Luton Rising

Our airport.
Our community.
Our planet.

February 2023

London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

Volume 5 Environmental Statement and Related Documents

5.08 Appendix 8.3 Habitats Regulations Assessment No Significant Effects Report

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

London Luton Airport Expansion Development Consent Order 202x

5.08 ENVIRONMENTAL STATEMENT APPENDIX 8.3 HABITATS REGULATIONS ASSESSMENT NO SIGNIFICANT EFFECTS REPORT

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1 INTRODUCTION

1.1 Background

1.1.1 Luton Rising (a trading name for London Luton Airport Limited (the Applicant)) has submitted an application for development consent for works that will allow London Luton Airport (the airport) to expand from 18 million passengers per annum (mppa) to accommodate 32 mppa (the 'Proposed Development').

1.1.2 As part of the Environmental Impact Assessment (EIA) this Habitats Regulations Assessment (HRA) No Significant Effects Report (NSER) describes the findings of an assessment to determine if there is potential for effects from the Proposed Development on European Sites (which comprise Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), possible SPAs and candidate SACs) and Ramsar sites), in compliance with the requirements of The Conservation of Habitats and Species Regulations 2017 (as amended) ('Habitats Regulations') (Ref. 1). These sites, with the exception of Ramsar sites, constitute the National Site Network.

1.1.3 Previous HRA NSER's have been provided as part of the EIA Scoping exercise and the Preliminary Environmental Information Reports (PEIR) as part of statutory consultation in 2019 and 2022.

1.1.4 This HRA NSER has been updated following stakeholder feedback and completion of the EIA and is provided as part of the Environmental Statement submitted in support of the application for development consent.

1.2 Report structure

1.2.1 This report is structured as follows:

a. **Section 2** describes the Proposed Development (the 'project' in HRA terms) and the environmental baseline;

b. **Section 3** outlines the data and methodology used in the assessment and information on European Sites that are considered in the assessment;

c. **Section 4** provides a screening assessment (i.e. Test of Likely Significant Effects) for the potential pathways for effects; and

d. **Section 5** provides a summary and conclusion.

1.3 HRA process

1.3.1 Regulation 63 of the Habitats Regulations requires a Competent Authority to undertake an 'appropriate assessment' of any plan or project (alone or in-combination with other plans and projects) which is likely to have a significant effect on the features or a European Site, unless the project is directly connected with the management of the site. In light of the conclusions of the assessment, the Competent Authority may proceed with or consent to the plan or project only after having ascertained that it will not adversely affect the

integrity of the European Site. UK Government policy requires proposed SACs and SPAs to be treated as European Sites along with Ramsar sites.

1.3.2 All plans and projects should identify any possible effects early in the plan/project making process and then either alter the plan/project to avoid them or introduce mitigation measures to the point where no adverse effects remain. The 'Competent Authority' shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site or sites concerned. In coming to a conclusion, the Competent Authority must consult with the Statutory Nature Conservation Organisation (in this case Natural England) and have regard to their comments. They may also consult the general public if considered appropriate.

1.3.3 The assessment of a project under the Habitats Regulations can be split into four stages. Stage 1 is the assessment of the likelihood of a plan or project having a significant effect on the features of a European Site. This is the trigger for the need for an Appropriate Assessment as set out in Regulation 63(1). The Appropriate Assessment (Stage 2) is the detailed consideration of the potential effects of the plan or project in relation to the conservation objectives for the features of the European Site(s) to determine if there is likely to be an adverse effect on the integrity of the site (i.e. an effect that would compromise the site meeting its conservation objectives). Providing it can be demonstrated that with appropriate mitigation measures the plan or project would not give rise to an adverse effect on the integrity of a European Site, the plan or project can proceed.

1.3.4 Where this cannot be demonstrated or there is uncertainty, the Appropriate Assessment would then need to consider if there were any other alternatives to the plan or project (Stage 3) that would not give rise to adverse effects on the integrity of the European Site. If there are no alternatives, Stage 4 would then consider if there are any Imperative Reasons of Overriding Public Interest, only at this stage can Compensatory Measures be considered.

1.3.5 The implication of the Court of Justice of the European Union (CJEU) judgement referred to as *People Over Wind* (Peter Sweetman v Coillte Teoranta, Case C323/17) (Ref. 2) is that competent authorities can no longer take account of any "*measures that are intended to avoid or reduce the harmful effects of the envisaged project on the site concerned*", when considering at the HRA screening stage whether the plan or project is likely to have an adverse effect on a European Site. The effect of this is that the screening stage must be undertaken on a precautionary basis with no regard to any proposed integrated or additional avoidance or reduction mitigation measures.

1.3.6 Consequently, any project which identifies an impact on a European Site where likely significant effects cannot be excluded and where avoidance and mitigation is required will need to address these measures during Stage 2 Appropriate Assessment.

1.3.7 This document constitutes a NSER and covers Stage 1, the Test of Likely Significant Effects. It has been prepared with reference to the Planning Inspectorate Advice Note 10 (Habitats Regulations Assessment) (Ref. 3) on the basis that an application for development consent is being made for the

Proposed Development. Matrices required by Planning Inspectorate Advice Note 10 are included at **Appendix A** of this document, and copies of citations in **Appendix C** of this document. Consultation with Natural England can be found in the Scoping Responses in **Appendix 1.4** of the ES **[TR020001/APP/5.02]**, and the **Consultation Report** submitted as part of the application for development consent **[TR020001/APP/6.01]** and **[TR020001/APP/6.02]**.

2 PROJECT DESCRIPTION

2.1 Site location

2.1.1 The Proposed Development is located to the immediate east and north east of the existing airport. New infrastructure would be predominately located within Luton Borough, with earthworks, construction activities and provision of open space extending into north Hertfordshire. The Main Application Site (as defined in **Chapter 2** of the ES **[TR020001/APP/5.01]**) is broadly centred on National Grid Reference TL124215 (refer to **Figure 1, Appendix A** of this document).

