much smaller. The caves support very specialised algal and lichen communities containing species such as *Pseudendoclonium submarinum Chrysotila lamellosa, Chrysotila stipitata, Chrysonema litorale* and *Thallochrysis litorale*, some of which were first described from Thanet.

Reason for Designation[78]

Qualifying Annex I habitats:

- Reefs
- Submerged or partially submerged sea caves

Conservation Objectives[79]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely"*

Current Pressures and Threats

The Site Improvement Plan[80] identifies the following pressures and threats to the SAC:

- Invasive species
- Public access/ disturbance
- Fisheries: Commercial marine and estuarine

Sandwich Bay SAC

Introduction

Sandwich Bay is a largely inactive dune system with a particularly extensive representation of fixed dune grassland, the only large area of this habitat in the extreme south-east of England. The vegetation of these dunes and their associated slacks is extremely species-rich. The site includes a number of rare and scarce species, such as fragrant evening-primrose *Oenothera stricta*, bedstraw broomrape *Orobanche caryophyllacea* and sand catchfly *Silene conica*, as well as the UK's largest population of lizard orchid *Himantoglossum hircinum.*

The seaward edge at the northern end of the site displays a good sequence of embryonic shifting dune communities and there is a clear zonation within the extensive dune system, with strandline species on the seaward edge and sand-binding grasses inland. Lyme-grass *Leymus arenarius* is extremely sparse and sand couch *Elytrigia juncea* is the dominant sand-binding species. The shifting dune vegetation contains a good range of characteristic

[78] http://publications.naturalengland.org.uk/publication/5766780467281920
[79] Ibid
[80] http://publications.naturalengland.org.uk/publication/6009926887407616

foredune species including sea bindweed *Calystegia soldanella,* sea spurge *Euphorbia paralias* and sea-holly *Eryngium maritimum.*

A small area of dunes with creeping willow *Salix repens* ssp. argentea is of interest as it is the only example found in the dry south-east of England and is representative of this habitat type in a near-continental climate.

Reason for Designation[81]

Qualifying Annex I habitats:

- Dunes with *Salix repens* ssp. argentea (*Salicion arenariae*). (Dunes with creeping willow)
- Embryonic shifting dunes
- Fixed dunes with herbaceous vegetation (grey dunes). (Dune grassland)*
- Humid dune slacks
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes). (Shifting dunes with marram)

Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[82]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely"*

Current Pressures and Threats

The Site Improvement Plan[83] identifies the following pressures and threats to the SAC:

- Public access/ disturbance
- Hydrological changes
- Air Pollution: impact of atmospheric nitrogen deposition
- Fisheries: Commercial marine and estuarine

Dover to Kingsdown Cliffs SAC

Introduction

The cliffs support a full zonation of maritime cliff communities found on chalk substrates, reflecting different levels of exposure to wind and salt spray. The most exposed, lowest parts of the cliff face support rock-crevice communities with rock samphire *Crithmum maritimum,* rock sea-lavender *Limonium binervosum* and thrift *Armeria maritima*, with the rare hoary stock *Matthiola incana* in places. On more sheltered slopes there is a community restricted to south-facing chalk cliffs characterised by wild cabbage *Brassica oleracea.*

The vegetation of the cliff tops consists mainly of chalk grassland interspersed with areas of scrub. Much of the grassland is dominated by tor-grass *Brachypodium pinnatum* or upright brome *Bromopsis erecta*, though there are

[81] http://publications.naturalengland.org.uk/publication/5132828329115648
[82] Ibid
[83] http://publications.naturalengland.org.uk/publication/6259686785417216

numerous areas of species-rich open grassland with a range of typical chalk-turf grass and herb species. These include sheep's-fescue *Festuca ovina*, salad burnet *Sanguisorba minor,* wild thyme *Thymus praecox* and horseshoe vetch *Hippocrepis comosa.* A number of nationally rare plants occur, including early spider orchid *Ophrys sphegodes* and oxtongue broomrape *Orobanche artemisiae-campestris*, which in the UK is confined to unstable coastal chalk cliffs of southern England, and has a stronghold on this site.

