

M25 junction 10/A3 Wisley interchange TR010030

5.3 Habitats Regulations Assessment Annex A: Stage 1 Screening

Regulation 5(2)(g)
Planning Act 2008

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



Infrastructure Planning

Planning Act 2008

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

M25 junction 10/A3 Wisley interchange improvement Development Consent Order 202[x]

5.3 HABITATS REGULATIONS ASSESSMENT

ANNEX A: STAGE 1 SCREENING

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1. Introduction

1.1. Scheme changes

1.1.1. This is a revised version of the screening, to take into account non-material changes introduced in November 2019. These changes are listed below and detailed in the M25 Junction 10 Targeted Consultation 2020 Brochure¹.

1. Extension of the proposed green element on Cockcrow Bridge;
2. Incorporation of two toad underpasses at Old Lane and other mitigation measures;
3. Removal of part of the proposed improvements to the A245 eastbound between the Seven Hills Road and Painshill junctions;
4. Amendment to Saturday construction working hours;
5. Adjustments to the Order limits in the draft development consent order to accommodate the diversion of a gas main including additional land take of 0.12 ha; and
6. Amendments to the speed limit at Elm Lane (and including Byway 525-Byway Open to All Traffic).

1.1.2. Permanent land for the Scheme is anticipated to be 139.2 ha, however, as a result of change five listed above temporary land take for the Scheme has increased from 101.4 ha to 101.5 ha, of which permanent land take of 5.9 ha and a temporary land take of 8.7 ha would be from within the SPA.

1.1.3. Consultations with key stakeholders listed below were carried out in February and March 2018 prior to the above listed changes and make reference to old land take figures for the Scheme. However, due to the minor nature of these changes to the overall scope of work it is understood that the proposed changes will have no effect on arrangements made with key stakeholders that may be referenced in this report. Therefore, no consultation has been undertaken beyond that included within the targeted consultation exercise with regard to these changes.

1.2. Terms of reference

1.2.1. Atkins Limited (Atkins) has been appointed by Highways England to undertake a Habitats Regulations Assessment (HRA) Stage 1: Screening report associated with the M25 junction 10/A3 Wisley interchange Scheme the Scheme).

1.2.2. The Scheme consists of two nationally significant infrastructure projects (NSIPs) and therefore, this assessment has been undertaken following guidance in the Planning Inspectorate Advice Note Ten² Habitats Regulations Assessment and the Design *Manual for Roads and Bridges* (DMRB) Volume 1, Section 4, Part 1 Assessment of Implications (of Highways and/or Road Projects) on European sites (Including Appropriate Assessment) (HD 44/09). This assessment also

¹ [Highways England. January – February 2020. M25 junction 10/A3 Wisley interchange improvement scheme. Targeted non-statutory consultation 2020 Brochure.](#)

² The Planning Inspectorate (2016) Habitat Regulations Assessment Advice Note Ten: Habitats Regulations Assessment relevant to nationally significant infrastructure projects.

takes into account Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations³.

- 1.2.3. Information has been collated by Atkins in order for the competent authority (in this case the Secretary of State) to assess whether there would be a 'likely significant effect' as a result of the Scheme on any European sites as required by Regulation 63 of the Conservation of Habitats and Species Regulations 2017, known as the Habitats Regulations.
- 1.2.4. Screening forms the first stage of the HRA process and is designed to identify those elements of a project which are likely to give rise to significant adverse impacts on European sites i.e. if they will have a 'likely significant effect'.
- 1.2.5. The precautionary principle (as enshrined in the Habitats Regulations) has been taken into account during this HRA Screening. The precautionary principle is used when an HRA cannot objectively demonstrate that there will be no likely significant effects on the European sites. Therefore, if a potential impact is identified as possibly having a significant effect on a European site, the precautionary principle will ensure that it is recorded as a likely significant event. If this occurs, the subsequent stages of HRA must be completed for the project or plan.
- 1.2.6. This report presents the results of the HRA Stage 1: Screening for the Scheme undertaken by Atkins on behalf of Highways England. The Scheme is now in the Preliminary Design Stage, and a Scheme red line boundary has been determined (refer to the scheme layout plans (application document TR010030/APP/2.8)).
- 1.2.7. This HRA Screening was originally written in November 2017 and informed the requirement for an appropriate assessment. However, this HRA Screening was updated in June 2018, in light of a recent (12 April 2018) Court of Justice of the European Union ("CJEU") ruling (referred to as the 'People over Wind' ruling). This judgment ruled that Article 6(3) of the Habitats Directive⁴ must be interpreted as meaning that mitigation measures (referred to in the judgment as measures which are intended to avoid or reduce effects) should be assessed within the framework of an appropriate assessment and that it is not permissible to take account of measures intended to avoid or reduce the harmful effects of the plan or project on a European site at the screening stage.
- 1.2.8. This HRA Screening document was reviewed in June 2018 to see if any amendments were required with respect of the ruling. The outputs of the HRA Screening document did not alter as a result of these updates, and this update does not lead to any required changes in the approach to the appropriate assessment. However, this could not be determined without undertaking the process of updating the HRA Screening in light of this ruling.

1.3. The Scheme

- 1.3.1. In December 2014, the Department for Transport published its Road Investment Strategy (RIS) for 2015-2020. The RIS sets out the list of schemes that are to be delivered by Highways England over the period covered by the RIS (2015 - 2020). The RIS identified improvements to the M25 junction 10/A3 Wisley

³ Natural England (2018) Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations.

⁴ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

interchange as one of the key investments in the Strategic Road Network (SRN) for the London and south east region.

- 1.3.2. The highways proposals are included in the scheme layout plans (application document TR010030/APP/2.8). The principal components are:
1. A larger, signalised gyratory for M25 junction 10, including free-flow left turn slip roads that bypass the traffic signals.
 2. Amended and extended slip roads onto and off the M25 and the A3.
 3. Widening of the A3 to dual-four lanes between Ockham Park junction and M25 junction 10 and between Painshill junction and M25 junction 10.
 4. Provision of four running lanes on the M25 through junction 10.
 5. A comprehensive package of local road, private access and Public Rights of Way (PRoW) changes and additions.

Motorway and trunk road

- 1.3.3. The proposed M25 junction 10 layout entails elongating the roundabout from circular to oval, using the existing bridges under the A3 and new bridges over the M25. This will provide an additional lane and extended queueing lengths, which will increase capacity for right-turning traffic between and through the traffic signals. There will be dedicated left-turn free-flow lanes that enable this traffic to bypass the junction signals rather than using roundabout capacity. The existing bridges over the M25 will be demolished.
- 1.3.4. The A3 will be widened from dual-three lane to dual-four lane between slip roads from the Ockham Park junction to the M25 junction 10 and from the Painshill junction to the M25 junction 10, to cater appropriately for the volumes of merging and diverging traffic. There will be a two-lane drop and gain at M25 junction 10, through which the A3 remains as dual-two lane passing over the roundabout.
- 1.3.5. The M25 carriageway will not be widened, but the hard shoulder will be used to provide a fourth running lane through junction 10, between the slip road merges and diverges. Emergency refuges will be provided for broken down vehicles.
- 1.3.6. All slip roads leading to and from junction 10 will be amended to increase junction capacity and to suit the A3 carriageway widening, the M25 amendments and the junction 10 free-flow left turn lanes, with two lanes diverging or merging in all cases and ghost islands provided between the slip road lanes where appropriate.
- 1.3.7. The slip roads leading to and from Ockham Park junction and the south side of Painshill junction will be amended to suit the A3 widening, with ghost islands provided between the slip road lanes where appropriate.
- 1.3.8. Retaining walls will be provided to minimise the land requirements and adverse impacts in the many sensitive locations, with the largest walls needed alongside RHS Wisley Gardens, Bolder Mere, Hut Hill, Painshill Park Gothic Tower, Clearmount and the base of Telegraph Hill cutting.
- 1.3.9. The free-flow left turns at junction 10 would prevent replacement of the current arrangements for NMUs to make their way around the junction and/or across the

M25 and A3. Almost all existing accesses to property or land direct from the A3 carriageways will also be closed, between Painshill and Ockham Park junctions.

- 1.3.10. The new and amended road links will be close to the existing M25, A3 and slip roads and will not segregate any areas of open land, but much of the space needed to provide and construct the Scheme is special category land and designated as SPA and/or SSSI.
- 1.3.11. New LED lighting will be provided along the new verges of the widened A3 and A245 carriageways and all the amended junction slip roads; the existing central reserve lighting on the A3 across junction 10 and along the M25 will remain.
- 1.3.12. The increased area of road carriageway will lead to increased rates of surface water runoff, which need to be attenuated to ensure that the existing rates of outfall into the receiving watercourses are not exceeded. Space has been allowed for the provision of drainage attenuation measures, with the aim of minimising the space required, as most of these are within the special category land and SPA/SSSI.
- 1.3.13. To accommodate these changes to the strategic highways, the Scheme also includes comprehensive amendments to the network of local roads, access tracks and PRoW, as outlined below, which will influence public access to local facilities and the existing pattern of registered commons and public open space, as well as the proposed areas of replacement land.

Local roads

- 1.3.14. There will be several changes to the local road network, summarised broadly from west to east along the Scheme:
 1. A diversion of Wisley Lane will be provided from the east side of the Ockham Park Junction roundabout across Stratford Brook and along the north-western edge of the Wisley airfield site, before turning northwest through the registered common to rise and cross over the A3 on a new bridge just south of the entrance to Elm Lane, to tie into the existing level of Wisley Lane and an amended RHS entrance. The existing A3 direct links to and from Wisley Lane and Elm Lane will not be re-provided. Elm Lane will not be connected as a public road to the new Wisley Lane, but there will be a bridleway connection.
 2. The Byway section of Elm Lane will be upgraded across Ockham Common to provide access suitable for all vehicles between Old Lane and Elm Corner, as a substitute for the closure of the A3 connection to Elm Lane.
 3. The connection to Old Lane from the junction 10 A3 southbound on-slip will be amended to improve safety and to suit the on-slip being widened to two lanes along its full length.
 4. The existing access from the A3 into the Starbucks drive-thru café will be closed and a new access provided via a local access road running from the end of Seven Hills Road (South) to the Starbucks entrance, which will join the private means of access from Redhill Road at an access control gate to prevent this route becoming a rat-run for A245

traffic; the existing road surface south of the entrance to the Cobham Hilton will be cleared and refurbished.

5. The A245 westbound between the Painshill junction roundabout and the B365 Seven Hills Road junction will be widened from dual two lane to dual three lane, with retaining walls used to minimise land requirements. Refer to Scheme change 3 within the M25 Junction 10 Consultation Brochure for changes at this location¹-.

Private means of access

- 1.3.15. There are two accommodation bridges to be replaced that are used for private means of access (PMA), both of which also function as parts of the PRow network:
 1. Reinstatement of Clearmount Bridge over the amended M25 as an accommodation/bridleway bridge, linking to Bridleway 8 and the farm access tracks used by SWT.
 2. Reinstatement of Cockcrow Bridge over the widened A3 as an accommodation/bridleway bridge, which also includes a wide green margin to provide habitat linkage between the two parts of the SPA. There will be a new access to this bridge from Old Lane to provide (gated) access to Hut Hill Cottage, Pond Farm and Birchmere camp site; the current PMA from the A3 northbound off-slip slip to junction 10 will not be re-provided. Entry to the car parks at Ockham Bites will also be taken from this new access from Old Lane and existing car park entrances closed.
- 1.3.16. Most existing PMA direct from the A3 carriageways will be closed and substituted by:
 1. A new road running from the remnant piece of old A3 carriageway parallel along the west side of the A3, providing access from the end of Redhill Road to the Long Orchard properties; an access control gate will be provided near the Starbucks café to prevent this route becoming a rat-run for A245 traffic through to Seven Hill Road (South).
 2. A new restricted byway running from the A3 southbound on-slip from Painshill junction, along which access will be provided along the east side of the A3 to New Farm, the gas valve compound, Heyswood Guide camp site and Court Close Farm. The existing direct accesses from the A3 will be closed, although occasional access to the gas valve compound will still be possible for major maintenance, under traffic management.
 3. A new two-way gated access from Seven Hills Road (South) into the eastern end of Byfleet Road, to be used by Feltonfleet School; the existing right-turn access in from the A245 eastbound carriageway will be closed.

Public rights of way

- 1.3.17. The following new public rights of way (PRow) works will re-provide and/or enhance existing NMU routes and connectivity, reduce severance caused by the A3 and provide suitable access to the existing areas of existing registered

common and public open space, as well as to the proposed replacement land areas:

1. Improved NMU crossings and new NMU links at Ockham Park junction for safe access under the A3 between the B2215/Mill Lane and Ockham Road North/Wisley Lane.
2. A bridleway alongside Wisley Lane diversion over the A3 to Ockham Park junction, with links to Elm Lane, Bridleways 8 and 544 and Footpaths 7, 13, 13a and 14.
3. Diverting Footpath 14 along a maintenance track south from Bolder Mere to connect with Elm Lane.
4. A restricted byway along the west side of the A3 between Wisley Lane and Cockcrow bridge, with links to Bridleway 8 and Footpaths 7, 9 and 10.
5. The new Sandpit Hill restricted byway bridge across the M25 to the southeast of M25 junction 10, with restricted byway links to Pointers Road and across the corner of Ockham Common to Footpath 17, Cockcrow bridge and Old Lane.
6. The new Red Hill bridleway bridge spanning the widened A3 south of the end of Redhill Road, linking the existing and proposed PRoW on either side and providing a substitute for the closure of bridleway 12.
7. A restricted byway between Pointers Road and Court Close Farm, including a link to Red Hill bridleway bridge, then continuing along the PMA to Painshill junction.
8. New NMU crossing facilities provided at the A3 northbound off-slip to Painshill junction, to retain connectivity between Cobham and Feltonfleet School.

1.3.18. Where appropriate, these new NMU routes will also enable maintenance access to Highways England infrastructure, such as sign gantries, balancing ponds and traffic signals, as well as to any utilities that follow the NMU alignment. This minimises the need to identify additional land take to create specific maintenance accesses. A plan of the NMU routes can be seen in Figure 12 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3).