2.2 Proposed works

2.2.1 The Proposed Development mainly consists of the provision of new infrastructure including:

a. extension and remodelling of the existing passenger terminal (Terminal 1) to increase the capacity;

b. new passenger terminal building and boarding piers (Terminal 2);

c. earthworks to create an extension to the current airfield platform; the vast majority of material for these earthworks would be generated on site;

d. airside facilities including new taxiways and aprons, together with relocated engine run-up bay and fire training facility;

e. landside facilities, including buildings which support the operational, energy and servicing needs of the airport;

f. enhancement of the existing surface access network, including a new dual carriageway road accessed via a new junction on the existing New Airport Way (A1081) to the new passenger terminal along with the provision of forecourt and car parking facilities;

g. extension of the Luton Direct Air to Rail Transit (Luton DART) with a station serving the new passenger terminal;

h. landscape and ecological improvements, including the replacement of existing open space; and

i. Further infrastructure enhancements and initiatives to support the target of achieving zero emission ground operations by 2040[1], with interventions to support carbon neutrality being delivered sooner including facilities for greater public transport usage, improved thermal efficiency, electric vehicle charging, on-site energy generation and storage, new aircraft fuel pipeline connection and storage facilities and sustainable surface and foul water management installations.

2.2.2 A detailed description of the Proposed Development is provided in **Chapter 4** The Proposed Development of this ES **[TR020001/APP/5.01]**.

[1] This is a Government target, for which the precise definition will be subject to further consultation following the Jet Zero Strategy, and which will require further mitigations beyond those secured under the Development Consent Order.

2.3 Environmental baseline

2.3.1 The undulating land within 2km of the Proposed Development mainly comprises the existing airport, Luton town and transport infrastructure, buildings, amenity grassland, species-poor semi-improved grassland, arable land, hedgerows, scrub and semi-natural broadleaved woodland.

2.3.2 Detailed studies for various ecological receptors have been undertaken to support the EIA and are reported separately. A full ecological assessment of impacts of the Proposed Development is presented in **Chapter 8** Biodiversity of the ES **[TR020001/APP/5.01]** submitted as part of the application for development consent.

3 GUIDANCE AND METHODOLOGY

3.1 Guidance and policy

3.1.1 This information has been informed by the following guidance and policy documents:

a. Tyldesley, D. & Chapman, C. (2022). The Habitats Regulations Assessment Handbook (Ref. 4);

b. Tyldesley, D. & Chapman, C. (2018). People Over Wind - some Implications of the Judgment. The Habitat Regulations Journal, 10, 19 to 23 (Ref. 5); and

c. The Planning Inspectorate (2022): Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects (version 9) (Ref. 3).

3.1.2 This guidance is intended to improve understanding of how projects are regulated under the Habitats Directive. This guidance draws on project experience and case law in Britain and Europe.

3.1.3 Planning Inspectorate Advice Note 10 (Ref. 3) requires an evaluation of the potential for the Proposed Development to require other consents which could also require HRA by different Competent Authorities, and a statement as to whether significant effects are considered to be likely in respect of European sites in devolved administrations or within EEA states. It is confirmed that the Proposed Development boundary does not overlap with areas of devolved administrations or with those of EEA States.

3.2 Desk study information

3.2.1 In addition to the guidance noted above, the following websites were used to gather information on the European Sites:

a. Multi-Agency Geographic Information for the Countryside (MAGIC) website (Ref. 6); and

b. Joint Nature Conservation Committee (JNCC) website (Ref. 7).

3.2.2 These websites provide information about European Sites including Conservation Objectives for their qualifying features, which are the primary reason for designation. The features are considered to have Favourable Conservation Status only when the conservation objectives are being met. These objectives therefore provide an indication of the type of effects which could affect the features of a designated site. An effect which could affect the ability of a site or feature to meet its objective could be considered to be an adverse effect on the integrity of the designated site concerned.

3.3 HRA methodology

3.3.1 To understand the potential implications for European Sites from the project it is necessary to identify those that are located nearby or are linked by pathways such as hydrological connections.

3.3.2 All European Sites were identified using Geographic Information System data from datasets downloaded from the JNCC and MAGIC.

Consultation with Natural England

3.3.3 A HRA screening assessment was undertaken as part of the EIA Scoping Exercise and 2019 and 2022 PEIR's for the Proposed Development and determined that there would be no likely significant effects on European Sites as a result of the Proposed Development and therefore, an appropriate assessment was not required.

3.3.4 Natural England, in their response to the 2019 PEIR, stated that the HRA screening assessment did not consider any pathways between the development site and Chilterns Beechwoods SAC, nor include potential effects as a result of changes to air quality. The subsequent 2022 PEIR HRA provided an updated screening assessment that considered the potential impacts on Chilterns Beechwoods SAC and included potential effects in terms of air quality where relevant. This HRA provides the same appropriate level of detail.

Understanding qualifying features and conservation objectives

3.3.5 For each of the European Sites identified the features were established and the conservation objectives for each feature were obtained. Information was also sought to understand the potential vulnerability of the features to any effects that might arise from the Proposed Development.

Identification of the potential effects of the project

3.3.6 Any potential pathways for effects on European Sites resulting from the Proposed Development were identified using either available guidance (in the case of road traffic that involves the Design Manual for Roads and Bridges) or, where no such guidance is available, a source-pathway-receptor model utilising available research concerning the relevant impact pathways. Following consideration of the potential impact pathways and the distance to European Sites (discussed below) that potential air quality impacts and potential for disturbance of birds in the nearest Special Protection Area are the only impact pathways requiring consideration. Other impacts have also been discussed where relevant such as the risk of fuel dumping affecting sites.

In-combination Effects

3.3.7 An 'in-combination' assessment is required where the project may have an effect on a European Site, but on its own the effects would not be significant. The potential effects of the project should be considered in-combination with other plans or projects that similarly may have an effect, but where on their own those effects would not be significant. The combined effects may therefore become significant.

3.3.8 Details of other plans and projects which are currently proposed or consented within the vicinity of the European Sites and/or European Sites identified were obtained to inform the in-combination assessment of the project.

3.3.9 Planning Inspectorate Advice Note 10 (Ref. 3) states that in assessing in-combination effects the following projects should be considered:

a. projects that are under construction;
b. permitted application(s) not yet implemented;
c. submitted application(s) not yet determined;
d. all refusals subject to appeal procedures not yet determined;
e. projects on the National Infrastructure's programme of projects; and
f. projects identified in emerging development plans recognising that much information on relevant proposals will be limited and the degree of uncertainty which may be present.

Consideration of the significance of potential effects

3.3.10 The significance of potential effects was assessed in the absence of avoidance or other mitigation measures other than those which are standard construction practices such as pollution control or those incorporated into the Proposed Development. The assessment has been made with awareness of the conservation objectives for the features of the European Sites, although as stated in the relevant guidance the assessment of the project against the conservation objectives is not required until the Appropriate Assessment stage of the HRA process.