Reason for Designation[84]

Qualifying Annex I habitats:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) (important orchid sites). (Dry grasslands and scrublands on chalk or limestone, including important orchid sites)*
- Vegetated sea cliffs of the Atlantic and Baltic coasts

Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[85]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely"*

Current Pressures and Threats

The Site Improvement Plan[86] identifies the following pressures and threats to the SAC:

- Inappropriate scrub control
- Undergrazing
- Air Pollution: impact of atmospheric nitrogen deposition

Lydden & Temple Ewell Downs SAC

Introduction

This site includes some of the richest chalk grassland in Kent, with outstanding assemblages of plants and invertebrates. Most of the grassland is situated on the steep south-west facing slopes on the thinnest soils and is dominated by tor-grass *Brachypodium pinnatum*, sheep's-fescue *Festuca ovina,* creeping bent *Agrostis stolonifera,* and upright brome *Bromopsis erecta*. Grazing pressure varies over the length of the site, resulting in a gradation within the habitat from a rank tor-grass sward to close-cropped fescue grassland. The history of continued grazing on this site has resulted in the retention of many characteristic downland herbs such as squinancywort *Asperula cynanchica*, horseshoe vetch *Hippocrepis comosa*, chalk milkwort *Polygala calcarea* and fragrant orchid *Gymnadenia conopsea*. It contains an important assemblage of rare, scarce and uncommon species, including early spider-orchid *Ophrys sphegodes,* burnt orchid *Orchis ustulata*, musk orchid *Herminium monorchis* and autumn lady's-tresses *Spiranthes spiralis.*

[84] http://publications.naturalengland.org.uk/publication/4785841763254272
[85] Ibid
[86] http://publications.naturalengland.org.uk/publication/5270624469516288

Reason for Designation[87]

Qualifying Annex I habitats:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) (important orchid sites). (Dry grasslands and scrublands on chalk or limestone, including important orchid sites)*

Annex I priority habitats are denoted by an asterisk (*).

Conservation Objectives[88]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely"*

Current Pressures and Threats

The Site Improvement Plan[89] identifies the following pressures and threats to the SAC:

- Overgrazing
- Public access/ disturbance
- Air Pollution: impact of atmospheric nitrogen deposition

Folkestone to Etchinghill Escarpment SAC

Introduction

This extensive area of chalk grassland is located on the steep escarpment north of Folkestone. Most of the downland is dominated by tor-grass *Brachypodium pinnatum* and fescues *Festuca* spp. in a mixed sward of quaking-grass *Briza media*, crested hair-grass *Koeleria macrantha* and upright brome *Bromopsis erecta*. Many herbs characteristic of unimproved grassland are present such as horseshoe vetch *Hippocrepis comosa*, salad burnet *Sanguisorba minor,* squinancywort *Asperula cynanchica* and small scabious *Scabiosa columbaria.* The site contains an important assemblage of rare and scarce species, including early spider-orchid *Ophrys sphegodes* and late spider-orchid *O. fuciflora.*

Reason for Designation[90]

Qualifying Annex I habitats:

- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) (important orchid sites). (Dry grasslands and scrublands on chalk or limestone, including important orchid sites)*

Annex I priority habitats are denoted by an asterisk (*).