1.3.19. The PRoW proposals will connect the new and replacement NMU and local road bridges to the existing network of permissive horse rides and other tracks across the land managed by SWT. There will be an upgrade in status (but no physical change) of some of these permissive horse rides to bridleway, so that they appear on maps and provide an appropriate right of access to and between the areas of registered common. The routes that will be upgraded are:

1. In the north-western quadrant between the new Red Hill bridge over the A3 and Clearmount bridge over the M25, mostly along the line of Footpath 11;
 2. In the western quadrant between Clearmount bridge over the M25 and Cockcrow Bridge over the A3, mostly along the line of Footpath 10 past Pond Farm;
 3. In the south-eastern quadrant between Sandpit Hill restricted byway bridge over the M25 and Bridleway 69, along the north-eastern edge of the open heathland on Telegraph Hill;
 4. In the north-eastern quadrant a bridleway will be designated along Pointers Road, between the existing traffic control gate and the junction with the proposed restricted byway.
- 1.3.20. Three new PRoW will be provided across the proposed areas of replacement land:
1. A bridleway between the junction of Bridleway 8 and Footpath 7 through Park Barn Farm replacement land to the proposed bridleway along Footpath 11;
 2. A bridleway between the proposed restricted byway near Red Hill bridge through Chatley Wood replacement land to the proposed bridleway along Pointers Road;
 3. A footpath between Bridleway 18 through the Hatchford End replacement land to Footpath 71.
- 1.3.21. The various NMU and PRoW works will also contribute towards achieving the aims of the Scheme.

Scheme construction

- 1.3.22. Construction of the Scheme is planned to commence in winter 2020, with the Scheme planned to be open for traffic in autumn 2023. The assessments of construction effects will assume best practice, based on industry guidance and professional experience.
- 1.3.23. The main site compound will be adjacent to and accessed from Ockham Park junction roundabout, which is outside the extent of special category land. There will be small construction compounds close to the new or replacement bridges, plus two satellite compounds; one each side of junction 10. One satellite compound falls within the SPA, but its size has been kept to a reasonably practicable minimum. Two other compound areas will be largely used for the storage of material excavated from the site: one on the former airfield hardstanding near Elm Lane; and one on the field beside Buxton Wood, which is special category land.
- 1.3.24. Working space for construction has been included as a 5m width beyond the extent of new earthworks or drainage works, increasing to 6m if a haul route is required. Around the M25 junction 10 roundabout, space is also included for temporary slip roads to ensure continued function of junction 10 during the construction period; some of this extra space will be used to provide the new NMU links and/or drainage works. Where the new restricted byway routes are to

be provided away from the main highways and bridge works, they will be constructed within a 7m working width.

- 1.3.25. The permanent land acquisition (i.e. the areas outside the existing highway boundary but within the proposed highway boundary) for the Scheme will include approximately 5.9 ha of Thames Basin Heaths SPA. The temporary possession of land outside the proposed highway boundary will include approximately 8.6-7 ha of Thames Basin Heaths SPA.

Decommissioning

- 1.3.26. In view of the indefinite design life of the Scheme, decommissioning has therefore been scoped out of the assessment.

1.4. Background to HRA

- 1.4.1. Habitats Regulation Assessment (HRA) is required by Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) for all plans and projects which may have likely significant effects on a European site and are not directly connected with or necessary to the management of the European site. The proposed options are not directly connected with, or necessary to, the nature conservation management of any European sites.
- 1.4.2. European sites include Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Wetlands of International Importance (Ramsar sites). HRA is also required, as a matter of UK Government policy for potential SPAs (pSPA), candidate SACs (cSAC) and proposed Ramsar sites (pRamsar) for the purposes of considering plans and projects, which may affect them⁵. Hereafter all of the above designated nature conservation sites are referred to as 'European sites'.
- 1.4.3. The stages of HRA process are:
1. **Stage 1 – Screening:** To test whether a plan or project either alone or in combination with other plans and projects is likely to have a significant effect on a European site;
 2. **Stage 2 – Appropriate Assessment:** To determine whether it can be ascertained, in view of the conservation objectives, that the plan or project (either alone or in combination with other projects and plans) would have no adverse effect on the integrity of a European site. If the potential for adverse effects on the integrity of a European site cannot be avoided, potential mitigation measures to alleviate those adverse effects should be proposed and assessed;
 3. **Stage 3 – Assessment of alternative solutions:** Where it is not possible to ascertain no adverse effect on the integrity of a European site, but a decision maker is minded to proceed, notwithstanding the negative outcome to an appropriate assessment, it is first necessary to establish the absence of alternative solutions (e.g. alternative locations and designs of development); and,
 4. **Stage 4 – Assessment of imperative reasons of overriding public interest (IROPI):** Where no alternative solutions can be identified and where reasonable scientific doubt remains as to the absence of

⁵National Planning Policy Framework. Department for Communities and Local Government. March 2012.

adverse effects on site integrity, authorisation may be granted in exceptional circumstances.

5. **Stage 5 – Compensatory measures:** These must be put in place to ensure the overall coherence of the network is protected.

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

1.5. Purpose of this report

- 1.5.1. This HRA Stage 1: Screening report presents the findings of the screening assessment undertaken to identify likely significant effects of the Scheme on European sites.
- 1.5.2. The content of this report adheres to the requirements set out in Appendix 1: Template for Screening Matrices of the Planning Inspectorate (PINS) Advice Note Ten: Habitats Regulations Assessment⁶. The Screening Matrices are presented in Appendix B.
- 1.5.3. This HRA Stage 1: Screening report includes a Screening Matrix (see Section 2), which includes a brief description of the project, details of the European sites which may be impacted, and an assessment of any likely effects on the European sites. This HRA Screening was updated in June 2018, due to the People Over Wind case (see paragraphs 1.1.7 – 1.1.8). Therefore, this HRA Screening has been amended to ensure there are no mitigation and/or avoidance measures.

2. Methodology

2.1. The project

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

2.2. Determination of European sites included in the HRA

- 2.2.1. PINS Advice Note 10⁷ states that the list of European sites should be taken as including:
 1. Sites of Community Importance (SCIs);
 2. Special Protection Areas (SPAs) and potential SPAs (pSPAs);
 3. Special Areas of Conservation (SACs), and candidate or possible SACs (cSACs or pSACs); and,
 4. Ramsar sites and proposed Ramsar sites (pRamsar).
- 2.2.2. With regards to determining the European sites to include in the HRA Stage 1: Screening, the guidance in the Design Manual of Roads and Bridges (DMRB) Volume 11, Section 4, Part 1 Assessment of Implications (of Highways and/or Roads Projects) on European sites (including appropriate assessment) (HD

⁶The Planning Inspectorate (2016) Habitats Regulations Assessment Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects.

⁷ The Planning Inspectorate (2016) Habitats Regulations Assessment Advice Note 10: Habitats Regulations Assessment relevant to nationally significant infrastructure projects.

44/09) (HE, 2009) states that as a general guide, subject to professional judgement about potential effect pathways, consideration should be given to any European site if:

1. The Scheme is within:
 - a. 2 km of a European site;
 - b. 30 km of a Special Area of Conservation SACs (including potential or candidate SACs) – with bats as a qualifying feature;
or
2. Crossing adjacent/upstream or downstream of watercourses designated as a European site.
3. The Scheme is not directly connected with or necessary to the management of any European site.

2.2.3. In addition, any European site within 200 m of the affected road network (ARN)⁸ associated with increased emissions as a result of the Scheme will be included. This has not been extended to 30 km for SACs with bats as a qualifying feature, as the habitats within an SAC that is located greater than 200 m from the ARN will not be affected by any increases in emissions.

2.3. Obtaining information on European sites with the potential to be affected

2.3.1. Information was gathered on the European sites to be included in the HRA. This includes:

1. Obtaining information on the qualifying features of each European site from the Joint Nature Conservation Committee (JNCC) website (www.jncc.gov.uk);
2. Contacting Natural England for the Conservation Objectives and Favourable Conditions Tables for each European site.

2.4. Obtaining information on other plans and projects

2.4.1. In accordance with the Habitat Regulations there is a need to consider the potential for effects of the Project 'in combination' with other plans and projects.

2.4.2. Natural England were consulted with regards to Plans and Projects that should be considered to determine if there is the potential for a cumulative impact on the European sites included in this HRA Screening.

2.5. Assessing the impacts of the project 'alone' or 'in combination'

2.5.1. Following the gathering of information on the Project and the European sites an assessment has been undertaken to predict the likely significant effects of the Project on the European sites 'alone'. In order to inform this process, all parts of

⁸ The air quality study area for assessment of construction traffic and during the operational phase is determined in accordance with traffic change criteria set out in the DMRB HA 207/07 which defines ARNs for local (paragraph 3.12) and regional (paragraph 3.20) air quality assessments.

the Project were assessed to see if they could result in likely significant effects on the European sites. This HRA assesses each of the allocation sites.

- 2.5.2. Each of the European sites have been examined in detail to see if the proposals could have a significant effect on the conservation objectives of the qualifying features of the European sites.
- 2.5.3. Likely significant effects are assessed by reference to the conservation objectives of the qualifying feature (interest feature) of the European site. Any plan or project that causes the cited interest features of a site to fall into unfavourable condition can be considered to have a likely significant effect on the site. Stage 1 of the HRA process does not assess effects on the integrity of European sites (this forms Stage 2 of the HRA process). However, the definition of integrity provided below has been taken into account during the assessment of likely significant effects:
- “...the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified.”⁹*
- 2.5.4. Plans or projects can lead to significant effects on a European site by, amongst other things:
1. causing delays in progress towards achieving the conservation objectives of the site;
 2. interrupting progress towards achieving the conservation objectives of the site;
 3. disrupting those factors that help to maintain the favourable conditions of the site; and
 4. interfering with the balance, distribution and density of key species that are the indicators of the favourable condition of the site.
- 2.5.5. It was agreed with Natural England¹⁰ that the in combination assessment should focus on the Ockham and Wisley Commons SSSI component of the Thames Basin Heaths SPA, due to the distance from the other SSSI components (Horsell Common SSSI is the closest component SSSI and is located approximately 6 km from the Scheme boundary at its closest point), and the lack of hydrological connectivity between Ockham and Wisley Commons SSSI and any other component SSSIs of the Thames Basin Heaths SPA.

⁹ Part I, Section B, Paragraph 20 of ODPM Circular 06/2005 accompanying Planning Policy Statement 9: Biodiversity and Geological Conservation

¹⁰ Natural England meeting minutes 09/10/2018, refer to Appendix C

3. The European sites

3.1.1. An HRA Stage 1: Screening is required as the Scheme is partially located within a SPA, and also within 30 km of two SACs which include bats as a qualifying feature¹¹:

1. Thames Basin Heaths SPA is partially located within the Scheme;
2. Mole Gap to Reigate Escarpment SAC, located approximately 6.9 km east of the Scheme; and
3. Ebernoe Common SAC, located approximately 29.3 km south of the Scheme.

3.1.2. Tables 1 – 3 provide a summary of the European sites. Figure 14 of 5.3 Habitats Regulations Assessment Figures (application document TR010030/APP/5.3) shows the European sites within the relevant search distances.

Table 1: Thames Basin Heaths SPA (UK9012141)

Characteristics of European site(s)	
Name of European site and its EU code	Thames Basin Heaths SPA (UK9012141)
Location and distance of the European site from the proposed works	The SPA partially falls within the Scheme. The SPA is immediately adjacent to the south east and south west section of M25 junction 10. Land within the SPA boundary will be lost as a result of the proposed improvements at junction 10.
European site size	8,274.72 ha ¹²
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p>ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season, the SPA regularly supports 1% or more of the Great Britain (GB) populations of the following species listed in Annex I:</p> <ul style="list-style-type: none"> • Dartford Warbler (<i>Sylvia undata</i>) – 27.8% of the GB population; • Nightjar (<i>Caprimulgus europaeus</i>) – 7.8% of the GB population; and, • Woodlark (<i>Lullula arborea</i>) – 9.9% of the GB population. <p>Within this SPA the principal habitat supporting these qualifying species is the lowland heathland.</p> <p>Non-qualifying species of interest: Hen harrier <i>Circus cyaneus</i>, merlin <i>Falco columbarius</i>, short-eared owl <i>Asio flammeus</i> and kingfisher <i>Alcedo atthis</i> (all Annex I species) occur in non-breeding numbers of less than European importance (less than 1% of the GB population).</p>
Vulnerability of the European site – any information available from the standard	The Natura 2000 site Standard Data Form ¹³ states that the following threats and pressures have a high impact on the SPA:

¹¹ Data from the Multi-Agency Geographic Information for the Countryside (MAGIC) website was used to determine the location of any European sites.

¹² Taken from Natural England (2016) European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features: Thames Basin Heaths SPA.

¹³ <http://inc.defra.gov.uk/pdf/SPA/UK9012141.pdf> [Accessed 25/05/2017]

Characteristics of European site(s)	
data forms on potential effect pathways	<ul style="list-style-type: none"> • Air pollution, air-borne pollutants (both within and outside the SPA); • Human intrusions and disturbance (within the SPA); • Succession (within the SPA); • Forest and plantation management and use (within the SPA); and, • Sports, leisure and recreational activities (within the SPA).
European site conservation objectives – where these are readily available	<p>Natural England’s conservation objectives¹⁴ for the SPA are as follows:</p> <p>“Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of qualifying species; • The structure and function of the habitats of qualifying species; • The supporting processes on which the qualifying features rely; • The populations of each of the qualifying features; and, • The distribution of the qualifying features within the site.”

Table 2: Mole Gap to Reigate Escarpment SAC

Characteristics of European site(s)	
Name of European site and its EU code	Mole Gap to Reigate Escarpment SAC (UK0012804)
Location and distance of the European site from the proposed works	<p>The designated site is situated within the North Downs and extends 13 km from Leatherhead to Reigate.</p> <p>Mole Gap to Reigate Escarpment SAC is located approximately 6.9 km, south-east of the Scheme.</p>
European site size	892.3 ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Stable xerothermophilous formations with <i>Buxus sempervirens</i> on rock slopes (Berberidion p.p.); • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (important orchid sites); and, • <i>Taxus baccata</i> woods of the British Isles. (Yew-dominated woodland). <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • European dry heaths; and, • Asperulo-Fagetum beech forests.

¹⁴ <http://publications.naturalengland.org.uk/publication/4952859267301376> [Accessed 25/05/2017]

Characteristics of European site(s)	
	<p>Annex II species present as a qualifying feature, but not a primary reason for site selection:</p> <ul style="list-style-type: none"> • Great crested newt <i>Triturus cristatus</i>; and, • Bechstein's bat <i>Myotis bechsteini</i>. <p>The SAC citation notes that an old chalk mine is used as a winter roost by several species of bats. Bechstein's bats are believed to hibernate in hollow trees and sometimes in underground localities.</p>
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The Natura 2000 site Standard Data Form¹⁵ states that the following threats and pressures have a high impact on the SAC:</p> <ul style="list-style-type: none"> • Modification of cultivation practices (within the SAC); • Succession (within the SAC); • Interspecific floral relations (within the SAC); and, • Air pollution (both within and outside the SAC).
European site conservation objectives – where these are readily available	<p>Natural England's conservation objectives¹⁶ for the SAC are as follows:</p> <p>"Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:</p> <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats and habitats of qualifying species; • The structure and function (including typical species) of qualifying natural habitats; • The structure and function of the habitats of qualifying species; • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; • The populations of qualifying species; and, • The distribution of qualifying species within the site."