3.3.11 In the assessment of the potential for significant effects, professional judgement was applied using the following criteria, as often information about the elements and interests is limited:

a. the vulnerability/sensitivity of the receiving environment/features of interest;
b. when the risk of effects is likely to occur (e.g. construction and/or operation);
c. the likely geographical extent of the effects; and
d. likelihood of significant effects occurring based on previous experience with similar elements, where available.

3.3.12 Professional judgement was used in the carrying out of this work where professional guidance was not available. Where there was limited information about the risk of qualifying interests being present, or of the risk of effects, the assessment used the precautionary principle to inform the judgement.

3.3.13 The precautionary principle has been applied to ensure that any assessment errs on the side of caution. This principle means that the conservation objectives should prevail where there is uncertainty over whether there will be likely significant effects and that harmful effects will be assumed in the absence of evidence to the contrary.

European Sites potentially affected by the proposed development

3.3.14 One key source of impacts on the natural environment from the Proposed Development (particularly when, as here, the nearest European Sites are at a considerable distance from the Proposed Development) is the potential for impacts from associated changes in traffic movements. Guidance on scoping impacts on European Sites from schemes that involve a material change to road traffic is provided by National Highways in their Design Manual for Roads and Bridges (DMRB). According to DMRB LA115 (Habitats Regulations Assessment) (Ref. 8):

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

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

3.3.15 In addition, a letter dated 04 April 2022 Natural England ref 383128, received in response to the 2022 PEIR, suggested that Natural England's Air Quality Distance Criteria for airports, in line with the Inter-agency Air Pollution Group, study area of 5km, plus consideration of effects on nearby roads potentially at a greater distance than 5km, should be considered. No publicly available copy of this document could be found, however, the suggestion has been adopted. Further response to this is provided in the **Consultation Report** submitted as part of the application for development consent **[TR020001/APP/6.01]** and **[TR020001/APP/6.02]**).

3.3.16 Following the above guidance for the Proposed Development, an area extending 5km from the Main Application Site was first selected in which internationally important wildlife sites (SAC, SPA, Ramsar) were identified in order to assess air quality related effects. The Affected Road Network (ARN) was also considered, even where this extended over 5km from the Main Application Site. With specific regard to air quality impacts from road traffic, Affected Roads (as defined in DMRB LA105) are relevant to HRA only if they pass within 200m of a European Site, this being the distance beyond which the local elevation of pollution due to roads has dropped to background levels. The extent of the ARN is shown on **Figure 2, Appendix A** of this document; details of how the ARN has been determined, can be found in **Section 7.3** of **Chapter 7** Air Quality of this ES **[TR020001/APP/5.01]**. No European Sites are located

within 5km of the Proposed Development or are located within 200m of the ARN.

3.3.17 In line with DMRB guidance this study area was extended to a 30km area to search for European Sites which are designated for bats, but in this case there are no bat European Sites within 30km.

3.3.18 European Sites where there is a pathway by which hydrological impact might occur through river or stream connectivity, were also included. Based on professional judgement, a search radius of 15km has been used for this analysis on the basis that any potential for an effect at greater distances is likely to be negligible and below the level of detection, due to the size of any dilution factors relative to the likely scale of any pollution event at source. There are no hydrologically sensitive European Sites within 15km of the Proposed Development that are hydrologically linked.

3.3.19 There is no published guidance on search distances for impacts on designated wildlife sites from aircraft so as a precaution (and taking into account flight altitudes and the distance taken to reach those altitudes) a 30km zone was used for all European Sites. These areas are hereafter referred to as 'the Study Area'.

3.3.20 There are four European Sites within 30km of the Proposed Development, as shown in **Figure 1, Appendix A** of this document (distances and direction are measured as a straight line from the Main Application Site boundary, with distances also provided to the Order Limits which includes Off-site Highways Interventions, as defined in **Chapter 2** of the ES **[TR020001/APP/5.01]**), which are as follows:

a. Chilterns Beechwoods SAC - 13.1km to the south west (10.1km to the Proposed Development);

b. Wormley Hoddesdonpark Woods SAC - 22.6km to the south east (22.2km to the Proposed Development);

c. Lee Valley SPA - 24.4km to the south east (23.9km to the Proposed Development); and

d. Lee Valley Ramsar site - 24.4km to the south east (23.9km to the Proposed Development).

3.3.21 A fifth European Site, Aston Rowant SAC (43.7km to the south west of the Main Application Site and 40.6km to the Proposed Development) has also been considered in terms of potential air quality impacts as it is bisected by the M40 which is a major regional highway in south east England. However, the ARN developed based on the DMRB LA105 (Air Quality) guidance (Ref. 9), shows the M40 through this site is not part of the ARN for the Proposed Development (shown on **Figure 2, Appendix A** of this document) as it will not be subject to a material increase in 24hr Annual Average Daily Traffic (AADT) as a result of this Proposed Development. It also lies beyond 5km from the Main Application Site and 37.8km from the ARN. Therefore, no impact pathway exists and this site can be screened out.

3.3.22 The qualifying features for Sites are summarised in **Table 3.1** and their locations in respect to the Proposed Development are shown on **Figure 1, Appendix A** of this document.

Table 3.1: European Sites within 30km of the Proposed Development (Information for each site has been obtained from the Natural England (Ref. 10) and Joint Nature Conservation Committee websites)

Site name and code (as per the citation/ site data sheet)	Site description (as per the citation/ site data sheet)	Qualifying features (as per the citation/ site data sheet)	Conservation Objectives (from Site Conservation Objectives and Supplementary Advice)	Vulnerability (taken from Site Improvement Plans/ site data sheet)
Chilterns Beechwoods Special Area of Conservation, UK0012724.	The site occupies an area of approximately 1,286ha, which is located north of Berkhamsted either side of the Hertfordshire/ Buckinghamshire border. The site comprises a mixture of ancient semi-natural and secondary woodland, plantation, scrub, bracken and grassland.	9130 *Asperulo-Fagetum* beech forests (this is listed on Annex l of the 'Habitats Directive' and is the primary reason for designation of this site). This Annex I habitat type is represented by an extensive tract of *Asperulo-Fagetum* beech forest in the centre of the habitat's UK range. The woodland is an important part of a grassland-scrub-woodland mosaic. A distinctive feature in the woodland flora is the Nationally Scarce coralroot bitter-cress (*Cardamine bulbifera*). 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates *Festuco-Brometalia*, which includes the priority feature '*important orchid rich sites' (this is listed on Annex l of the 'Habitats	Ensure that the integrity of the site and the favourable conservation status of its qualifying features are maintained or restored as appropriate in accordance with the 'Habitats Directive'.	The cited adverse threats to the qualifying features at this site relate to habitat degradation as consequence of change in plant community structure and species composition because of competition from: a. invasive non-native plant species; b. invasive native plant species; and c. interspecific plant relations. Although not cited, professional judgement and