[87] http://publications.naturalengland.org.uk/publication/5024513766981632
[88] Ibid
[89] http://publications.naturalengland.org.uk/publication/5601143384178688
[90] http://publications.naturalengland.org.uk/publication/6261005457817600

Conservation Objectives[91]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely"*

Current Pressures and Threats

The Site Improvement Plan[92] identifies the following pressures and threats to the SAC:

- Undergrazing
- Inappropriate scrub control
- Air Pollution: impact of atmospheric nitrogen deposition

Dungeness, Romney Marsh and Rye Bay Ramsar

Introduction

This is a large area with a diverse coastal landscape comprising a number of habitats, which appear to be unrelated to each other. However, all of them exist today because coastal processes have formed and continue to shape a barrier of extensive shingle beaches and sand dunes across an area of intertidal mud and sand flats. The site includes the largest and most diverse area of shingle beach in Britain, with low-lying hollows in the shingle providing nationally important saline lagoons, natural freshwater pits and basin fens. Rivers draining the Weald to the north were diverted by the barrier beaches, creating a sheltered saltmarsh and mudflat environment, which was gradually in-filled by sedimentation, and then reclaimed on a piecemeal basis by man. Today this area is still fringed by important intertidal habitats, and contains relict areas of saltmarsh, extensive grazing marshes and reedbeds. Human activities have further modified the site, resulting in the creation of extensive areas of wetland habitat due to gravel extraction. As a whole, Dungeness, Romney Marsh and Rye Bay is important for breeding, wintering and passage waterbirds, wetland plants, bryophytes and invertebrates, and natural or near-natural wetland habitats. In addition to the internationally important wetland habitats and species, the Ramsar site and adjacent areas are also of national and international importance for a variety of non-wetland habitats and species.

Reason for Designation[93]

Criterion 1: - contains representative, rare, or unique examples of natural or near-natural wetland types:

- Annual vegetation of drift lines and the coastal fringes of perennial vegetation of stony banks
- Natural shingle wetlands: saline lagoons, freshwater pits and basin fens

Criterion 2:

Supports threatened ecological communities:

- Bryophytes
- Vascular plants

[91] Ibid
[92] http://publications.naturalengland.org.uk/publication/5748653180321792
[93] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/509228/dungeness-romney-rye-ramsar-documents.pdf

- Invertebrates

Supports vulnerable, endangered or critically endangered species:

- Greater water-parsnip *Sium latifolium*
- Warne's thread-moss *Bryum warneum*
- Water vole *Arvicola amphibius*
- Aquatic warbler *Acrocephalus paludicola*
- Great crested newt *Triturus cristatus*
- Medicinal leech *Hirudo medicinalis*
- A ground beetle *Omophron limbatum*
- Marsh mallow moth *Hydraecia osseola hucherardi*
- De Folin's lagoon snail *Caecum amoricum*

Criterion 5: - site regularly supports 20,000 or more waterbirds.

Criterion 6: - site regularly supports 1% of the individuals in the populations of the following species or subspecies of waterbird in any season:

- Mute swan *Cygnus olor*
- Shoveler *Anas clypeata*

North Downs Woodland SAC

Introduction

This site consists of mature beech *Fagus sylvatica* forests and yew *Taxus baccata* woods on steep slopes. The stands lie within a mosaic of scrub, other woodland types and areas of unimproved grassland on thin chalk soils.

The beech and yew woodland is on thin chalk soils and where the ground flora is not shaded dog's mercury *Mercurialis perennis* predominates. Associated with it is stinking iris *Iris foetidissima* and several very scarce species such as lady orchid *Orchis purpurea* and stinking hellebore *Helleborus foetidus.*

The chalk grassland, on warm south-facing slopes, is dominated by upright brome *Bromopsis erecta* and sheep's-fescue *Festuca ovina* but supports many other plants which are characteristic of unimproved downland, including the nationally rare ground pine *Ajuga chamaepitys.*

Reason for Designation[94]

Qualifying Annex I habitats:

- *Taxus baccata* woods of the British Isles. (Yew-dominated woodland)*
- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)

Annex I priority habitats are denoted by an asterisk (*).