¹⁵ <http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012804.pdf> [Accessed 25/05/2017]

¹⁶ <http://publications.naturalengland.org.uk/publication/4911739200077824> [Accessed 25/05/2017]

Table 3: Ebernoe Common SAC

Characteristics of European site(s)	
Name of European site and its EU code	Ebernoe Common SAC (UK0012715)
Location and distance of the European site from the proposed works	Ebernoe Common SAC is located within West Sussex and the South Downs National Park. The SAC is located approximately 29.3 km, south-west of the Scheme.
European site size	234.93 ha
Key features of the European site including the primary reasons for selection and any other qualifying interests	<p>Annex I habitats that are a primary reason for selection of this site as follows:</p> <ul style="list-style-type: none"> • Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrub layer (<i>Quercion robori-petraeae</i> or <i>Ilici-Fagenion</i>). <p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • Barbastelle bat (<i>Barbastella barbastellus</i>); and, • Bechstein`s bat. <p>The SAC citation notes that maternity colonies are present for both barbastelle and Bechstein`s bats. Barbastelle utilise a range of tree roosts in the site, usually in dead tree stumps, but the species appears to be present throughout the year, with individuals using a range of roost sites in tree holes and under bark. Bechstein`s mainly roost in old woodpecker holes in the stems of live mature sessile oak trees.</p>
Vulnerability of the European site – any information available from the standard data forms on potential effect pathways	<p>The Natura 2000 data sheet¹⁷ for the SAC lists the following threats:</p> <ul style="list-style-type: none"> • Modification of cultivation practices (within the SAC); • Forest and Plantation management & use (within the SAC); • Human induced changes in hydraulic conditions (both within and outside the SAC); • Other ecosystem modifications (both within and outside the SAC); and, • Changes in biotic conditions (both within and outside the SAC). <p>The Site Improvement Plan¹⁸ for the SAC lists the following threats and pressures:</p> <ul style="list-style-type: none"> • Impacts of forestry and woodland management on barbastelle and Bechstein`s bats and beech forests on acid soils; • Offsite habitat availability/management for barbastelle and Bechstein`s bats; • Habitat fragmentation for barbastelle bat and Bechstein`s bats; • Change in land management on barbastelle bats; • Hydrological changes on Bechstein`s bats; • Air pollution: risk of atmospheric nitrogen deposition to barbastelle and Bechstein`s bats and beech forests on acid soils; and, • Public access/disturbance Bechstein`s bats.

¹⁷ <http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012715.pdf> [Accessed 25/05/2017]

¹⁸ <http://publications.naturalengland.org.uk/publication/6364242571689984> [Accessed 25/05/2017]

Characteristics of European site(s)

European site conservation objectives – where these are readily available

Natural England's conservation objectives¹⁹ for the SAC are as follows:

“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 and habitats of qualifying species;
- The structure and function (including typical species) of qualifying natural habitats;
- The structure and function of the habitats of qualifying species;
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely;
- The populations of qualifying species; and,
- The distribution of qualifying species within the site.”

¹⁹ <http://publications.naturalengland.org.uk/publication/6255629165395968> [Accessed 25/05/2017]

4. Other plans and projects

4.1.1. Natural England advised that the in combination assessment should focus on the Local Plan HRAs for local boroughs within 10 km of the Scheme boundary. This consists of:

1. Elmbridge Borough Council²⁰
2. Guildford Borough Council²¹
3. Mole Valley District Council²²
4. Runnymede Borough Council²³
5. Spelthorne
6. Surrey Heath Borough Council²⁴
7. Woking Borough Council²⁵

Table 4: Potential adverse effects of the Scheme in combination with Local Plan HRAs for local boroughs within 10 km of the Scheme boundary

Local Planning Authority	Potential impacts on Thames Basin Heaths SPA	Potential for likely significant effect in combination in the absence of mitigation
Elmbridge Borough Council	<ul style="list-style-type: none"> • Increased recreational pressure • General urbanisation • Air quality impacts • Risk of effect on water levels from abstraction if future water needs require this 	<p>In the absence of any mitigation, the following potential impacts could have a likely significant effect on the SPA in combination with the Scheme:</p> <ul style="list-style-type: none"> • Land take of the SPA. • Increased recreational disturbance • Changes in air quality within the SPA • Changes in hydrology within the SPA
Guildford Borough Council	<ul style="list-style-type: none"> • Increased recreational pressure • General urbanisation • Air quality impacts 	<p>In the absence of any mitigation, the following potential impacts could have a likely significant effect on the SPA in combination with the Scheme:</p> <ul style="list-style-type: none"> • Land take of the SPA. • Increased recreational disturbance • Changes in air quality within the SPA
Mole Valley District Council	<p>Not significant. Mole Valley has reached agreement with Natural England that it will consult with them on all housing developments over 50 dwellings within 7 km driving</p>	<p>No in combination adverse effect predicted</p>

²⁰ Elmbridge Local Plan Habitats Regulations Assessment Stage 1: Initial Screening Report Spatial Strategy Options (2016)

²¹ Habitats Regulations Assessment for Guildford Borough Proposed Submission Local Plan: Strategy and Sites (2018 update)

²² Mole Valley Local Development Framework: Mole Valley Appropriate Assessment (2008)

²³ Appropriate Assessment Report Pursuant to the Conservation of Habitats and Species Regulations 2017 on the Likely Significant Effects and Adverse Effects on Integrity of Runnymede Borough Council's Local Plan: HRA Screening and Appropriate Assessment Report (2018)

²⁴ Surrey Heath Borough Council Draft Local Plan to 2032 Issues and Options Consultation: Habitats Regulations Assessment (2018)

²⁵ Woking Borough Council Site Allocations DPD: habitats Regulations Assessment (2018)

Local Planning Authority	Potential impacts on Thames Basin Heaths SPA	Potential for likely significant effect in combination in the absence of mitigation
	distance of the SPA boundary ²⁶ . This only effects a very small, mostly rural part of the District, that is not the focus for the new development.	
Runnymede Borough Council	<ul style="list-style-type: none"> • Increased recreational pressure • General urbanisation • Air quality impacts • Water quality and water quantity 	<p>In the absence of any mitigation, the following potential impacts could have a likely significant effect on the SPA in combination with the Scheme:</p> <ul style="list-style-type: none"> • Land take of the SPA. • Increased recreational disturbance • Changes in air quality within the SPA • Changes in hydrology within the SPA
Spelthorne Borough Council	N/A No Local Plan HRA available	No in combination adverse effect predicted as Spelthorne Borough Council is over 5 km from the Ockham and Wisley Commons SSSI component of the SPA at its closest point
Surrey Heath Borough Council	<ul style="list-style-type: none"> • Increased recreational pressure and disturbance • General urbanisation • Air quality impacts 	<p>In the absence of any mitigation, the following potential impacts could have a likely significant effect on the SPA in combination with the Scheme:</p> <ul style="list-style-type: none"> • Land take of the SPA. • Increased recreational disturbance • Changes in air quality within the SPA
Woking Borough Council	<ul style="list-style-type: none"> • Increased recreational pressure and disturbance • Air quality impacts 	<p>In the absence of any mitigation, the following potential impacts could have a likely significant effect on the SPA in combination with the Scheme:</p> <ul style="list-style-type: none"> • Land take of the SPA. • Increased recreational disturbance • Changes in air quality within the SPA

²⁶ Natural England reviewed and responded to this HRA document on the 12th April 2019. In the response, Natural England clarified the current consultation parameters for Mole Valley District Council, and this text has been amended to reflect this.

5. Stage 1 – HRA screening assessment

- 5.1.1. A screening assessment has been carried out considering the following impacts that might lead to significant effects on the three European sites identified as potentially being affected:
1. habitat loss and habitat fragmentation;
 2. water quality;
 3. recreation;
 4. noise;
 5. lighting;
 6. air pollution; and
 7. spread of non-native invasive plant species.
- 5.1.2. These impacts were identified through consideration of the potential impact pathways of a road scheme and the conservation objectives and vulnerabilities of the sites identified, using the professional judgement of experienced and qualified consultant ecologists.
- 5.1.3. Tables 5, 6 and 7 below consider the potential for these impacts to have a likely significant effect on the European sites.

Table 5: Thames Basin Heaths SPA

Project Name	M25 junction 10	
Natura 2000 Site Under Consideration	Thames Basin Heaths SPA	
PCF Stage 1		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
26/05/2017	[REDACTED]	[REDACTED]
PCF Stage 2		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
23/08/2017	[REDACTED]	[REDACTED]
PCF Stage 3		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
20/11/2018	[REDACTED]	[REDACTED]
<u>03/02/2020</u>	[REDACTED]	[REDACTED]
	<u>Updated in light of non-material changes.</u>	
Size and scale (road type and probable traffic volume)	<p>Improvements are proposed to the M25 junction 10 to reduce congestion and improve safety. The Scheme includes an elongated roundabout at junction 10, connecting side roads at Wisley Lane and Painshill, and the widening of the A3 between the Ockham Park and Painshill Interchanges (a distance of approximately 5 km), and the non-material Scheme changes as listed in Section 1.1.</p> <p>A permanent land take of 139.2 ha and a temporary land take of 101.5 ha 4 ha is anticipated, of which a permanent land take of 5.9 ha and a temporary land take of 8.6 7 ha would be from within the SPA.</p> <p>The scheme layout plans (application document TR010030/APP/2.8) show the Scheme boundary.</p>	

<p>Land take</p>	<p>The improvements at the main junction result in land take from the Thames Basin Heaths SPA. Approximately 5.9 ha of permanent land take and 8.6-7 ha of temporary land take from within the SPA is anticipated.</p> <p>This estimate includes <u>land (temporary and permanent) land</u> take for the junction improvements, a small amount of land take associated with the widening of the A3, <u>the installation of a new gas mains crossing south of the M25 (Scheme change 5), two toad underpasses (Scheme change 2)</u> and construction requirements, such as site compounds. <u>Scheme change 1, 3, 4 and 6 (see Section 1.1) do not result in any additional (temporary or permanent) land take within the SPA.</u></p> <p>The Scheme also requires additional land take from land not designated as SPA. The majority of land take that is not designated as SPA consists of woodland, scrub and grassland and is separated from the SPA by the M25 and/or the A3 and therefore it is unlikely to currently provide significant supporting functions to the SPA.</p> <p>The 2016, 2017 and 2018 bird surveys (further information in the Environmental Statement (application document TR010030/APP/6.3) did not identify any qualifying bird species of the SPA utilising habitat within the proposed land take areas, either within or outside the SPA.</p> <p>Taking the three years of breeding bird surveys into account, the following numbers of territories are estimated for the south-east and south-west quadrants:</p> <p>South-east quadrant (Wisley Common): three nightjar territories, two Dartford warbler territories, one woodlark territory South-west quadrant (Ockham Common): four nightjar territories, four Dartford warbler territories, one woodlark territory.</p>
<p>Distance from the European site or key features of the site (from edge of the project assessment corridor)</p>	<p>Parts of the Scheme are located within the Thames Basin Heaths SPA. The SPA is located immediately to the south of M25 junction 10 on both sides of the A3. Details of approximate land take is provided in the section on land take above.</p>
<p>Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)</p>	<p>The Scheme involves direct land take from the Thames Basin Heaths SPA. This could potentially result in the loss of habitat used by qualifying bird species for foraging or breeding, or habitat that provides buffering functions (i.e. reduction in visibility and pollution control).</p>
<p>Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)</p>	<p>An increase in traffic flow as a result of the Scheme may result in increased air pollution within sensitive habitats adjacent to the affected road network. The structure and function of adjacent heathland habitats, which support the SPA bird populations, are sensitive to changes in oxides of nitrogen (NOx) concentrations and nitrogen deposition rates. Further studies are required to determine the effects of the Scheme on air pollutant emissions. However, initial findings indicate that concentrations of NOx are likely to increase within the SPA as result of the Scheme at locations that are currently exceeding both the NOx annual mean limit value for the protection of vegetation of 30 µg/m³ and the nitrogen deposition lower critical load for heathland of 10 kg/ha/yr²⁷. There is the potential therefore, that the Scheme will lead to a worsening of nitrogen deposition rates at sensitive locations already exceeding the relevant critical load.</p>

²⁷ <http://www.apis.ac.uk/indicative-critical-load-values>

Excavation requirements (e.g. impacts of local hydrogeology)	The Scheme <u>will require temporary loss of land in the woodland belt surrounding the M25 to allow a new gas main crossing (Scheme Change 5) and excavation work to allow the construction of two new toad underpasses along Old Lane (Scheme Change 2). In addition to this the Scheme</u> is likely to require changes to road levels and therefore cuttings and/or embankments are likely to be required. Impacts on hydrology are unknown at this stage and will need to be assessed.
Transportation requirements	Approximately 8.6-7 ha of temporary land take is required within the SPA. This will be used <u>in part for</u> for temporary road diversions, haul roads, compounds or any other temporary works.
Duration of construction, operation, etc.	Construction of the Scheme is planned to commence in winter 2020, with the Scheme planned to be open for traffic in autumn 2023. Operation of the road will be ongoing in perpetuity; therefore, decommissioning has been scoped out of this assessment.
Other	Noise: An assessment of noise impacts on the Thames Basin Heaths SPA during the construction and operational phases with regards to qualifying bird species will need to be undertaken. Large increases in noise levels could potentially lead to reduced suitability of the SPA habitat to support qualifying breeding bird species. Human disturbance: Disturbance of qualifying bird species of the Thames Basin Heaths SPA by walkers (particularly those with dogs) is an ongoing issue. Therefore, impacts of any changes to public access and car parking will need to consider implications of changes to visitor use of the SPA. Lighting: Increased levels of lighting within the SPA could potentially lead to increased disturbance of breeding birds. An assessment of impacts of lighting would be required when a lighting design has been produced. Spread of non-native invasive plant species: The movement of machinery and the works taking place during construction have the potential to cause the spread of any non-native invasive plants that may be present within the DCO boundary.

Assessment Criteria

Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.