Site name and code (as per the citation/ site data sheet)	Site description (as per the citation/ site data sheet)	Qualifying features (as per the citation/ site data sheet)	Conservation Objectives (from Site Conservation Objectives and Supplementary Advice)	Vulnerability (taken from Site Improvement Plans/ site data sheet)
		Directive' but is not the primary reason for designation of this site). 1083 Stag beetle (*Lucanus cervus*) (this is listed on Annex II of the 'Habitats Directive' but is not a primary reason for designation of this site).		experience suggests that there is potential for additional adverse threats to the qualifying features at this site which also relate to habitat degradation, such as: air pollution and deposition of air-borne pollutants; and, human intrusive activities.
Wormley Hoddesdonpark Woods Special Area of Conservation, UK0013696.	The site occupies an area of approximately 337ha, which is located west of Hoddesdon in Hertfordshire. The site mainly comprises ancient semi-natural and secondary	9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli* (this is listed on Annex I of the 'Habitats Directive' and is the primary reason for designation of this site). This Annex I habitat type is represented at this site by large stands of almost pure hornbeam (*Carpinus betulus*), with sessile oak (*Quercus petraea)* standards. Areas dominated by bluebell	Ensure that the integrity of the site and the favourable conservation status of its qualifying features are maintained or restored as appropriate in accordance with	The cited adverse threats to the qualifying features at this site relate to habitat degradation as consequence of: a. change in plant community structure and species composition

Site name and code (as per the citation/ site data sheet)	Site description (as per the citation/ site data sheet)	Qualifying features (as per the citation/ site data sheet)	Conservation Objectives (from Site Conservation Objectives and Supplementary Advice)	Vulnerability (taken from Site Improvement Plans/ site data sheet)
	woodland, wood-pasture and heaths.	(*Hyacinthoides non-scripta*) do occur, but elsewhere there are stands of great wood-rush (*Luzula sylvatica*) with carpets of the mosses (*Dicranum majus*) and (*Leucobryum glaucum*). Locally, a bryophyte community more typical of continental Europe occurs, including the mosses (*Dicranum montanum*, *D. flagellare* and *D. tauricum*).	the 'Habitats Directive'.	because of competition from: i. invasive non-native plant species; ii. invasive native plant species; and iii. interspecific plant relations. b. air pollution and deposition of air-borne pollutants; and c. human intrusive activities.
Lee Valley Special Protection Area, UK9012111.	The site comprises four discrete areas located within a lowland valley floodplain with extensive waterbodies between Ware,	The site regularly supports: 1% or more of the Great Britain population of the British wintering population of bittern (*Botaurus stellaris*) (which satisfies Article 4.1 of the Birds Directive and is a key reason for designation of this site).	Ensure that the integrity of the site and the favourable conservation status of its qualifying features are	The cited adverse threats to the qualifying features at this site relate to: a. habitat degradation as consequence of: i. aquaculture;

Site name and code (as per the citation/ site data sheet)	Site description (as per the citation/ site data sheet)	Qualifying features (as per the citation/ site data sheet)	Conservation Objectives (from Site Conservation Objectives and Supplementary Advice)	Vulnerability (taken from Site Improvement Plans/ site data sheet)
	Hertfordshire and Finsbury Park, London.	The site qualifies under article 4.2 of the Directive as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed on Annex I), in any season: a. Shoveler *Anas clypeata*; and b. Gadwall *Anas strepera*	maintained or restored as appropriate in accordance with the 'Birds Directive'.	ii. change in hydrology (affecting water level); iii. groundwater pollution; and iv. ecological succession (habitat change); and b. species disturbance because of human recreation.
Lee Valley Ramsar site, UK11034.	The site comprises four discrete areas located within a lowland valley floodplain with extensive waterbodies between Ware, Hertfordshire and Finsbury Park, London.	The site supports: a Nationally Rare water-boatman (*Micronecta minutissima*); and, the Nationally Scarce whorled water-milfoil (*Myriophyllum verticillatum*). (which satisfies Criterion 2 of the Ramsar Convention and are key reasons for designation of this site). The site regularly supports:	Ensure that the integrity of the site and the favourable conservation status of its qualifying features are maintained or restored as appropriate in	Although not cited, it is considered that there is potential for additional adverse threats to the qualifying features at this site which relate to: a. habitat degradation as consequence of:

Site name and code (as per the citation/ site data sheet)	Site description (as per the citation/ site data sheet)	Qualifying features (as per the citation/ site data sheet)	Conservation Objectives (from Site Conservation Objectives and Supplementary Advice)	Vulnerability (taken from Site Improvement Plans/ site data sheet)
		2.6% (5-year peak mean between 1998/9 and 2002/3) of the British wintering population of gadwall (*Anas strepera*); and, 1.9% (5-year peak mean between 1998/9 and 2002/3) of the British spring/autumn passage population of shoveler (*Anas clypeata*). (which satisfies Criterion 6 of the 'Ramsar Convention' and are key reasons for designation of this site).	accordance with the 'Ramsar Convention'.	i. aquaculture; ii. change in hydrology (affecting water level); iii. groundwater pollution; and iv. ecological succession (habitat change); and b. species disturbance because of human recreation.

4 SCREENING ASSESSMENT

4.1 Potential effects of the Proposed Development

4.1.1 Pathways for effects to occur on qualifying features of the four European Sites are considered for the construction and operation of the Proposed Development and described in **Table 4.1** and shown in the Planning Inspectorate matrices in **Appendix A** of this document.

4.1.2 The potential pathways for effect include:

a. habitat loss;
b. habitat degradation;
c. habitat severance;
d. species disturbance; and
e. species mortality/injury.

4.1.3 Consideration has also been given to the potential for 'fuel dumping' as a pathway. 'Fuel dumping' is carried out by aircraft in emergency situations in order to reduce weight, thereby improving the safety of landing. It is only carried out in emergency situations, as a matter of preserving human safety, and is a rare occurrence.

4.1.4 Even when fuel is dumped from an aircraft in an emergency situation, it is always carried out at, or above, an altitude that will allow evaporation or dissipation before the fuel reaches the ground. In most conditions an altitude of 5,000ft to 6,000ft above ground level (AGL) is sufficient (Ref. 11).