[94] http://publications.naturalengland.org.uk/publication/5717001544663040

Conservation Objectives[95]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of qualifying natural habitats*
- *The structure and function (including typical species) of qualifying natural habitats, and*
- *The supporting processes on which qualifying natural habitats rely"*

Current Pressures and Threats

The Site Improvement Plan[96] identifies the following pressures and threats to the SAC:

- Public access/ disturbance
- Forestry and woodland management
- Invasive species
- Air pollution: impact of atmospheric nitrogen deposition

Stodmarsh SPA/ Ramsar

Introduction

Stodmarsh SPA/ Ramsar is a wetland of international importance comprising open water bodies, reedbeds, grazing marshes and alder carr. The site provides wintering and breeding habitats for important assemblages of wetland bird species, particularly wildfowl and waders. It is also important because it supports a number of uncommon plants.

Reason for Designation

The **SPA**[97] is designated for:

Qualifying Annex I species:

- Bittern *Botaurus stellaris*
- Hen harrier *Circus cyaneus*

Breeding:

- Gadwall *Anas strepera*
- Bearded tit *Panurus biarmicus*
- Great crested grebe *Podiceps cristatus*
- Lapwing *Vanellus vanellus*
- Redshank *Tringa tetanus*
- Snipe *Gallinago gallinago*
- Grasshopper warbler *Locustella naevis*

[95] Ibid
[96] http://publications.naturalengland.org.uk/publication/6363401429188608
[97] http://publications.naturalengland.org.uk/publication/5199409650335744

- Savi's warbler *L. lusciniodes*
- Sedge warbler *Acrocephalus schoenobaenus*
- Reed warbler *A. scirpaceus*

Over winter:

- Gadwall
- Shoveler *Anas clypeata*
- White-fronted goose *Anser albifrons*
- Wigeon *Anas Penelope*
- Mallard *A. platyrhychos*
- Pochard *Aythya farina*
- Tufted duck *A. fuligula*
- Water rail *Rallus aquaticus*
- Lapwing
- Snipe

The **Ramsar** is designated for[98]:

Criterion 2: Six British Red Data Book wetland invertebrates. Two nationally rare plants, and five nationally scarce species. A diverse assemblage of rare wetland birds.

Species regularly supported during the breeding season:

- Gadwall

Species with peak counts in spring/autumn:

- Bittern
- Shoveler
- Hen harrier

Conservation Objectives[99]

"With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site."*

[98] https://jncc.gov.uk/jncc-assets/RIS/UK11066.pdf
[99] http://publications.naturalengland.org.uk/publication/5199409650335744

Current Pressures and Threats

The Site Improvement Plan[100] identifies the following pressures and threats to the SPA:

- Water pollution
- Invasive species
- Inappropriate scrub control
- Air pollution: impact of atmospheric nitrogen deposition

The Ramsar information sheet[101] does not identify any adverse factors.

Stodmarsh SAC

Introduction

This wetland site located in the Stour valley contains a wide range of habitats including open water, extensive reedbeds, scrub and alder carr which together support a rich flora and fauna. The vegetation is a good example of a southern eutrophic (nutrient-rich) flood plain and a number of rare plants are found here. The invertebrate fauna is varied and includes several scarce moths as well as a sizeable population of Desmoulin's whorl snail *Vertigo moulinsiana*. The snail is found beside ditches within pasture on the floodplain of the River Stour, where reed sweet-grass *Glyceria maxima*, large sedges *Carex* spp. and sometimes common reed *Phragmites australis* dominate the vegetation.