Impacts of the Scheme alone

On the basis of information currently available, it is possible that the Scheme alone could give rise to impacts on the European site on the basis of the displacement or reduced breeding success of qualifying bird species through habitat loss, changes in habitat quality and disturbance.

Impacts of the Scheme in combination

Natural England advised that the in-combination assessment should focus on the Local Plan HRAs for local boroughs within 10 km of the DCO boundary Scheme. Potential in combination effects (land take from the SPA, increased recreational disturbance, changes in air quality and changes in hydrology within the SPA) were identified.

Therefore, on a precautionary basis, it is considered that the Proposed Scheme alone and in combination is likely to give rise to impacts on the European site.

Initial Assessment in relation to Thames Basin Heaths SPA

The key characteristics of the site and the details of the European site should be considered in identifying potential impacts.

Describe any likely changes to the site arising as a result of:

Effect	Evidence	Phase ²⁸
Reduction of habitat area	<p>The <u>proposed elongated roundabout, and A3 widening, and installation of a new gas mains crossing and two toad underpasses</u> will result in the permanent loss of approximately 5.9 ha and the temporary loss of approximately 8.6-7 ha of the SPA.</p> <p>Whilst the Scheme will result in the loss of habitat from within the SPA, the main habitat to be lost is woodland. This woodland habitat currently buffers the heathland habitat (where the qualifying bird species breed and forage) from the roads, but the woodland itself was not used by the qualifying bird species (for foraging or breeding) during the 2016, 2017 and 2018 breeding bird surveys.</p> <p>It is acknowledged that the woodland habitats surrounding the heathlands contribute to the invertebrate resource of the SPA. However, there is strong evidence that nightjars actively avoid established woodland for foraging, even though it supports higher levels of invertebrate food, and instead select open areas and young woodland (less than 10 years age) for foraging (Sharps <i>et al.</i>²⁹, Verstraten <i>et al.</i>³⁰). In addition, Dartford warblers have a strong affinity to heathland with mature gorse and are negatively associated with woodland³¹, and woodlarks are known to require open areas with bare ground and short, sparse vegetation for foraging^{32,33} and therefore would not select to forage within established mixed woodland. Therefore, the Scheme may not result in a reduction in area of habitat utilised by the qualifying species Dartford warbler, nightjar and woodlark, although the habitat to be lost may contribute to the overall invertebrate resource for the SPA.</p>	Construction
Disturbance to key species	<p>The proposed elongated roundabout, A3 widening, <u>installation of a new gas main crossing and two toad underpasses</u> will result in direct <u>(permanent and/or temporary)</u> land take of the SPA.</p> <p>Although the Wisley Lane connecting road does not result in land take of the SPA, the proposed access route lies adjacent to the SPA along Wisley Lane. The elongated roundabout, A3 widening, <u>gas mains crossing, two toad underpasses</u> and Wisley Lane connecting road therefore have the potential to result in disturbance of qualifying species for</p>	Construction

²⁸ The impact of decommissioning the Scheme has not been considered as the M25 is thought as being operational for perpetuity.

²⁹ Sharps, K., Henderson, I., Conway, G., Armour-Chelu, N. and Dolman, P. (2015) Home-range size and habitat use of European Nightjars *Caprimulgus europaeus* nesting in a complex plantation-forest landscape. *Ibis*, 157 (2). pp. 260-272

³⁰ Vertsraeten, G., Baeten, L. and Verheyen, K. (2011) Habitat preferences of European Nightjars *Caprimulgus europaeus* in forests on sandy soils. *Bird Study* Vol 58, Issue 2.

³¹ van den Berg, L. J. L., Bullock, J. M., Clarke, R. T., Langston, R. H. W., Rose, R. J. (2001) Territory selection by the Dartford warbler (*Sylvia undata*) in Dorset, England: the role of vegetation type, habitat fragmentation and population size. *Biological Conservation*, 101 (2). pp. 217-228.

³² Bowden, C (1990) Selection of foraging habitats of woodlark (*Lullula arborea*) nesting in pine plantations. *Journal of Applied Ecology* 27(2): 410.

³³ RSPB Land management for woodlarks (<https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/advice/conservation-land-management-advice/woodlarks/>; accessed 13/05/18).

	<p>which the Thames Basin Heaths SPA is designated during the construction phase (potentially more than one breeding season) due to construction noise.</p> <p>In addition, the entire Scheme has the potential to result in disturbance of qualifying species for which the Thames Basin Heaths SPA is designated during the construction phase (potentially more than one breeding season) due to construction workers walking on the site (potentially with their dogs) during their breaks.</p>	
	<p>The Scheme has the potential for disturbance of qualifying species during ongoing operation of the new road layout (due to loss of buffering habitats) or changes to public access (changes to access to car parks, footpaths etc.) leading to increased levels of noise and visual disturbance as a result of increased public use.</p>	Operation
Habitat or species fragmentation	<p>The ability of the qualifying bird species to safely and successfully move between feeding and nesting areas using flight-lines and movement routes is critical to their breeding success and to adult fitness and survival³⁴. Due to the reliance of the qualifying species on heathland habitats, and the existing separation of the Ockham and Wisley Common sections of the SPA by the A3, it is unlikely that the qualifying species are currently subject to road collision casualties. The increase in the footprint of junction 10, and the widening of the A3, <u>temporary works to install a new gas crossing in land to the south of the M25 and two toad underpasses along Old Lane</u>, is unlikely to alter the incidence of road casualties of qualifying species, nor create new barriers to movement of qualifying bird species.</p>	Construction/Operation
Reduction in species density	<p>Due to the qualifying bird species' breeding territories all being located within the heathland areas outside the Scheme boundary, the habitat loss as a result of the Scheme will not result in the loss of territories, nor reduce species density.</p> <p>Noise disturbance during construction may reduce density of the qualifying bird species for which the SPA has been designated, by displacing breeding bird territories.</p>	Construction
	<p>Changes to air quality could affect the habitats on which the qualifying bird species depend. Exceeding critical values for air pollutants may result in changes to the chemical status of its habitat substrate, accelerating or damaging plant growth, altering habitat structure and composition and thereby affecting the quality of nesting, feeding or roosting habitats. Some of the effects that might be attributable to aerial pollution could include accelerated and more vigorous growth of bramble, birch and coarse grasses and consequent loss of bare ground and/or heather³⁵. Further assessment will be required to fully assess this potential impact.</p>	Construction/operation

³⁴ Natural England (May 2016). European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features. Thames Basing Heaths Special Protection Area (SPA) Site Code UK9012141.

³⁵ Natural England (May 2016). European Site Conservation Objectives: Supplementary Advice on Conserving and Restoring Site Features. Thames Basing Heaths Special Protection Area (SPA) Site Code UK9012141.

	Changes to water quality (e.g. treatment of road run off) may affect species density. There is potential for aquatic pollution incidents during the construction or operational phases of the Scheme. However, once operational, it is considered likely that the Scheme will lead to improved water quality, due to improved road drainage infrastructure.	
	During operation, noise disturbance may increase or decrease depending on the Scheme design. Further assessment will be required to fully assess this potential impact.	Operation
Changes in key indicators of conservation value (water quality etc.)	There is potential for improvements to water quality through improved drainage as part of the Scheme design. It is anticipated that increased traffic volumes may increase air pollutant levels. Changes to noise levels, species diversity and habitat coverage may also be expected. Further assessment will be required to fully assess this potential impact.	Construction/operation
Spread of non-native invasive plant species	The movement of machinery and the works taking place during construction have the potential to cause the spread of any non-native invasive plants that may be present within the DCO boundary.	
Climate change	Potential changes to the European site as a result of climate change are considered highly unlikely, and the Scheme will not contribute to these changes.	Operation
Describe any likely impacts on the European site as a whole in terms of:		
Interference with the key relationships that define the structure of the site	The Thames Basin Heaths SPA is a composite site that is located across the counties of Surrey, Hampshire and Berkshire in southern England. It encompasses all or parts of Ash to Brookwood Heaths Site of Special Scientific Interest (SSSI), Bourley and Long Valley SSSI, Bramshill SSSI, Broadmoor to Bagshot Woods and Heaths SSSI, Castle Bottom to Yateley and Hawley Commons SSSI, Chobham Common SSSI, Colony Bog and Bagshot Heaths SSSI, Eelmoor Marsh SSSI, Hazeley Heath SSSI, Horsell Common SSSI, Ockham and Wisley Commons SSSI, Sandhurst to Owlsmoor Bogs and Heaths SSSI and Whitmoor Common SSSI. Together with the nearby Wealden Heaths SPA and Ashdown Forest SPA, the Thames Basin Heaths form part of a complex of heathlands in southern England that support important breeding bird populations. There are potential impacts as a result of the elongated roundabout, A3 widening and Wisley Lane connecting road due to the loss and further fragmentation of habitat used by SPA qualifying bird species for foraging and breeding, changes in extent, distribution and quality of habitats due to direct loss, changes in air quality or aquatic pollution and loss of habitat that acts as a buffer to noise and visual disturbance to qualifying bird species.	Construction/operation
Interference with key relationships that define the function of the site	There are potential impacts as a result of the Scheme, due to habitat loss, reduction in habitat quality, and noise and visual disturbance of qualifying bird species.	Construction/operation

Indicate the significance as a result of the identification of impacts set out above in terms of:

Reduction of habitat area	Potential likely significant effect due to habitat loss.	Construction/operation
Disturbance to key species	Potentially significant impact due to noise and disturbance during the construction phase of the Scheme.	Construction
	Changes to access as a result of the Scheme could lead to increased recreational pressure on the SPA, which may result in increased disturbance. Operational impacts from traffic noise and changes to visitor use of the site as a result of all the Scheme will require further assessment.	Operation
Habitat or species fragmentation	The Scheme will result in habitat loss of woodland along the edge of the SPA. This woodland is confined to areas which are already adjacent to the M25 and A3 and in which, no qualifying SPA species were recorded throughout the 2016 and 2017 breeding bird surveys. Therefore, this is not likely to cause further species or habitat fragmentation.	Construction/operation
Disruption	There is potential for disruption of the local hydrology through creation of cuttings and embankments.	Construction/operation
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	There is the potential significant impact due to increased air pollutant levels leading to a worsening of nitrogen deposition rates at sensitive locations already exceeding the relevant critical load. Further assessment will be required to fully assess this potential impact. There is the potential significant impact due to changes to water quality and hydrological regime. Further studies are required.	Construction/operation
Spread of non-native invasive plant species	There is potential for the movement of machinery and the works taking place during construction have the potential to cause the spread of any non-native invasive plants that may be present within the DCO boundary. This could have harmful effects on the habitats within the SPA, upon which the qualifying features rely.	

Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:

There is potential for the following factors to have significant effects on the Thames Basin Heaths SPA as a result of the Scheme³⁶:

- habitat loss (temporary and permanent);
- degradation of habitats (by changes in air quality, hydrology and spread of non-native invasive plant species); and
- disturbance (by changes in noise, recreational use and/or lighting).

³⁶ The list of factors to consider in the Appropriate Assessment was agreed with Natural England, RSPB, Surrey Wildlife Trust and Surrey County Council during a stakeholder meeting on the 16th March 2018 (see item 9.0 in the minutes, Appendix C)

Outcome of screening stage (delete as appropriate)	Significant Effects are Likely
Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)?	YES – As minuted in a meeting held on the 16 th March 2018, a likely significant effect of the Scheme on the Thames Basin Heaths SPA was agreed by Natural England (see Appendix C)

Table 6: Mole Gap to Reigate Escarpment SAC

Project Name	M25 junction 10	
Natura 2000 Site Under Consideration	Mole Gap to Reigate Escarpment SAC	
PCF Stage 1		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
26/05/2017	[REDACTED]	[REDACTED]
PCF Stage 2		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
23/08/2017	[REDACTED]	[REDACTED]
PCF Stage 3		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
25/10/2017	[REDACTED]	[REDACTED]
<u>03/02/2020</u>	[REDACTED]	[REDACTED]
	<u>Updated in light of non-material changes.</u>	

<p>Size and scale (road type and probable traffic volume)</p>	<p>Improvements are proposed to the M25 junction 10 to reduce congestion and improve safety. The Scheme includes an elongated roundabout at junction 10, connecting side roads at Wisley Lane and Painshill, and the widening of the A3 between the Ockham Park and Painshill Interchanges (a distance of approximately 5 km) <u>and the non-material Scheme changes as listed in Section 1.1.</u></p> <p><u>A permanent land take of 139.2 ha and a temporary land take of 101.5 ha is anticipated.</u></p> <p><u>A permanent land take of 139.2 ha and a temporary land take of 101.4 ha is anticipated.</u></p> <p>The scheme layout plans (application document TR010030/APP/2.8) show the Scheme boundary.</p>
<p>Land take</p>	<p>The Scheme will not involve land take from the Mole Gap to Reigate Escarpment SAC.</p>
<p>Distance from the European site or key features of the site (<i>from edge of the project assessment corridor</i>)</p>	<p>Mole Gap to Reigate Escarpment SAC is located approximately 6.9 km, south-east of the Scheme. Due to this SAC being over 2 km from the Scheme, Bechstein's bats are the only qualifying feature of the SAC that could potentially be affected by the Scheme.</p>
<p>Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)</p>	<p>The Natura 2000 site Standard Data Form³⁷ states that the following threats and pressures have a high impact on the SAC:</p> <ul style="list-style-type: none"> • Modification of cultivation practices (within the SAC); • Succession (within the SAC); • Interspecific floral relations (within the SAC); and, • Air pollution (both within and outside the SAC). <p>It is conceivable that any of these threats and pressures could cause changes to habitats within the SAC, and have an adverse effect on the population of Bechstein's bats. Bechstein's bats are closely associated with mature deciduous woodland and appear to select old woodpecker holes or rot holes in trees for breeding. They also occur in coniferous woodland in some areas. These habitats are present within the Scheme footprint. Maternity colonies may move between suitable crevices within a small area, such as a piece of woodland. Studies have found this species typically forages close to the roost site (within 1 km to 2 km) although, individual bats have been recorded foraging at distances up to 3.8 km from the roost site.</p> <p>A University of Bristol website³⁸ states that 'although Bechstein's bats may be one of the rarest mammal species in Britain, unexpectedly high numbers were caught at underground sites by Parsons et al. (2003). Bechstein's bats are rarely, if ever, found hibernating in underground sites. This indicates that the Bechstein's bats caught at the swarming sites in this study may travel long distances to these sites exclusively for swarming. Additionally, swarming is likely to have an important reproductive function, and so it is essential to conserve swarming sites. In response to this study two of the swarming sites have been selected as candidate Special Areas of Conservation (cSAC) for Bechstein's bats.'</p> <p>The Scheme footprint is 6.9 km from the SAC. Bechstein's are considered to have potential to travel long distances to hibernating/swarming sites. Movements of ringed male Bechstein's bats indicate travelling distances up to 20 km, with a</p>