4.1.5 As fuel dumping is only carried out in emergency situations at a sufficient height that the fuel has evaporated before reaching the ground, there is no linking pathway to particular areas on the ground, including European Sites.

4.1.6 To fall within the remit of the HRA process, any impact must be 'likely'. While use of the precautionary principle (and case law) sets the threshold for 'likely' to be quite low, the Court of Appeal ruled in the Boggis judgement that there should be *"credible evidence that there was a real, rather than hypothetical risk"* (Ref. 12).

4.1.7 Therefore, in accordance with case law, and as set out above, for the following reasons, fuel dumping is not considered to be a realistic impact pathway connecting to specific European Sites and is therefore not considered further in this report:

a. fuel dumping is only carried out rarely and only in emergency situations;
b. much or all of the dumped fuel vaporises before reaching the land or sea, so does not cause any pollution of the terrestrial or marine environment. and;
c. due to the nature of the event it is impossible to know where any such event may take place given that it is carried out in emergency situations

or to draw a specific direct linkage to any European Sites due to the evaporation of the fuel well above ground level.

4.2 Consideration of effects and significance

4.2.1 It is concluded that there is no impact pathway on the qualifying features of the European Sites. Justification for this overall conclusion is provided separately for each of the four European Sites, as follows:

Chilterns Beechwoods SAC

4.2.2 The Proposed Development, which includes Off-site Highways Interventions (as defined in **Chapter 2** of the ES **[TR020001/APP/5.01]**) lies approximately 10.1km north east of this site (the Main Application Site lies 13.1km north east). Given the separation distance between the Proposed Development and this European Site and the fact the site does not lie on or within 200m of the ARN for the Proposed Development, no pathways for effect have been identified. This has included consideration of potential air quality changes and associated deposition of air-borne pollutants from aircraft arriving and departing the airport and vehicle emissions resulting from an increase in road traffic travelling to and from the Proposed Development.

4.2.3 The main pollutants of concern for European Sites are oxides of nitrogen (NO_x), ammonia (NH_3) and sulphur dioxide (SO_2) and their effects on habitats and species are summarised below:

a. Nitrogen oxides (NOx) - Direct toxicity effects of gaseous NOx are likely to be important in areas close to the source (e.g. roadside verges). Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification. In addition, NOx contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.

b. Ammonia (NH_3) - The negative effect of NH_4+ may occur via direct toxicity when uptake exceeds detoxification capacity and via nitrogen (N) accumulation. It is toxic to vegetation even at low concentrations but its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen. It should be noted that ammonia emissions from vehicles are associated with catalytic converters that are designed to minimise NOx and emit ammonia as a by-product. Aircraft do not emit ammonia.

c. Sulphur dioxide (SO_2) - Wet and dry deposition of SO_2 acidifies soils and freshwater and may alter the composition of plant and animal communities. The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species. However, SO_2 background levels have fallen considerably since the 1970s and are now not regarded a threat to plant communities (Ref. 13). For example, decreases in sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.

Neither aircraft or road traffic emit sulphur dioxide and therefore this can be screened out.

4.2.4 According to the World Health Organisation, the critical NO_x concentration (critical level) for the protection of vegetation is 30µgm^{-3}. In addition, ecological studies have determined 'critical loads' of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH_3). These are bespoke to particular habitats and are available on the Air Pollution Information System (Ref. 13).

4.2.5 According to the Airport Air Quality Manual (ICAO, 2011 (Ref. 14)), local deposition of air-borne pollutants on the ground (i.e. that which may form a linking impact pathway to a specific European Site) typically occurs from overflying aircraft at up to 1,000ft (305m) above ground-level.

4.2.6 Detailed air quality assessment using appropriate modelling has been carried out as part of the EIA and is reported in **Chapter 7** Air Quality of the ES **[TR020001/APP/5.01]**. Based on typical ascent/descent angles it is currently considered that aircraft will be flying above 305m when further than 6km from the Proposed Development.

4.2.7 Therefore, due to the distances involved (>6 km threshold) there is no pathway for air pollution and deposition of air-borne pollutants to the Chiltern Beechwoods SAC.

4.2.8 According to the Department for Transport's Transport Analysis Guidance, "*beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant*" (Ref. 15). As such, the traffic air quality study area used in this HRA is 200m from the ARN . Chiltern Beechwoods SAC is 6.5km away from the ARN at its closest point, therefore, there is no pathway for air pollution and deposition of air-borne pollutants from an increase in vehicular traffic.

Wormley Hoddesdonpark Woods SAC

4.2.9 The Proposed Development is approximately 22.2km north west of this site. The SAC also lies 22.6km from the Main Application Site, and approximately 19km from the ARN. Given the separation distance between the Proposed Development and this European Site and the altitude at which aircraft will be flying when over this SAC, no pathways for effect have been identified. This has similarly included consideration of potential air quality changes and associated deposition of air-borne pollutants from traffic generated by the Proposed Development.

4.2.10 For the reasons outlined above for the Chiltern Beechwood SAC, given the distance between the airport and Wormley Hoddesdonpark Woods SAC, no pathway for effect from air quality changes has been identified.

Lee Valley SPA and Lea Valley Ramsar Site

4.2.11 The Proposed Development is approximately 23.9km north west of the Lea Valley SPA and the Lea Valley Ramsar Site. The SPA and Ramsar sites also lie 24.4km from the Main Application Site, and approximately 22km from the ARN. The screening exercise has considered the potential pathway for adverse

effects on certain qualifying features (populations of bittern, gadwall and shoveler); this includes disruption to a functional link, such as regularly frequented contributory habitat and/or documented bird dispersal route.

4.2.12 It is recognised that the qualifying bird populations will disperse to other locations away from Lee Valley SPA/Ramsar Site. However, there is no suitable habitat within 2km of the Proposed Development that is known to regularly support important wintering populations of bittern, gadwall or shoveler that can be considered to be functionally linked habitat. Wintering bird surveys undertaken of the Main Application Site and further suitable habitats up to 500m did not detect any of the three SPA species mentioned, as described in the Ecology Baseline Report provided as **Appendix 8.1** of the ES **[TR020002/APP/5.02]** nor have they been identified as being at risk from air strikes as described in the Bird Strike Risk Assessment provided as **Appendix 8.4** of the ES **[TR020002/APP/5.02]**. The Proposed Development is also not hydrologically connected to the SPA/Ramsar Site and is not on a known fly-way connected to these European Sites.