Reason for Designation[102]

Qualifying Annex II species:

- Desmoulin's whorl snail

Conservation Objectives[103]

"With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- *The extent and distribution of the habitats of qualifying species*
- *The structure and function of the habitats of qualifying species*
- *The supporting processes on which the habitats of qualifying species rely*
- *The populations of the qualifying species, and,*
- *The distribution of the qualifying species within the site"*

Current Pressures and Threats

The Site Improvement Plan[104] does not identify any specific threats to the SAC

[100] http://publications.naturalengland.org.uk/publication/5749196032311296
[101] https://jncc.gov.uk/jncc-assets/RIS/UK11066.pdf
[102] http://publications.naturalengland.org.uk/publication/5199409650335744
[103] Ibid
[104] http://publications.naturalengland.org.uk/publication/5749196032311296

Thames Estuary & Marshes SPA/ Ramsar

Introduction

This area is a wetland of European importance comprising a mosaic of intertidal habitats, saltmarsh, coastal grazing marshes, saline lagoons and chalk pits. The site provides wintering and breeding habitats for important assemblages of wetland bird species, particularly wildfowl and waders as well as supporting migratory birds on passage. The site forms part of the wider Thames Estuary together with other classified SPAs in both Essex and Kent. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.

Reason for Designation

The **SPA** is designated for[105]:

Qualifying Annex I species:

- Avocet *Recurvirostra avosetta*
- Hen harrier *Circus cyaneus*

Regularly occurring migratory species, in any season:

- Ringed plover *Charadrius hiaticula*
- Grey Plover *Pluvialis squatarola*
- Dunlin Calidris *alpina alpina*
- Knot Calidris *canutus islandica*
- Black-tailed godwit *Limosa limosa islandica*
- Redshank *Tringa totanus tetanus*

Regularly used by over 20,000 waterfowl in any season.

The **Ramsar** is designated for[106]

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.

Criterion 5: Assemblages of international importance – species with peak counts in winter.

Criterion 6: species/populations occurring at levels of international importance.

Species with peak counts in spring/ autumn:

- Ringed plover
- Black-tailed godwit

Species with peak counts in winter:

- Grey plover
- Knot
- Dunlin
- Redshank

[105] http://publications.naturalengland.org.uk/publication/4698344811134976
[106] https://jncc.gov.uk/jncc-assets/RIS/UK11069.pdf

Conservation Objectives[107]

"With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- *The extent and distribution of the habitats of the qualifying features*
- *The structure and function of the habitats of the qualifying features*
- *The supporting processes on which the habitats of the qualifying features rely*
- *The population of each of the qualifying features, and,*
- *The distribution of the qualifying features within the site."*

Current Pressures and Threats

The Site Improvement Plan[108] identifies the following pressures and threats to the SPA:

- Coastal squeeze
- Public access/ disturbance
- Invasive species
- Changes in species distributions
- Fisheries: Commercial marine and estuarine
- Vehicles: illicit
- Air Pollution: risk of atmospheric nitrogen deposition

[107] http://publications.naturalengland.org.uk/publication/4698344811134976
[108] http://publications.naturalengland.org.uk/publication/6270737467834368

Appendix B

B.1 Air Quality Modelling Results for A229

In each of the tables below, column 'Change in Total NOx/N Dep between DS and Future Base' shows the 'in combination' dose for both NOx and nitrogen. Column 'Change in Total NOx/N Dep between DS and DM' shows the dose due to the Blue Bell Hill Improvement Scheme alone for both NOx and nitrogen. A positive numeral means an increase in pollution, while a negative numeral means a decrease in pollution. Amber shading indicates the dose exceeds 1% of the critical level or load, while green shading indicates that it does not (or that the change is positive i.e. a reduction in pollution). In expressing the '1% of the critical level/load' threshold, attention has been paid to paragraph 5.5.2.6 of the Institute of Air Quality Management guidance regarding assessment of air pollution on ecological sites which clarifies that '*the 1% … screening criteria should not be used rigidly and, not to a numerical precision greater than the expression of the criteria themselves*'. An example is then given of 1.1% being effectively 1%. In other words, in the view of IAQM the data should be reported to whole percentages (i.e. 1% rather than 1.0%) using rounding up or down of the first decimal place. That is therefore how the thresholds have been used when it comes to interpreting these results.