³⁷ Joint Nature Conservation Committee (2016) Natura 2000 – Standard data Form: Mole Gap to Reigate Escarpment

³⁸ <http://www.bio.bris.ac.uk/research/bats/batpages/zechsteins.htm> (accessed 13/10/2017)

	<p>distance of 12 km recorded several years in a row between swarming sites. Therefore, there remains potential for Bechstein's bats hibernating within the SAC to utilise habitats within the Scheme footprint for their supporting functions (roosting, foraging, commuting). However, the presence of an existing major road network is likely to reduce the suitability of the Scheme footprint for Bechstein's bats.</p> <p>Desk study information provided by Surrey Biodiversity Information Centre provided records of Bechstein's approximately 9 km south west of the project site. In addition, potentially suitable habitat is present in the vicinity of the Scheme.</p> <p>In 2016, 2017 and 2018 a number of bat surveys were undertaken within the Scheme footprint. These included bat activity transect surveys, crossing point surveys and bat trapping surveys.</p> <p>No Bechstein's bats were recorded or trapped, and it is considered unlikely that Bechstein's regularly occur within or near the Scheme footprint.</p>
Emissions (e.g. polluted surface water runoff – both soluble and insoluble pollutants, atmospheric pollution)	<p>There are no hydrological linkages (the Scheme is close to the River Mole but downstream of the SAC) and the project site and SAC are separated by many roads and a distance of approximately 6.9 km. The air quality assessment carried out in chapter 5 of the Environmental Statement (application document TR010030/APP/6.3) identifies no changes in NOx levels as a result of the Scheme. No impacts on Mole Gap to Reigate Escarpment SAC from emissions are therefore anticipated.</p>
Excavation requirements (e.g. impacts of local hydrogeology)	<p>No impacts on Mole Gap to Reigate Escarpment SAC are anticipated due to the distance to this designated site from the Scheme and the absence of hydrological linkages.</p>
Transportation requirements	<p>No impacts on Mole Gap to Reigate Escarpment SAC are anticipated due to the distance to this designated site from the Scheme.</p>
Duration of construction, operation, etc.	<p>Construction of the Scheme is planned to commence in winter 2020, with the Scheme planned to be open for traffic in autumn 2023.</p> <p>Due to the distance between the construction area and the SAC, no impacts relating to the duration and methods of construction are anticipated.</p>
Other	<p>No other impacts on Mole Gap to Reigate Escarpment SAC are anticipated due to the distance to this designated site from the Scheme.</p>

Assessment Criteria

Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.

Impacts of the Scheme alone

The Scheme does not involve any land take from the SAC, therefore, the Scheme does not require any resources from the SAC, will not lead to increased disturbance (either as a result of noise during construction or visitor pressure during operation), will not lead to increased levels of air pollution and is not anticipated to lead to any changes in the ecosystem function within or adjacent to the SAC.

Disturbance of foraging and commuting Bechstein's bats: Bechstein's bats are considered to have potential to travel long distances to hibernating/swarming sites. However, the bat surveys carried out in 2016, 2017 and 2018 have recorded no Bechstein's bats. Therefore, the results suggest that Bechstein's bats do not regularly (if ever) occur within the Scheme boundary. It is therefore unlikely that the Scheme will have any significant impacts on this population of Bechstein's bats;

Overall, habitat loss within the footprint of the Scheme and replacement/installation of lighting columns is unlikely to have any impacts on this population of Bechstein's bats; and, overall, there are no elements of the Scheme alone that are likely to give rise to impacts on the SAC.

Impacts of the Scheme in combination

No elements of the Scheme are likely to give rise to impact on any of the qualifying features of the SAC. Therefore, no cumulative effects on the SAC are anticipated when combined with other developments/projects.

Initial Assessment in relation to Mole Gap to Reigate Escarpment SAC

The key characteristics of the site and the details of the European site should be considered in identifying potential impacts.

Describe any likely changes to the site arising as a result of:

Effect	Evidence	Phase ³⁹
Reduction of habitat area	No reduction of habitat area is predicted.	N/A
Disturbance to key species	Due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no disturbance to key species is predicted.	N/A
Habitat or species fragmentation	Due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no habitat or species fragmentation is predicted.	N/A
Reduction in species density	Due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no reduction in species density is predicted.	N/A
Changes in key indicators of conservation value (<i>water quality etc.</i>)	Due to the distance between the footprint of the Scheme and the SAC, no changes in key indicators of conservation value are anticipated.	N/A
Climate change	Due to the distance between the footprint of the Scheme and the SAC, no climate change impacts are anticipated.	N/A

³⁹ The impact of decommissioning the Scheme has not been considered as the M25 is thought as being operational for perpetuity.

Describe any likely impacts on the European site as a whole in terms of:

Interference with the key relationships that define the structure of the site	Due to the distance between the footprint of the Scheme and the SAC, no interference with the key relationships that define the structure of the site is anticipated.	N/A
Interference with key relationships that define the function of the site	Due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no interference with key relationships that define the function of the site is predicted.	N/A

Indicate the significance as a result of the identification of impacts set out above in terms of:

Reduction of habitat area	There will be no reduction of SAC habitat area.	N/A
Disturbance to key species	Due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no disturbance of Bechstein's bats is predicted.	N/A
Habitat or species fragmentation	Due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no habitat or species fragmentation is predicted.	N/A
Disruption	Due to the distance between the footprint of the Scheme and the SAC, no disruption is predicted.	N/A
Disturbance	Due to the distance between the footprint of the Scheme and the SAC, no disruption is predicted.	N/A
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Due to the distance between the footprint of the Scheme and the SAC, no change to key elements of the site is predicted.	N/A

Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:

Due to the distance between the footprint of the Scheme and the SAC, and due to the absence of any Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that the Scheme will have any significant impacts on the SAC or its populations of Bechstein's bats.

Outcome of screening stage (<i>delete as appropriate</i>)	Not likely to be Significant Effects
Are the appropriate statutory environmental bodies in agreement with this conclusion (<i>delete as appropriate and attach relevant correspondence</i>)?	YES – As minuted in a meeting held on the 16 th March 2018, no likely significant effect of the Scheme on the Mole Gap to Reigate Escarpment SAC was agreed by Natural England (see Appendix C).

Table 7: Ebernoe Common SAC

Project Name	M25 junction 10	
Natura 2000 Site Under Consideration	Ebernoe Common SAC	
PCF Stage 1		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
26/05/2017	[REDACTED]	[REDACTED]
PCF Stage 2		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
23/08/2017	[REDACTED]	[REDACTED]
PCF Stage 3		
Date:	Author (Name/Organisation):	Verified (Name/Organisation):
25/10/2017	[REDACTED]	[REDACTED]
<u>03/02/2020</u>	[REDACTED]	[REDACTED]
	<u>Updated in light of non-material changes.</u>	
Size and scale (road type and probable traffic volume)	<p>Improvements are proposed to M25 junction 10 to reduce congestion and improve safety. The Scheme includes an elongated roundabout at junction 10, connecting side roads at Wisley Lane and Painshill, and the widening of the A3 between the Ockham Park and Painshill Interchanges (a distance of approximately 5 km) <u>and the non-material Scheme changes as listed in Section 1.1.</u></p> <p><u>A permanent land take of 139.2 ha and a temporary land take of 101.5 ha is anticipated.</u> - A permanent land take of 139.2 ha and a temporary land take of 101.4 ha is anticipated.</p> <p>The scheme layout plans (application document TR010030/APP/2.8) show the Scheme boundary.</p>	
Land take	The Scheme will not involve land take from the Ebernoe Common SAC.	
Distance from the European site or key features of the site (<i>from edge of the project assessment corridor</i>)	Ebernoe Common SAC is located approximately 29.3 km, south-west of the Scheme. Due to this SAC being over 2 km from the Scheme, barbastelle bats and Bechstein's bats are the only qualifying features of the SAC that could potentially be affected by the Scheme.	

<p>Resource requirements (from the European site or from areas in proximity to the site, where of relevance to consideration of impacts)</p>	<p>The Natura 2000 data sheet⁴⁰ for the SAC lists the following threats:</p> <ul style="list-style-type: none"> • Modification of cultivation practices (within the SAC); • Forest and Plantation management & use (within the SAC); • Human induced changes in hydraulic conditions (both within and outside the SAC); • Other ecosystem modifications (both within and outside the SAC); and, • Changes in biotic conditions (both within and outside the SAC). • It is conceivable that any of these threats and pressures could cause changes to habitats within the SAC, and have an adverse effect on the population of barbastelle bats and Bechstein's bats. <p>Barbastelle bats</p> <p>Studies show that barbastelle bats typically prefer woodlands and treelines to forage. Foraging behaviour is likely to vary depending on the landscape surrounding the roost location along with weather conditions when foraging. Radiotracking studies have recorded individual barbastelle travelling between 1 and 20 km to reach foraging areas, however, females typically forage 7 – 8 km from their roost⁴¹. Taking into account the availability of good foraging habitat within and around the SAC, the 29.3 km distance between the SAC and the footprint of the Scheme, it is unlikely that this population of barbastelle bat rely on the habitats within and directly adjacent to the footprint of the Scheme for foraging and commuting.</p> <p>Bechstein's bats</p> <p>Bechstein's are considered to have potential to travel long distances to hibernating/swarming sites. Movements of ringed male Bechstein's bats indicate travelling distances up to 20 km, with a distance of 12 km recorded several years in a row between swarming sites⁴². Taking into account the distance of 29.3 km between the SAC and the Scheme, it is unlikely that that this population of Bechstein's bat regularly occur within the footprint of the Scheme.</p> <p>In addition, the presence of an existing major road network is likely to reduce the suitability of the Scheme footprint for barbastelle and Bechstein's bats.</p> <p>In 2016, 2017 and 2018 a number of bat surveys were undertaken within the Scheme footprint. These included bat activity transect surveys, crossing point surveys and bat trapping surveys.</p> <p>The bat trapping surveys used specific lures designed to attract barbastelle bats and Bechstein's bats. No barbastelle bats or Bechstein's bats were recorded or trapped, and it is considered unlikely that barbastelle bats or Bechstein's regularly occur within or near the Scheme footprint.</p>
<p>Emissions (e.g. polluted surface water runoff – both soluble and</p>	<p>There are no hydrological linkages and the project site and SAC are separated by many roads and a distance of 29.3 km. The Ebernoe Common SAC falls outside the Affected Road Network (ARN) for the Scheme (refer to chapter 5 of the</p>

⁴⁰ <http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012715.pdf> [Accessed 25/05/2017]

⁴¹ Zeale, M.R.K., Davidson-Watts, I., Jones, G. & Stevens, R.D. (2012). Home range use and habitat selection by barbastelle bats (*Barbastella barbastellus*): implications for conservation. *Journal of Mammalogy* 93(4):1110-1118.

⁴² Cohen, K. (2017). Bechstein's Bats in a Mosaic Landscape – presentation given at the bi-annual Wiltshire Bat Group meeting on the 11th May 2017, based on bat work carried out around the Trowbridge area in Wiltshire (unpublished).

insoluble pollutants, atmospheric pollution)	Environmental Statement (application document TR010030/APP/6.3)). No impacts on Ebernoe Common SAC from pollution are therefore anticipated.
Excavation requirements (e.g. impacts of local hydrogeology)	No excavations will take place within the SAC. The SAC lies approximately 29.3 km from the footprint of the Scheme at its closest point. Excavation within the footprint of the Scheme will have no impact on the SAC.
Transportation requirements	No impacts on Ebernoe Common SAC are anticipated due to the distance to this designated site from the Scheme.
Duration of construction, operation, etc.	Construction of the Scheme is planned to commence in winter 2020, with the Scheme planned to be open for traffic in autumn 2023. Due to the distance between the construction area and the SAC, no impacts relating to the duration and methods of construction are anticipated.
Other	No other impacts on Ebernoe Common SAC are anticipated due to the distance to this designated site from the Scheme.

Assessment Criteria

Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.

Impacts of the Scheme alone

The Scheme does not involve any land take from the SAC and falls outside the ARN for the Scheme. Therefore, the Scheme does not require any resources from the SAC, will not lead to increased disturbance (either as a result of noise during construction or visitor pressure during operation), will not lead to increased levels of air pollution and is not anticipated to lead to any changes in the ecosystem function within or adjacent to the SAC.

Disturbance of foraging and commuting Barbastelle bats

- The SAC is located approximately 29.3 km to the west of the footprint of the Scheme at its closest point. The SAC is separated from the Scheme by residential areas. Studies show that barbastelle bats typically prefer woodlands and treelines to forage. Foraging behaviour is likely to vary depending on the landscape surrounding the roost location along with weather conditions when foraging. Radiotracking studies have recorded individual barbastelle travelling between 1 and 20 km to reach foraging areas, however females typically forage 7 – 8 km from their roost⁴³. Taking into account the availability of good foraging habitat within and around the SAC, and the 29.3 km distance between the SAC and the footprint of the Scheme, it is unlikely that this population of barbastelle bats rely on the habitats within and directly adjacent to the footprint of the Scheme for foraging and commuting. The Scheme will not result in fragmentation or other impacts to foraging and commuting routes of barbastelle bats at the SAC. The works are taking place along an existing motorway, and therefore will not create any new barrier to the movement of barbastelle to other colonies;

Disturbance of foraging and commuting Bechstein's bats:

- Bechstein's are considered to have potential to travel long distances to hibernating/swarming sites. Movements of ringed male Bechstein's bats indicate travelling distances up to 20km, with a distance of 12 km recorded several years in a row between swarming sites. Taking into account the distance of 29 km between the SAC and the Scheme, it is unlikely that the Scheme will have any significant impacts on this population of Bechstein's bats;
- Overall, habitat loss within the footprint of the Scheme and replacement/installation of lighting columns is unlikely to have any impacts on this population of barbastelle or Bechstein's bats; and,

⁴³ Zeale, M.R.K., Davidson-Watts, I., Jones, G. & Stevens, R.D. (2012). Home range use and habitat selection by barbastelle bats (*Barbastella barbastellus*): implications for conservation. *Journal of Mammalogy* 93(4):1110-1118.

- Overall, there are no elements of the Scheme alone that are likely to give rise to impacts on the SAC.

Impacts of the Scheme in combination

No elements of the Scheme are likely to give rise to impacts on any of the qualifying features of SAC. Therefore, no cumulative effects on the SAC are anticipated when combined with other developments/projects.