4.2.13 In line with Natural England guidance, none of the habitats within 5km of the airport are considered to provide a potentially important role in maintaining or restoring the protected SPA/Ramsar Site populations at Favourable Conservation Status (Ref. 16). Therefore, there is no evidence of functional linkage and thus no pathways for effect on qualifying species of the SPA/Ramsar Site.

4.2.14 Noise and visual disturbance are also to be considered. Hoang (2013) (Ref. 17) conducted a literature review of aircraft disturbance on shorebirds and seabirds. Of seven studies presented in the literature review which investigated effects on shorebirds, the minimum distance at which disturbance was found to be caused by fixed-wing aircraft was 300m above ground level, with higher level flights having relatively limited or no disturbance effects. It should be noted that all aircraft considered by this study were small planes or military jets which are more likely to fly at lower altitudes and be noisier and more disturbing that larger fixed wing aircraft.

4.2.15 Based on typical ascent/descent angles, aircraft will be flying above 305m when further than 6km maximum distance from the Proposed Development. Given the distances of the SPA and Ramsar from the Proposed Development, aircraft will be far too high to cause visual and/or noise disturbance to birds on the ground, or atmospheric pollution. There is therefore no pathway for effect on qualifying species of the SPA/Ramsar Site.

Other Plans and Projects

4.2.16 Since there is no pathway for effect on the qualifying features of the European Sites, there can be no potential for in-combination effects with other plans or projects.

4.2.17 For the aforementioned reasons, subsequent stages of HRA are not considered necessary.

Table 4.1. Summary of effects during construction and operation on European Sites within 30km of the Proposed Development.

Pathways for Effects	Chilterns Beechwoods SAC	Wormley Hoddesdonpark Woods SAC	Lee Valley SPA	Lee Valley Ramsar Site
	9130 *Asperulo-Fagetum* beech woodland, which support the Nationally Scarce coralroot bitter-cress. **6210 Semi-natural calcareous *Festuco-Brometalia* grasslands with scattered scrub, which are of importance for orchids.** **1083 Stag beetle**	**9160 Sub-Atlantic and medio-European oak or oak-hornbeam *Carpinion-Betuli* woodland.**	**Wetlands which support:** **a. wintering population of bittern;** **b. wintering population of gadwall; and** **c. wintering population of shoveler.**	**Wetlands which support:** **a. a Nationally Rare water-boatman (*Micronecta minutissima*);** **b. the Nationally Scarce whorled water-milfoil;** **c. wintering population of gadwall; and** **d. spring/autumn passage population of shoveler.**
Construction				
Habitat loss	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Habitat degradation	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Habitat severance	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Species disturbance	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects

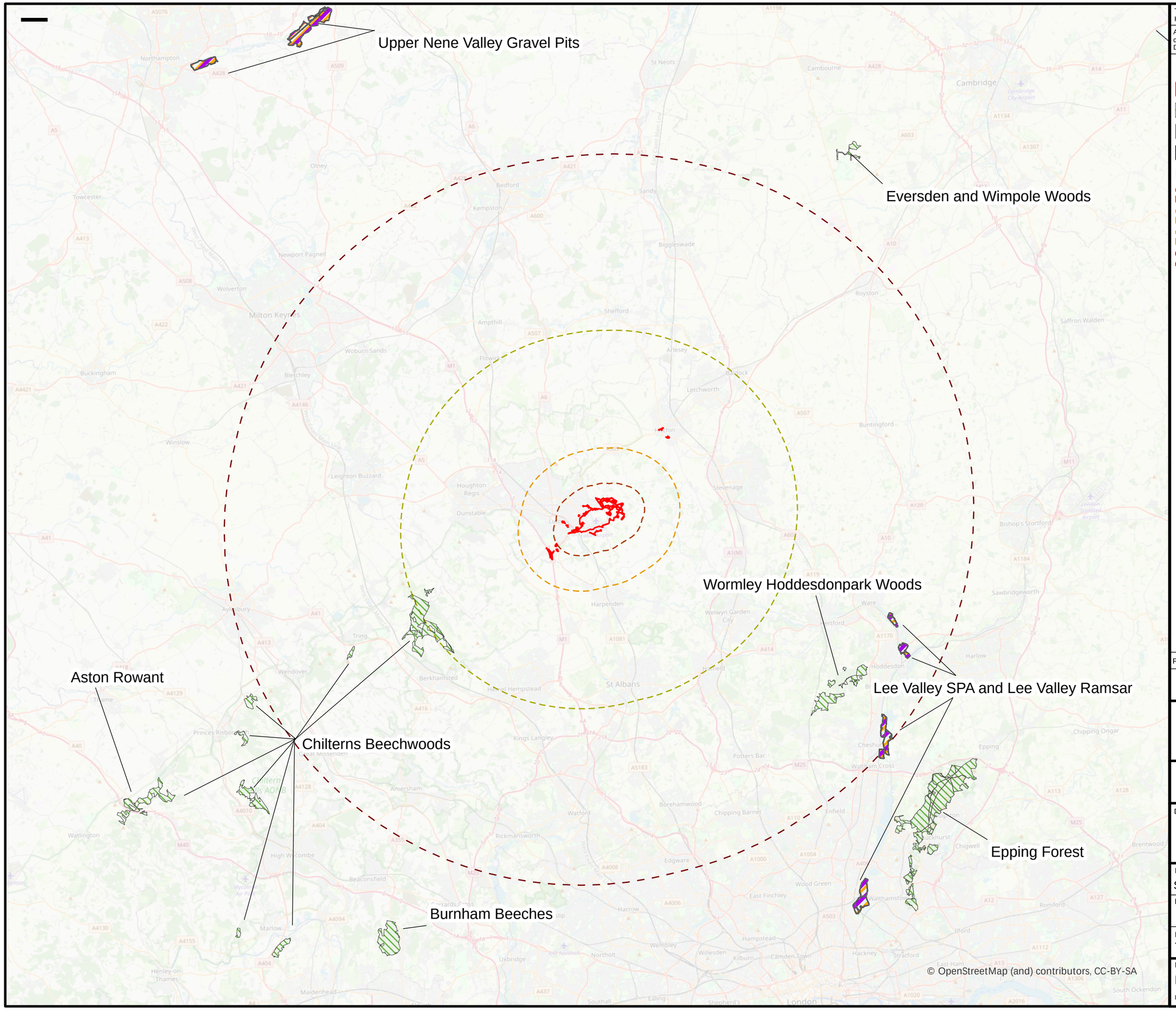
Pathways for Effects	Chilterns Beechwoods SAC	Wormley Hoddesdonpark Woods SAC	Lee Valley SPA	Lee Valley Ramsar Site
Species mortality / injury	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Operation				
Habitat loss	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Habitat degradation	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Habitat severance	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Species disturbance	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects
Species mortality / injury	No pathway for effects	No pathway for effects	No pathway for effects	No pathway for effects

5 CONCLUSION

5.1.1 This HRA NSER has considered the Proposed Development and European Sites within 30km, and beyond in accordance with consultation responses. Potential effects have been discussed and associated pathways described.