The A229 tables start at 163m from the road because that is the closest part of the SAC to the road. It is to be noted that by that distance from the road the contribution of the Scheme to nitrogen deposition (the primary pollutant of relevance) has declined to the extent that it is only slightly above zero and well below 1% of the critical load for woodland of 10 kgN/ha/yr. It should also be noted that for the A229 total NOx concentrations and nitrogen deposition rates at the SAC are forecast to improve between 2019 and 2027 with or without the Scheme or other plans and projects due to increasing uptake of improved vehicle emissions technology (i.e. an increasing number of people replacing vehicles compliant with older Euro standards with those compliant with newer Euro standards).

Option 1

	NOx Concentrations (µg/m³)									Nitrogen Deposition (kg N/ha/yr)								
Distance from Road (m)	2019 Background NOx	2027 Background NOx	2019 Base Total NOx	2027 Future Base Total NOx	2027 DM Total NOx	2027 DS Total NOx	Change in Total NOx between DS and Base	Change in Total NOx between DS and Future Base	Change in Total NOx between DS and DM	Base Background N Dep	Opening Year Background N Dep	Total 2019 Base N Dep	Total 2027 Future Base N Dep	Total 2027 N Dep	Total 2027 DS N Dep	Change in N Dep between DS and Base	Change in N Dep between DS and Future Base	Change in N Dep between DS and DM
163	19.8	14.6	38.3	22.1	30.6	31.0	-7.3	8.9	0.4	26.4	24.2	29.2	27.6	29.36	29.42	0.2	1.9	0.07
170	19.8	14.6	37.8	21.9	30.2	30.6	-7.3	8.7	0.4	26.4	23.9	29.2	27.5	29.29	29.36	0.2	1.8	0.06
180	19.8	14.6	37.2	21.7	29.6	30.0	-7.2	8.4	0.4	26.4	23.6	29.1	27.5	29.21	29.27	0.2	1.8	0.06
190	19.8	14.6	36.6	21.4	29.1	29.5	-7.1	8.1	0.4	26.4	23.3	29.0	27.5	29.13	29.19	0.2	1.7	0.06

200	19.8	14.6	36.1	21.2	28.7	29.0	-7.0	7.8	0.4	26.4	23.1	28.9	27.4	29.05	29.11	0.2	1.7	0.06

Option 2

	NOx Concentrations (µg/m³)									Nitrogen Deposition (kg N/ha/yr)								
Distance from Road (m)	2019 Background NOx	2027 Background NOx	2019 Base Total NOx	2027 Future Base Total NOx	2027 DM Total NOx	2027 DS Total NOx	Change in Total NOx between DS and Base	Change in Total NOx between DS and Future Base	Change in Total NOx between DS and DM	Base Background N Dep	Opening Year Background N Dep	Total 2019 Base N Dep	Total 2027 Future Base N Dep	Total 2027 DM N Dep	Total 2027 DS N Dep	Change in N Dep between DS and Base	Change in N Dep between DS and Future Base	Change in N Dep between DS and DM
163	19.8	14.6	38.3	22.1	30.6	30.9	-7.4	8.8	0.4	26.4	24.2	29.2	27.6	29.36	29.42	0.2	1.9	0.06
170	19.8	14.6	37.8	21.9	30.2	30.5	-7.3	8.6	0.3	26.4	23.9	29.2	27.5	29.29	29.35	0.2	1.8	0.05
180	19.8	14.6	37.2	21.7	29.6	30.0	-7.2	8.3	0.3	26.4	23.6	29.1	27.5	29.21	29.26	0.2	1.8	0.05
190	19.8	14.6	36.6	21.4	29.1	29.5	-7.2	8.0	0.3	26.4	23.3	29.0	27.5	29.13	29.18	0.2	1.7	0.05
200	19.8	14.6	36.1	21.2	28.7	29.0	-7.1	7.8	0.3	26.4	23.1	28.9	27.4	29.05	29.10	0.2	1.7	0.05

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