Initial Assessment in relation to Ebernoe Common SAC

The key characteristics of the site and the details of the European site should be considered in identifying potential impacts.

Describe any likely changes to the site arising as a result of:

Effect	Evidence	Phase ⁴⁴
Reduction of habitat area	No reduction of habitat area is predicted	N/A
Disturbance to key species	Due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that barbastelle bats and/or Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no disturbance to key species is predicted.	N/A
Habitat or species fragmentation	Due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that barbastelle bats and/or Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no habitat or species fragmentation is predicted.	N/A
Reduction in species density	Due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that barbastelle bats and/or Bechstein's bats regularly occur within or near the Scheme footprint. Therefore, no reduction in species density is predicted.	N/A
Changes in key indicators of conservation value (<i>water quality etc.</i>)	Due to the distance between the DCO boundary and the SAC, no changes in key indicators of conservation value are anticipated.	N/A
Climate change	Due to the distance between the DCO boundary and the SAC, no climate change impacts are anticipated.	N/A

Describe any likely impacts on the European site as a whole in terms of:

⁴⁴ The impact of decommissioning the Scheme has not been considered as the M25 is thought as being operational for perpetuity.

Interference with the key relationships that define the structure of the site	Due to the distance between the DCO boundary and the SAC, no interference with the key relationships that define the structure of the site is anticipated.	N/A
Interference with key relationships that define the function of the site	Due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that barbastelle bat and/or Bechstein's bats regularly occur within or near the DCO boundary. Therefore, no interference with key relationships that define the function of the site is predicted.	N/A
Indicate the significance as a result of the identification of impacts set out above in terms of:		
Reduction of habitat area	There will be no reduction of SAC habitat area.	N/A
Disturbance to key species	Due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that barbastelle bats and/or Bechstein's bats regularly occur within or near the DCO boundary. Therefore, no disturbance of barbastelle bats or Bechstein's bats is predicted.	N/A
Habitat or species fragmentation	Due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that barbastelle bats and/or Bechstein's bats regularly occur within or near the DCO boundary. Therefore, no habitat or species fragmentation is predicted.	N/A
Disruption	Due to the distance between the DCO boundary and the SAC, no disruption is predicted.	N/A
Disturbance	Due to the distance between the DCO boundary and the SAC, no disruption is predicted.	N/A
Change to key elements of the site (e.g. water quality, hydrological regime etc.)	Due to the distance between the DCO boundary and the SAC, no change to key elements of the site is predicted.	N/A
Describe from the above those elements of the project, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known:		
Due to the distance between the DCO boundary and the SAC, and due to the absence of any barbastelle bat or Bechstein's bat records during the 2016, 2017 and 2018 surveys, it is considered unlikely that the Scheme will have any significant impacts on the SAC or its populations of barbastelle bats or Bechstein's bats.		
Outcome of screening stage (delete as appropriate)	Not likely to be Significant Effects	

Are the appropriate statutory environmental bodies in agreement with this conclusion (delete as appropriate and attach relevant correspondence)?

YES – As minuted in a meeting held on the 16th March 2018, no likely significant effect of the Scheme on the Ebernoe Common SAC was agreed by Natural England (see Appendix C).

6. Conclusion

6.1. Stage 1 screening findings

6.1.1. This HRA Screening report has identified the following:

- There are likely significant effects on the Thames Basin Heaths SPA as a result of the Scheme (habitat loss (temporary and permanent), degradation of habitats (by changes in air quality, hydrology and/or spread of non-native invasive plant species), disturbance (by changes in noise, recreational use and/or lighting);
- There are no likely significant effects on the Mole Gap to Reigate Escarpment SAC as a result of the Scheme.
- There are no likely significant effects on the Ebernoe Common SAC as a result of the Scheme.

6.2. Recommendations for further assessment

6.2.1. Due to the Scheme having likely significant effects on the Thames Basin Heaths SPA, a Stage 2 Appropriate Assessment is required with regards to the Thames Basin Heaths SPA.

Appendices

Appendix A. Stakeholder feedback on HRA Screening document

A.1 Natural England comments

A.1.1 A draft of the HRA Screening was issued to Natural England for comment on the 5th February 2018.

A.1.2 The following response was received from Natural England on the 16th March 2018:

“On the whole, we’re happy with the issues discussed within the screening document and have no further comments of real note to make at this stage. In terms of air quality, you’ve stated that you intend to carry out an in-combination assessment for the Thames Basin Heaths SPA. As you’ve established that there will be an effect alone, an in-combination assessment would not be necessary (as an in-combination effect is already implied from establishing one in isolation).”

A.2 RSPB comments

A.2.1 A draft of the HRA Screening was issued to the RSPB for comment on the 5th February 2018.

A.2.2 The following table lists the RSPBs comments, as provided by email on the 13th March 2018

RSPB comment	Response
There seems to be some inconsistency within the document about the area of permanent and temporary land take from the SPA associated with the scheme. Pg 6 states 6.6ha (permanent) and 6.7ha (temporary) whereas p18 states 5.9ha (permanent) and 6.8ha (temporary). It is understood that further detailed design will refine the exact land take however, it is critical that there is clarity over the figures that are being used for the assessment.	Agreed. The land take should be 6.6 ha (permanent) and 6.7 ha (temporary). Incorrect figures were based on previous red line boundaries. Report has been updated. N.B. These land take figures have changed since February 2018. Changes have been updated throughout the report.
Para 5.1.1 identifies impacts considered. We recommend that light intrusion should also be included: This is discussed elsewhere in the document (pg 20) as a potential impact and needs to be recognised in this summary due to its potential to disturb/displace species.	Agreed. This has been added to paragraph 5.1.1

RSPB comment	Response
<p>The document states that the 2016/17 surveys did not identify the qualifying bird species within habitat proposed for land take in a number of places in the document (pg 19, pg21, pg24), but we do not consider that this appropriately represents the survey work undertaken. We understand that no specific survey work was undertaken on nightjar foraging activity within these areas. This point was discussed at the meeting on 27th October, and I understood that Atkins were in agreement, that these areas could be used by foraging nightjar and that consequently this was being assumed as part of the baseline. The breeding bird surveys only recorded breeding territories for the qualifying species within these areas and did not as I understand assess other habitat use by the birds such as foraging. In addition, as previously highlighted in our previous response the 2016 surveys were not comprehensive as they were undertaken too late to detect woodlark.</p>	<p>The 2017 bird surveys were thorough and produced similar results to the 2 Jays volunteer bird surveys for the same season. A total of seven nightjar territories were recorded, and all activity was confined to the open heathland areas.</p> <p>It is acknowledged that the woodland habitats surrounding the heathlands contribute to the invertebrate resource of the SPA. However, there is strong evidence that nightjars actively avoid established woodland for foraging, even though it supports higher levels of invertebrate food, and instead select open areas and young woodland (less than 10 years age) for foraging (Sharps <i>et al.</i>⁴⁵, Verstraten <i>et al.</i>⁴⁶).</p> <p>Therefore, as agreed in a meeting on the 16th March 2018, it is considered that the woodland habitats surrounding the heathland areas contribute to the fabric of the SPA by providing a buffer and an invertebrate resource, but do not physically support SPA qualifying species, either for nesting or foraging.</p> <p>Detailed woodlark, Dartford warbler and nightjar surveys were undertaken in 2017 to build on the 2016 data and confirm the abundance and distribution of SPA qualifying species. Similar surveys are also being undertaken in 2018.</p>
<p>The inclusion of Compensation habitat within the “Description of avoidance and/or mitigation measures” Table 4 (p20) is not appropriate. This document, and the terminology that it uses, needs to clearly reflect the sequential stages within the HRA process. The need for compensation will only arise once it has been determined that an adverse effect on the integrity of the Thames Basin Heaths SPA. Before the provision of compensatory habitat can be considered the scheme must first demonstrate that there are no less damaging alternative solutions to the scheme and that there are imperative reasons of overriding public interest (IROPI). It is therefore essential that the potential need for compensatory habitat is separated from consideration of potential avoidance/mitigation measures (that will reduce the impact and hence the need for compensatory habitat) in the assessment.</p>	<p>Agreed. References to habitat maintenance, creation and enhancement have been removed.</p>

⁴⁵ Sharps, K., Henderson, I., Conway, G., Armour-Chelu, N. and Dolman, P. (2015) Home-range size and habitat use of European Nightjars *Caprimulgus europaeus* nesting in a complex plantation-forest landscape. *Ibis*, 157 (2). pp. 260-272

⁴⁶ Vertsraeten, G., Baeten, L. and Verheyen, K. (2011) Habitat preferences of European Nightjars *Caprimulgus europaeus* in forests on sandy soils. *Bird Study* Vol 58, Issue 2.

RSPB comment	Response
<p>Whilst we agree that disturbance to key species is appropriately highlighted in pg 21/22, specific reference should be included here to recreational disturbance as a result of changes in access that may arise as a result of the scheme. As identified in para 1.2.7 the scheme includes the provision of additional connections (via new bridges) to facilitate access, and it is essential that the consequences of these measures are considered in detail as part of the further scheme assessment.</p>	<p>This table already states that changes to public access (changes to access to car parks, footpaths etc.) could lead to increased levels of noise and visual disturbance as a result of increased public use. This will be included in the Appropriate Assessment, and it is considered that the text in the table does not require amending.</p>
<p>At this stage there is insufficient detail around the statement that “there is potential for habitat enhancements and creation, such as felling of conifer plantations to create additional habitat for qualifying bird species” (pg 23) particularly in terms of the location(s) of such enhancement measures. However, as this is stated in relation to the reduction in habitat arising from the scheme we highlight that if this is within the SPA we would consider that these enhancement measures are already required to bring the SPA into favourable condition. This illustrates a more general point about the need for clarity over whether measures are proposed as mitigation, compensation or enhancement (to achieve net-gains for biodiversity).</p>	<p>This will be explored in further detail during the Appropriate Assessment. As discussed in the meeting on the 16th March 2018, any heathland restoration that will form part of a compensation package will be over and above what is considered ‘normal practice’ for the SPA, based on advice from Natural England as SNCO and Surrey Wildlife Trust as site managers.</p>
<p>The consideration of changes/improvements to public access within and outside the SPA as stated in “Disturbance to key species” (pg23) as having the potential to improve disturbance needs to be considered very carefully and assessed particularly in terms of displacement. Without the details of these proposed measures to improve access on the SPA and how they would reduce disturbance we do not consider that it has been demonstrated how this would avoid disturbance to Annex I birds or facilitate works to enable the SPA to reach favourable condition.</p>	<p>This will be explored in further detail during the Appropriate Assessment.</p>
<p>Regarding in-combination impacts we note that Natural England are being consulted on the plans and projects that will need to be considered as part of this assessment, and we reiterate our request to see what has been considered to fall within the scope of this assessment. In terms of recreational disturbance, it will be critical to consider the proposals for housing at Wisley Airfield. We are also keen to understand how the requirements for an in-combination assessment will be interpreted in respect of air quality.</p>	<p>Natural England have advised that the in combination assessment should focus on the Local Plan HRAs for local boroughs within 10 km of the Scheme boundary.</p>
<p>Given the conclusion of the screening conclusion that significant effects on the SPA are likely we consider that a Stage 2 Appropriate Assessment will be required (Para 6.2.2).</p>	<p>Agreed. Text amended for clarity.</p>

A.3 Surrey Wildlife Trust comments

- A.3.1 A draft of the HRA Screening was issued to the Surrey Wildlife Trust for comment on the 5th February 2018. No response was received and SWT confirmed that they had no comments during a meeting on the 16th March 2018 (refer to section 9.0 of the minutes in Appendix C).

Appendix B. Stage 1: Screening matrices

- B.1.1 The following tables use the template for screening matrices provided in Appendix 1 of the Planning Inspectorate Advice Note 10 Habitats Regulations Assessment.
- B.1.2 Each of the European sites included within the screening assessment has a separate matrix, determining whether the identified potential impacts (referred to as likely effects in the PINS matrix) will lead to a likely significant effect on the features of the European site⁴⁷.
- B.1.3 The European sites included within the screening assessment are:
1. Thames Basin Heaths SPA;
 2. Mole Gap to Reigate Escarpment SAC;
 3. Ebernoe Common SAC.

⁴⁷ For the Special Areas of Conservation, only the bat features are included in these matrices, due to the distance of the Scheme from these SACs ruling out the potential for any likely significant effects of any other features.