5.1.2 Based on information available, no pathway for effect on any European Site has been identified and therefore no effects on such sites are predicted to occur. With the conclusion of no effect from the Proposed Development, no potential for in-combination effect can occur.

APPENDIX A. FIGURES



All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

- Order Limits
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)
- Ramsar

Main Application Site Buffers

- 2km
- 5km
- 15km
- 30km

Revision History	Drawn	Checked / Approved	Date	Rev.
First Issue	AB	NL / CS	20/02/23	P01

Luton Rising
Our airport. Our community. Our planet.
Luton Rising
Hart House Business Centre
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London Luton Airport Expansion Development Consent Order

Drawing Title

Figure 1 European Designated Sites

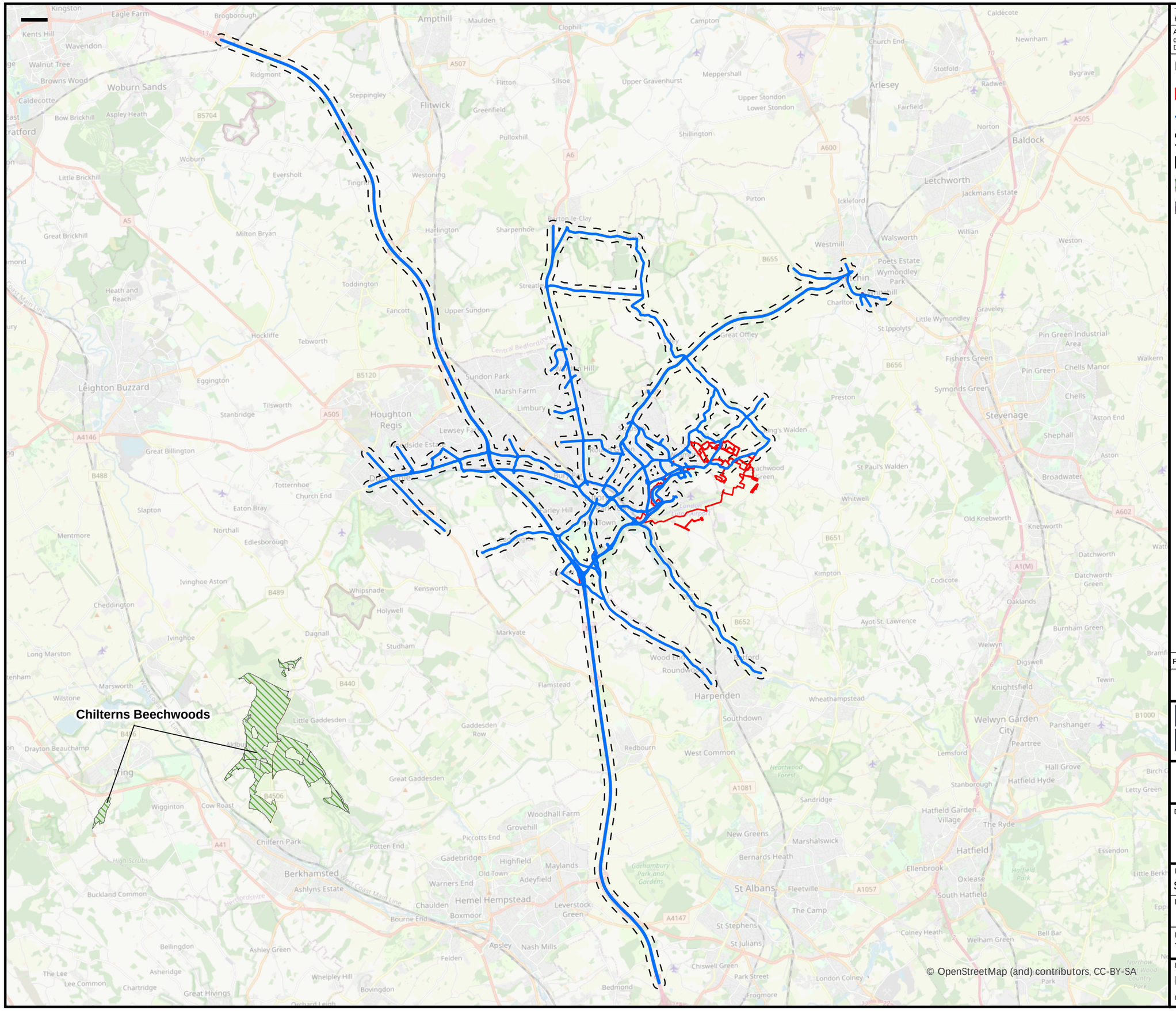
Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S2

Drawn	Checked	Approved	Date	Scale	Size
AB	NL	CS	20/02/23	1:300,000	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	APFP 5(2)(g)	TR020001/APP/5.08

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0225	P01

Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number



All structure positions are indicative. The proposed works will be subject to detailed design development. The changes will be within limits of deviation specified in the Development Consent Order.

Legend

- Order Limits
- Affected Road Network
- Affected Road Network 200m buffer
- Ramsar
- Special Areas of Conservation (SAC)
- Special Protection Areas (SPA)

Revision History	Drawn	Checked / Approved	Date	Rev.
First Issue	AB	NL / CS	20/02/23	P01

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Drawing Title

Figure 2 Affected Road Network

Purpose of issue	Suitability
SUITABLE FOR INFORMATION	S2

Drawn	Checked	Approved	Date	Scale	Size
AB	NL	CS	20/02/23	1:125,000	A3

DCO Application Ref.	APFP Regulation	DCO Document Ref.
TR020001	APFP 5(2)(g)	TR020001/APP/5.08

Drawing Number	Revision
LLADCO-3C-ARP-00-00-DR-YE-0224	P01

Project - Phase - Originator - Asset/Zone - Sub Asset - Type- Discp. - Number

APPENDIX B. PLANNING INSPECTORATE ADVICE NOTE 10 HRA SCREENING MATRICES

B.1. Potential Effects

Potential effects upon the European Site(s), as defined in Advice Note 10 (Ref. 3) which are considered within this HRA NSER are provided in **Table B.1.**

Table B.1: Effects considered within the screening matrices

Designation	Effects described in submission information	Presented in screening matrices as
Chilterns Beechwoods SAC	Habitat loss Habitat degradation Habitat severance	Air quality
Wormley Hoddesdonpark Woods Special Area of Conservation, UK0013696.	Habitat loss Habitat degradation Habitat severance	Air quality
Lee Valley Special Protection Area, UK9012111.	Habitat loss Habitat degradation Habitat severance Species disturbance Species mortality / injury	Disturbance
Lee Valley Ramsar UK11034.	Habitat loss Habitat degradation Habitat severance Species disturbance Species mortality / injury	Disturbance

B.2. STAGE 1: SCREENING MATRICES

The European Sites included within the screening assessment are:

a. Chilterns Beechwoods SAC;
b. Wormley Hoddesdonpark Woods;
c. Lee Valley SPA; and
d. Lee Valley Ramsar.