Designation	Effects described in submission information	Presented in screening matrices as
Thames Basin Heaths SPA	<ul style="list-style-type: none"> • Land take 	Reduction of habitat area
	<ul style="list-style-type: none"> • Recreational disturbance • Noise • Lighting 	Disturbance of qualifying features
	<ul style="list-style-type: none"> • Pollution of surface and groundwater • Air quality changes • Spread of non-native invasive plants 	Degradation of habitats
Mole Gap to Reigate Escarpment SAC	<ul style="list-style-type: none"> • Land take 	Reduction of habitat area
	<ul style="list-style-type: none"> • Recreational disturbance • Noise • Lighting 	Disturbance of qualifying features
	<ul style="list-style-type: none"> • Pollution of surface and groundwater • Air quality changes 	Degradation of habitats
Ebernoe Common SAC	<ul style="list-style-type: none"> • Land take 	Reduction of habitat area
	<ul style="list-style-type: none"> • Recreational disturbance • Noise • Lighting 	Disturbance of qualifying features
	<ul style="list-style-type: none"> • Pollution of surface and groundwater • Air quality changes 	Degradation of habitats

HRA Screening Matrix 1: Thames Basin Heaths Special Protection Area

Name of European site and designation: Thames Basin Heaths Special Protection Area														
EU Code: UK9012141														
Distance to NSIP: NSIP is situated within Thames Basin Heaths Special Protection Area														
European site features	Likely effects of NSIP													
Effect	Habitat Loss		Degradation of habitats by changes in air quality		Degradation of habitats by changes in water quality		Disturbance by changes in noise		Disturbance by changes in recreational use		Disturbance by changes in lighting		In combination effects	
Stage of Development	C ⁴⁸	O ⁴⁹	C	O	C	O	C	O	C	O	C	O	C	O
Feature 1 <i>A224 Caprimulgus europaeus; European nightjar (breeding)</i>	✓a	xb	✓c	✓d	✓e	✓f	✓g	✓h	✓i	✓j	✓k	✓l	✓m	✓n
Feature 2 <i>A246 Lullula arborea; woodlark (breeding)</i>	✓a	xb	✓c	✓d	✓e	✓f	✓g	✓h	✓i	✓j	✓k	✓l	✓m	✓n
Feature 3 <i>A302 Sylvia undata; Dartford warbler (breeding)</i>	✓a	xb	✓c	✓d	✓e	✓f	✓g	✓h	✓i	✓j	✓k	✓l	✓m	✓n

⁴⁸ Construction

⁴⁹ Operation

B.1.4 Evidence supporting conclusions:

- a. When considering the screening assessment, it cannot be ruled out without any reasonable scientific doubt that the permanent loss of mixed woodland habitat from the SPA could contribute to a reduction in the invertebrate source within the SPA and thus have an indirect negative effect on breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 26)
- b. The loss of habitat is considered to be a construction impact.
- c. The structure and function of adjacent heathland habitats, which support the SPA bird populations, are sensitive to changes in oxides of nitrogen (NOx) concentrations and nitrogen deposition rates. It cannot be ruled out without any reasonable scientific doubt that breeding Dartford warblers, nightjars and woodlarks will be subject to significant effects from air pollution during construction (Table 5, page 27).
- d. An increase in traffic flow as a result of the Scheme may result in increased air pollution within sensitive habitats adjacent to the affected road network and have a negative impact on breeding Dartford warblers, nightjars and woodlarks. The structure and function of adjacent heathland habitats, which support the SPA bird populations, are sensitive to changes in oxides of nitrogen (NOx) concentrations and nitrogen deposition rates. There is potential for the Scheme leading to a worsening of nitrogen deposition rates at sensitive locations already exceeding the relevant critical load (Table 5, page 27).
- e. Changes to water quality (e.g. Treatment of road run-off) and the potential of aquatic pollution incidents during the construction phase could have an indirect negative impact on breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 27).
- f. Changes to water quality (e.g. Treatment of road run-off) and the potential of aquatic pollution incidents during the operational phase could have an indirect negative impact on breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 27).
- g. There is a potential significant impact due to construction noise on breeding Dartford warblers, nightjars and woodlarks during the construction phase (refer to Table 5, page 26).
- h. There is potential for traffic noise and changes to visitor use of the site as a result of the Scheme to have negative impact on breeding Dartford warblers, nightjars and woodlarks during the operation phase (refer to Table 5, page 26).
- i. Changes in usage during construction could potentially lead to increased recreational pressure on the SPA, which may result in increased disturbance to breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 26).
- j. Changes in usage of the SPA as a result of the Scheme could lead to increased recreational pressure on the SPA, which may result in increased disturbance to breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 26).

- k. Increased levels of lighting within the SPA during the construction phase could potentially lead to increased disturbance of breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 27).
- l. Increased levels of lighting within the SPA could potentially lead to increased disturbance of breeding Dartford warblers, nightjars and woodlarks (refer to Table 5, page 27).
- m. It is considered that the Scheme could have in combination effects on breeding Dartford warblers, nightjars and woodlarks with regards to Local Plan HRAs for local boroughs within 10 km of the Scheme boundary as a result of land take, increased disturbance, changes in air quality and/or changes in hydrology during construction (refer to Table 4 pages 18-19).
- n. It is considered that the Scheme could have in combination effects on breeding Dartford warblers, nightjars and woodlarks with regards to Local Plan HRAs for local boroughs within 10 km of the Scheme boundary as a result of land take, increased disturbance, changes in air quality and/or changes in hydrology during operation (refer to Table 4 pages 18-19).

HRA Screening Matrix 2: Mole Gap to Reigate Escarpment Special Area of Conservation

Name of European site and designation: Mole Gap to Reigate Escarpment SAC														
EU Code: UK0012804														
Distance to NSIP: Approximately 6.9 km, south-east of the Scheme														
European site features	Likely effects of NSIP													
Effect	Habitat Loss		Degradation of habitats by changes in air quality		Degradation of habitats by changes in water quality		Disturbance by changes in noise		Disturbance by changes in recreational use		Disturbance by changes in lighting		In combination effects	
Stage of Development	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Feature 1 <i>S1323 Bechstein's Bat</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _d	x _d	x _d	x _d	x _d	x _d	x _f	x _f
Feature 2 <i>H4030 European dry heaths</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _e	x _e	x _e	x _e	x _e	x _e	x _f	x _f
Feature 3 <i>H5110 Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.); natural box scrub</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _e	x _e	x _e	x _e	x _e	x _e	x _f	x _f
Feature 4 <i>H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia) (important orchid sites); Dry grasslands and scrublands on chalk or limestone (important orchid sites)</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _e	x _e	x _e	x _e	x _e	x _e	x _f	x _f

Feature 5 <i>H9130 Asperulo-Fagetum beech forests; Beech forests in neutral to rich soils</i>	x a	x a	x b	x b	x c	x c	x e	x e	x e	x e	x e	x e	x f	x f
Feature 6 <i>H91J0 Taxus baccata woods of the British Isles; Yew dominated woodland</i>	x a	x a	x b	x b	x c	x c	x e	x e	x e	x e	x e	x e	x f	x f
Feature 7 <i>S1166 Triturus cristatus; Great crested newt</i>	x a	x a	x b	x b	x c	x c	x e	x e	x e	x e	x e	x e	x f	x f

B.1.5 Evidence supporting conclusions:

- There is no reduction of SAC habitat expected so it is unlikely this will have an effect on any features during construction or operation (refer to Table 6, page 32).
- Due to the distance between the SAC and the Scheme, and the fact that the SAC will not be affected by the Affected Road Network no changes in air quality are anticipated. It is therefore unlikely that changes in air quality will have an effect on any qualifying features during construction or operation (refer to Table 6, page 33).
- Due to the distance between the SAC and the Scheme and the absence of hydrological linkages, no changes in key water quality are anticipated. It is therefore unlikely that changes in water quality will have an effect any qualifying features during construction or operation (refer to Table 6, page 33).
- Due to the absence of Bechstein's bats during the Scheme surveys (for detailed survey information refer to 6.5 Environmental Statement Appendix 7.9 Bats [APP-095] and Appendix 7.10 Bat trapping [APP-096]) it is considered unlikely that Bechstein's regularly occur within or near the Scheme footprint. It is therefore unlikely that changes noise, recreation or lighting during construction or operation will have an effect on Bechstein's bats (refer to Table 6, page 33).
- Due to the distance between the SAC and the Scheme, it is considered unlikely that changes noise, recreation or lighting during construction or operation will have an effect on any qualifying features of the SAC (refer to Table 6, page 33).

- f. No elements of the Scheme are likely to give rise to impact on any of the qualifying features of the SAC. Therefore, no cumulative effects on the SAC are anticipated when combined with other developments/projects during construction or operation (refer to Table 6, page 31).

HRA Screening Matrix 3: Ebernoe Common Special Area of Conservation

Name of European site and designation: Ebernoe Common SAC														
EU Code: UK0012715														
Distance to NSIP: Approximately 29.3 km, south-west of the Scheme.														
European site features		Likely effects of NSIP												
Effect	Habitat Loss		Degradation of habitats by changes in air quality		Degradation of habitats by changes in water quality		Disturbance by changes in noise		Disturbance by changes in recreational use		Disturbance by changes in lighting		In combination effects	
Stage of Development	C	O	C	O	C	O	C	O	C	O	C	O	C	O
Feature 1 <i>S1323 Myotis bechsteinii; Bechstein's Bat</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _d	x _d	x _d	x _d	x _d	x _d	x _f	x _f
Feature 2 <i>S1308 Barbastella barbastellus; Barbastelle Bat</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _d	x _d	x _d	x _d	x _d	x _d	x _f	x _f
Feature 3 <i>H9120 Atlantic acidophilous beech forest with Ilex and sometimes also Taxus in the shrub layer (Querion roboretanae or Ilici-Fagenion); Beech forests on acid soil</i>	x _a	x _a	x _b	x _b	x _c	x _c	x _e	x _e	x _e	x _e	x _e	x _e	x _f	x _f

B.1.6 Evidence supporting conclusions:

- a. There is no reduction of SAC habitat expected so it is unlikely this will have an effect on any features during construction or operation (refer to Table 7, page 38).

- b. Due to the distance between the SAC and the Scheme, and the fact that the SAC will not be affected by the Affected Road Network no changes in air quality are anticipated. It is therefore unlikely that changes in air quality will have an effect on any qualifying features during construction or operation (refer to Table 7, page 38).
- c. Due to the distance between the SAC and the Scheme and the absence of hydrological linkages, no changes in key water quality are anticipated. It is therefore unlikely that changes in water quality will have an effect any qualifying features during construction or operation (refer to Table 7, page 38).
- d. Due to the absence of Bechstein's bats and barbastelle bats during the Scheme surveys (for detailed survey information refer to 6.5 Environmental Statement Appendix 7.9 Bats [APP-095] and Appendix 7.10 Bat trapping [APP-096]) it is considered unlikely that Bechstein's regularly occur within or near the Scheme footprint. It is therefore unlikely that changes noise, recreation or lighting during construction or operation will have an effect on Bechstein's bats or Barbastelle bats (refer to Table 7, page 38).
- e. Due to the distance between the SAC and the Scheme, it is considered unlikely that changes noise, recreation or lighting during construction or operation will have an effect on beech forests of the SAC (refer to Table 7, page 38).
- f. No elements of the Scheme are likely to give rise to impact on any of the qualifying features of the SAC. Therefore, no cumulative effects on the SAC are anticipated when combined with other developments/projects during construction or operation (refer to Table 7, page 36).

Appendix C. Meeting minutes 16 March 2018 and 9 October 2018

Project:	A14 Cambridge to Huntingdon Improvement Scheme		
Subject:	Error! No document variable supplied.		
Date and time:	Error! No document variable supplied.	Meeting no: 1	Error! No document variable supplied.
Meeting place:	Error! No document variable supplied.	Minutes by:	██████████
Present:	Natural England (NE) Forestry Commission (FC) RSPB Surrey Wildlife Trust (SWT) Surrey County Council (SCC) Highways England Atkins DTA Ecology	Representing:	Error! No document variable supplied.

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
1.0	Health & safety ██████████ highlighted the risk from ticks and noted that this was likely to increase with warmer weather coming	N/A	All
2.0	Overview and site walkover ██████████ outlined the main features of the current scheme. ██████████ noted SWT's objection to inclusion of 5ha of Pond Farm as a replacement land parcel, although he understood the reasons why this area was included. All attendees then undertook a site walkover looking at the site scheme area located with SCC land, with particular interest in the replacement land areas at Pond Farm, Park Barn Farm and Chatley Heath Wood. After the walkover, attendees were invited to express their views on the proposals.	N/A	All
3.0	Pond Farm ██████████ set out the SWT view that this parcel was unsuitable as compensation for SPA as he felt it was too wet to create sustainable heathland habitat and would be damaging to SWT's operations and hence their ability to manage the rest of the SPA. Although he felt it would have some habitat value, the change to open public access would be incompatible with SWT's need to use the land as winter grazing for their herd and a location for cattle with calves and stock needing to be quarantined. The ability to maintain the stock levels and herd management at Pond Farm is vital to the management of the entire SPA, not just the Wisley part of it. He felt it would be unattractive to users due to the wet ground conditions for much of the year and that there was no evidence of public pressure to access the farm fields. ██████████ was also of the same view. The RSPB also stated that Pond Farm was not suitable as SPA replacement as it would not be possible to provide appropriate habitat in this location. ██████████ noted that, with management, it could be suitable for certain aspects of the SPA, providing habitat that would contribute to supporting the qualifying species. He noted that the SPA land to be lost was of low value being closest to the M25 and A3. ██████████ noted that specific areas identified as compensation for lost SPA would by preference be south of the M25 to avoid extending the planning restrictions arising from	N/A	All

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
	<p>the SPA in local authority areas. It was noted that the Pond Farm area was ideally placed as replacement SPA and common land as it sat within areas covered by both designations. This lead onto discussions about alternative means of compensating for lost SPA land.</p>		
4.0	<p>SPA compensation</p> <p>██████████ noted that it might be possible to provide compensation for the impacts resulting from the loss of SPA land by enhancing the habitat value of land within the currently designated boundary (i.e. by clearing woodland to allow areas of heathland to regenerate). However, it was noted that there would be an expectation to avoid physical loss of SPA total land area, thus requiring Pond Farm (or additional land associated with the wider Thames Basin Heaths SPA) to form part of the compensation package.</p> <p>It was noted that clearance of woodland/tree cover to achieve this would require agreement from Forestry Commission. Patrick Stephens noted that Forestry Commission could support this approach subject to agreed areas/proportions of canopy cover being maintained and new areas of planting within the replacement land being provided. ██████████ referring to the EC guidance (<i>Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC 2012</i>) on this noted at 1.4.1 that to be allowable the SPA enhancement must not be something that would have been done as 'normal practice' under the Habitats and Birds Directives or obligations laid down in EC law. SWT confirmed that their obligations were to 'maintain' the SPA and SSSI and hence additional enhancement did not form part of 'normal practice'. Heather Richards confirmed that enhancement must not be what was going to happen anyway and understood that restoration of further areas of heathland was an aspiration. It was noted that enhancement of the SPA could include NMU provision and dog control orders that would encourage public use of the replacement land areas and reduce pressure on the main heathland areas of the SPA which were most used by the qualifying species. The effectiveness of dog control orders was questioned by the RSPB, these require significant resource to enforce and the TBH strategy has opted for responsible behaviour through positive messaging to date rather than enforcement so ██████████ noted that any enhancement that formed part of a compensation package would need to be identified with and funded by the project and ██████████ agreed to investigate the mechanism for doing this with HE legal team.</p>	N/A	All
5.0	<p>Park Barn Farm</p> <p>All agreed that Park Barn Farm appeared to provide excellent opportunities as replacement common land/public open space and has scope for habitat creation to support heathland species. New planting and some tree clearance/diversification of single species plantations would be proposed along with heathland/dry acid grassland habitat creation which ██████████ ██████████ was supportive of. ██████████ noted that identification as common land rather than public open space imposed more difficulties on the use of grazing as a management tool, as</p>	N/A	All

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
	<p>specific consent is needed for any fencing, which is a legally complex process. This may have an influence on the arrangement of the two types of replacement land relative to the types of habitats intended. RSPB thought there was some potential but required more information on the current state and the proposals to enable proper evaluation of the merits of these areas.</p>		
6.0	<p>Chatley Wood It was noted that this area could provide good opportunities for public recreation, helping to take the pressure off the SPA. This would need encouragement through provision of signposting, appropriate path surfacing and tree clearance to open up routes to it from NMU routes and the Ockham Bites car park. The proposed NMU bridge would be of benefit for this, creating a new direct access between the north-east and south-east quadrants, which currently does not exist. In addition, the possibility of providing a new car park off Pointers Road was raised. The existing grass areas could be managed to provide a mixture of open and scrub habitats mixed with native wood pasture and/or orchard habitats, both of which were noted as being in decline nationally. The current SWT work to manage the SSSI woodland at Redhill Bottom and Chatley Wood was observed.</p>	N/A	All
7.0	<p>Hatchford End There was concern that this parcel would provide little ecological value for the SPA and SSSI due to its size and location, separated from the heathland. [REDACTED] pointed out the benefits in providing rights of way linkages enabling better access to the other areas of public access, particularly bearing the Wisley Airfield draft housing allocation in mind. It also has benefits in linking areas of woodland and providing safer NMU access than along Old Lane.</p>	N/A	All
8.0	<p>Land adjacent to M25/A3 [REDACTED] explained that the land within the red line boundary but outside the permanent highway boundary would be used to construct the scheme and is likely to be cleared of vegetation during the works. The intention is to return this land to the landowner (mainly SCC) in a condition where it can provide environmental benefit. There was agreement that this should have a varied vegetation profile with scrub (excluding gorse) and some larger trees to benefit the SPA and should have a scalloped edge to create diverse edge habitat. The available land within the highway boundary (such as embankment slopes) would be treated similarly but also provide screening for views of the M25/A3 where appropriate. Environmental barriers would be provided to mitigate noise effects and which could serve to enhance the SPA by reducing noise levels for the qualifying species and encourage their spread. SWT also favoured lighting proposals that reduced the light spill from the M25/A3 where possible.</p> <p>The potential provision of one or more green bridges (as enhanced provision at bridges that would be replaced anyway, particularly Cockcrow and Clearmount bridges) was discussed and all agreed that this would be of significant benefit to the scheme and should be explored through the Highways England</p>	N/A	All

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
	<p>designated funds. SWT confirmed willingness to input advice to the design [redacted] features and to look at ideas for work they might potentially undertake to add value to such bridges. Graham Steven noted that careful consideration would be needed to ensure such bridges did not encourage recreational pressure in sensitive areas. RSPB agreed with the need to consider the potential for change in recreational pressure as a result of these bridges and also this is something that the wider scheme needs to consider holistically as the improvement of NMU provisions through the junction has the potential to change access to the SPA and therefore recreational disturbance.</p>		
9.0	<p>HRA Discussion</p> <p>[redacted] set out the current situation regarding the HRA work noting that the Screening document confirmed that a likely significant effect had been identified with regard to the Thames Basin Heaths SPA. The draft had been circulated for comment to NE, RSPB and SWT. NE and SWT confirmed that they had no comments (apart from an email comment from Natural England ahead of a meeting booked for 27 March regarding specifically to consideration of air quality). [redacted] confirmed that the RSPB have already provided their comments. Some aspects were discussed in the meeting and it was agreed that a response to all comments would be provided with an updated version of the screening report. [redacted] noted that the Screening should clearly set out which aspects of the scheme could have likely significant effects as only these should be addressed in the Appropriate Assessment. It was agreed that these would be limited to peripheral habitat loss in areas that are not currently heathland, habitat degradation (by changes in air quality and/or hydrology), and disturbance (visual, light, noise and changes in recreational usage patterns). RSPB highlighted the need for clarity regarding what is being proposed as avoidance, mitigation, compensation and enhancement measures.</p> <p>Atkins stated that it is anticipated that the Appropriate Assessment will record that it is not possible to ascertain no adverse effects on the integrity of the SPA. In this situation, it will be necessary to demonstrate an absence of alternative solutions and imperative Reason of Overriding Public Interest why the project should, nevertheless, proceed. Compensatory measures to ensure that the overall coherence of Natura 2000 is protected will then need to be secured. It was noted that an 'in combination' assessment would not be needed as the project will be having an adverse impact on the integrity of the SPA 'alone'. Should the project go ahead under the derogation provisions, sufficient compensatory measures would be secured to address all associated adverse impacts so there would be no <i>residual</i> effects to act in combination with other plans or projects.</p> <p>Note: RSPB commented in these minutes stating that <i>'The RSPB consider it essential that an in-combination assessment is undertaken. Its key role is to identify and assess interactions with other proposals (particularly applicable to issues arising</i></p>	N/A	All

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
	<p><i>from recreational disturbance and housing development in the vicinity). This is important as it is difficult to be sure that mitigation measures will not leave even the smallest residual effects – on their own they do not amount to an adverse effect, but have the potential when combined to cause an adverse effect. This “sense check” provides confidence that no effects have been overlooked by the assessment process.’</i></p> <p>Noise impacts on the SPA were noted as likely to be significant during construction but not in operation.</p>		
10	<p>Other matters NE/SWT/RSPB/FC would like to be involved in the programming of clearance works, with woodland areas left till last if possible. Visitor numbers were expected to drop during construction. It was noted that the Wisley Airfield ES may have included a visitor survey that could contain useful baseline data. It was suggested that employing access consultants/behavioural psychologists might provide benefits in planning NMU provision.</p>	N/A	All

Meeting notes

Project:	M25 J10/A3 Wisley Interchange Improvement		
Subject:	Catch up meeting with Natural England		
Date and time:	09 October 2018	Meeting no:	
Meeting place:	Natural England office, Reading	Minutes by:	[REDACTED]
Present:	[REDACTED]	Representing:	Natural England (NE) Natural England (NE) Natural England (NE) Atkins Atkins

ITEM	DESCRIPTION & ACTION	DEADLINE	RESPONSIBLE
1.0	<p>Overview of final Scheme</p> <p>[REDACTED] gave a recap on the previous design fix (DF2), and how the cost of the Scheme and the consultation feedback has led to the final design fix (DF3).</p> <p>NW ran through the DF3 Scheme, explaining the key changes:</p> <ul style="list-style-type: none">The reroute of the gas main and NMU route to the western most side of the A3, avoiding Bolder Mere.The amendment of the residential access route at Painshill to reduce the impact on Painshill Park and also the ancient woodland at Heyswood.The removal of bridges at the northern most and southern most extent of the M25 from the Scheme (these were included in DF2) <p>It was agreed by all that the changes in DF3 would reduce the land take and thus help reduce impacts of the Scheme.</p>		
2.0	<p>Compensation package</p> <p>[REDACTED] showed the common land replacement areas at Park Barn Farm, Chatley Wood, and along Old Lane, with a description of the proposed habitat enhancement proposals for these locations. The proposals were met favourably.</p> <p>However, [REDACTED] commented that the change at Chatley Wood (avoidance of taking [REDACTED] best field and instead including some new areas of woodland) reduces some of the connectivity of this compensation area for recreational users. This was discussed further, and it was agreed that with the additional of a new bridge across the M25, it may encourage recreational users to the new compensation areas, plus there are opportunities for a circular route the incorporates the existing bridge at Hatchford Wood.</p> <p>[REDACTED] discussed potential improvements for these areas, including planting wooded areas, and managing existing woodland areas</p>		
Next meeting:	TBA		
Distribution:	All present plus [REDACTED]		
Date issued:		File ref:	

NOTE TO RECIPIENTS:

These meeting notes record Atkins understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

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for improvement (such as felling Scots pine plantations and planting diverse deciduous woodland, and tackling dense rhododendron understoreys within existing woodland to allow a more diverse understory to develop).

The SPA compensation package contains two elements: physically extending the SPA by adding land currently outside the SPA, and additional compensation by enhancement works to improve the biological value of the land within the SPA, so that the carrying capacity is increased.

The SPA physical compensation areas were discussed. The total area of these compensation areas will equal the permanent land take within the SPA. The proposed habitat creation at these compensation areas was described by PW:

- Elm Corner SPA compensation land– an additional area of woodland will be added to the SPA. This will undergo some thinning, in combination with the adjacent enhancement area, to allow a more diverse and open woodland.
- Old Lane SPA compensation land – two open grass fields will be designated as compensation areas. These currently undergo occasion grazing but are heavily dominated by ruderal vegetation, suggesting low usage. It is proposed that these areas would be planted with a mixture of scrub and woodland to increase their diversity, and contribute invertebrate resource to the SPA. This needs to be agreed with Surrey Wildlife Trust.
- Wisley SPA compensation land – an area of grazed grassland to the south of the M25, near Buxton Wood is proposed for a compensation area. The size of this area will be determined by the final permanent and take figure. The usage of this compensation area is not proposed to change as woodlark and nightjar are both known to forage within short grass areas. However, the adjacent enhancement works will open up the woodland, providing increased connectivity between existing open heathland habitat and the compensation area.

NE agreed that these compensation areas are appropriate, and they are satisfied with the proposals.

The SPA enhancement areas were discussed, and MT stated that it was essential (under the Briels ruling) that the HRA document needs to be clear that the enhancement areas (improving the biological value of land beyond what normal planned management would achieve on land areas within the SPA) will contribute to the compensation package and these works are not for 'mitigation' (as any mitigation will have already been taken into account in the Appropriate Assessment).

explained the proposals for the different SPA enhancement areas, the total area of which adds up to 3:1 of the combined permanent and temporary land take.

- The enhancement areas will consist of a combination of:
- areas of total clearance (where only mature trees and/or trees with potential bat features will be retained) to encourage heathland regeneration and

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	<p>provide open habitats for SPA qualifying species, and;</p> <ul style="list-style-type: none"> • areas of thinning, where the woodlands will be thinned by up to 80% (focusing on young silver birch trees and Scots pines), to encourage increased woodland diversity and provide more open habitats. This thinning will include widening existing rides and increasing the size of existing open patches within woodlands. <p>These enhancement works will increase the diversity of the retained woodland within the SPA, increasing the invertebrate resource that it supports, as well as increasing the areas of open heathland habitat, enabling the populations of SPA qualifying species within the SPA to increase.</p> <p>████ confirmed that physical compensation areas outside the SPA should be set up prior to construction of the highways works, but enhancement works within the SPA could be staged and could take place after construction if required – improvements to biological value can be delivered once the Scheme is live if appropriate (████ pointed out that clearance adjacent to a construction area could potential encourage woodlarks to use habitat that will be disturbed by construction works).</p>		
	<p>Bolder Mere</p> <p>The mitigation measures at Bolder Mere were discussed. These measures focus on marginal habitat improvement rather than replacing the lost volume of water as a result of the Scheme.</p> <p>████ questioned if the loss of volume water within a WFD waterbody was acceptable. █████ agreed to discuss with the water team.</p> <p>Post Meeting Update:</p> <p>A response has now been received by █████</p> <p>'We have talked through lake volume with various people in the EA. Volume is not a criteria used to measure water body health by the WFD. Rather, we need to demonstrate whether loss of volume will cause failure against any of the biological, ecological or chemical criteria. The EA have asked us to do this for Phosphorous; we have done so and demonstrated no deterioration. In summary, we have agreed with the competent authority that loss of volume should not be an issue to WFD compliance.'</p>		
	<p>Green bridge</p> <p>████ confirmed that a green element to the Cockcrow Bridge is included in the Scheme design, and that a feasibility study is underway to determine the potential design and cost implications of incorporating a green bridge here and at potentially at Clearmount bridge.</p>		
	<p>HRA update</p> <p>████ provided an update on the Appropriate Assessment, confirming that it is currently considered that the only</p>		

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adverse effect that will not be ruled out will be the loss of SPA land reducing the amount of habitat contributing to the fabric of the SPA, and potentially contributing to the invertebrate resource for SPA qualifying species (however, it was acknowledged that the amount of available heathland habitat is likely to be the limiting factor for the number of SPA qualifying species breeding territories within the site, rather than the invertebrate food resource).

█ and █ agreed that due to the access and parking availability not changing for the SPA as a result of the Scheme, the Scheme will not lead to increased visitors, and indeed the provision of new compensation, a new bridge across the M25 and improved NMU routes may increase the options for users and draw users away from the SPA.

█ queried if a green bridge may attract more users to Wisley Common, but it was agreed that the provision of a new bridge across the M25 leading to new compensation areas, plus improved paths, may take the pressure off the SPA, and any users that choose to use the green bridge from Ockham Common car park to visit Wisley Common will have chosen this area instead of Ockham Common, reducing visitor pressure in Ockham Common, where the majority of the SPA qualifying species occur.

█ explained that air quality models are depicting increases of greater than 1% of the critical load for heathland being confined to the first 10 m of the road within the SPA, and even reducing in some locations. Therefore, adverse effects on the SPA as a result of emissions increases has been ruled out. This was agreed by all.

█ advised that the title of the HRA clearly states that it incorporates an Appropriate Assessment.

█ requested advice on the 'In Combination assessment' section of the Appropriate Assessment. This is because there are several SSSI components of the SPA.

█ advised that as the predicted adverse effects are confined to the Ockham and Wisley Commons SSSI, and that the scheme will not have any significant air quality impacts on the SPA (all increases over 1% of critical load are within 10 m of the road or less), will not increase user pressure, nor affect the hydrology of other component SSSIs, then Atkins should focus the In Combination assessment on Local Plans for boroughs within 10 km of the Scheme.

Species licences

█ discussed protected species licences with █ explained that the licences will be restricted to bat licences for loss of bat roosts in trees, and San Domenico compound, and badger licence for a sett closure.

The San Domenico site was discussed as the building is known to support maternity roost of brown long eared bats and common pipistrelles. This building will need to

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	<p>be demolished or significantly renovated in order for the site to be used as a compound. Access has not yet been achieved and the most recent data available is from 2017. [REDACTED] confirmed that as the data proves a roost is present, then as long as the conditions on site haven't significantly changed, then the licence application would take into account the loss of maternity roosts and the data should be fine. [REDACTED] confirmed that more recent data would be necessary if Highways England were aiming to demonstrate a building did not support roosting bats. The proposed mitigation tower was discussed, and it was agreed that any mitigation tower would need to be protected from disturbance (e.g. by a buffer between the compound and the mitigation tower, screening such as hedge and tree planting, and directional lighting).</p> <p>[REDACTED] confirmed that Atkins should keep NE informed on how the licences are progressing. With enough notice, they should be able to turn around a review of Highways England's draft licences within a couple of days of receipt (under the DAS). This would be followed up by a Letter of No Impediment (LONI) once any substantive comments have been resolved.</p> <p>[REDACTED] has since confirmed that in order for NE to produce a LONI, the draft licences will need to provide a clear description of the location of protected species, the condition/suitability of the supporting habitat and the proposed basic safeguards and precautionary procedures in order to minimise the risk of disturbance or habitat loss/degradation.</p>		

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