Evidence for, or against, likely significant effects on the European Site(s) and its qualifying feature(s) is detailed within the footnotes to the screening matrices below.
Matrix Key:

✓ = Likely significant effect **cannot** be excluded
✕ = Likely significant effect **can** be excluded

C = construction
O = operation
D = decommissioning

If there is **no impact pathway** at all linking the Proposed Development to a European site the **cells are greyed out** in line with Planning Inspectorate guidance.

B.2.1. HRA Screening Matrix 1: Chilterns Beechwoods SAC

Name of European Site and designation: Chilterns Beechwoods SAC						
EU Code: UK0012724						
Distance to the Main Application Site: 13.1km (10.1km from the Proposed Development and 6.5km from the ARN						
European site features	**Likely effects of the airport**					
Effect	*Air quality*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*
9130 Asperulo-Fagetum beech woodland, which support the Nationally Scarce coralroot bitter-cress.						
6210 Semi-natural calcareous Festuco-Brometalia grasslands with scattered scrub, which are of importance for orchids.						
1083 Stag beetle						
1166 Great crested newt.						

Evidence supporting conclusions:

Paragraphs 4.2.5 and **4.2.6** describe the height at which air-borne pollutant from aircraft cease to affect receptors at ground level (305m above ground level). Aircraft will be flying above 305m when further than 6km from take-off; therefore, there is no pathway for air pollution and deposition of air-borne pollutants to the Chiltern Beechwoods SAC. Paragraph 4.2.8 describes the ARN and traffic air quality impacts being within 200m. This SAC is over 200m from the ARN.

B.2.2. HRA Screening Matrix 2: Wormley Hoddesdonpark Woods SAC

Name of European Site and designation: Wormley Hoddesdonpark Woods SAC						
EU Code: UK0013696.						
Distance to the Main Application Site: 22.6 km (22.2km from the Proposed Development and 19km from the ARN						
European site features	**Likely effects of the airport**					
Effect	*Air quality*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*
9160 Sub-Atlantic and medio-European oak or oak-hornbeam Carpinion-Betuli woodland.						

Evidence supporting conclusions:

Paragraphs 4.2.5 and **4.2.6** describe the height at which air-borne pollutant from aircraft cease to affect receptors at ground level (305m above ground level). Aircraft will be flying above 305m when further than 6km from take-off; therefore there is no pathway for air pollution and deposition of air-borne pollutants to Wormley Hoddesdonpark Woods SAC. Paragraph 4.2.8 describes the ARN and traffic air quality impacts being within 200m. This SAC is over 200m from the ARN.

B.2.3. HRA Screening Matrix 3: Lee Valley SPA

Name of European Site and designation: Lee Valley SPA						
EU Code: UK9012111.						
Distance to the Main Application Site: 24.4km (23.9km from the Proposed Development and 22km from the ARN						
European site features	**Likely effects of the airport**					
Effect	*Disturbance*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*
Wetlands which support: • *wintering population of bittern;* • *wintering population of gadwall; and,* • *wintering population of shoveler.*						

Evidence supporting conclusions:

Paragraph 4.2.14 identifies that Hoang (2013) (Ref. 17) conducted a literature review of aircraft disturbance on shorebirds and seabirds. Of seven studies presented in the literature review which investigated effects on shorebirds, the minimum distance at which disturbance was found to be caused by fixed-wing aircraft was 300m above ground level, with higher level flights having relatively limited or no disturbance effects. It should be noted that all aircraft considered by this study were small planes or military jets which are more likely to fly at lower altitudes and be noisier and more disturbing that larger fixed wing aircraft.

Paragraphs 4.2.5 and **4.2.6** describe the height at which air-borne pollutant from aircraft cease to affect receptors at ground level (305m above ground level). Aircraft will be flying above 305m when further than 6km from take-off. Given the distances of the SPA and Ramsar from the Proposed Development aircraft will be far too high to cause visual and/or noise disturbance to birds on the ground.

Paragraph 4.2.13 confirms that there is also no habitat within 2km of the Proposed Development that is likely to be used by birds from this SPA site. There is therefore no pathway for effect on qualifying species of the SPA.

B.2.4. HRA Screening Matrix 4: Lee Valley Ramsar

Name of European Site and designation: Lee Valley Ramsar						
EU Code: UK11034.						
Distance to the Main Application Site: 24.4km (23.9km from the Proposed Development and 22km from the ARN						
European site features	**Likely effects of the airport**					
Effect	*Disturbance*			*In combination effects*		
Stage of Development	*C*	*O*	*D*	*C*	*O*	*D*
Wetlands which support: • *a Nationally Rare water-boatman (Micronecta minutissima);* • *the Nationally Scarce whorled water-milfoil;* • *wintering population of gadwall; and,* • *spring/autumn passage population of shoveler.*						

Evidence supporting conclusions:

Paragraph 4.2.14 identifies that Hoang (2013) (Ref. 17) conducted a literature review of aircraft disturbance on shorebirds and seabirds. Of seven studies presented in the literature review which investigated effects on shorebirds, the minimum distance at which disturbance was found to be caused by fixed-wing aircraft was 300m above ground level, with higher level flights having relatively limited or no disturbance effects. It should be noted that all aircraft considered by this study were small planes or military jets which are more likely to fly at lower altitudes and be noisier and more disturbing that larger fixed wing aircraft.

Paragraphs 4.2.5 and **4.2.6** describe the height at which air-borne pollutant from aircraft cease to be deposited on the ground (305m above ground level). Aircraft will be flying above 305m when further than 6km from take-off. Given the distances of the Ramsar from the Proposed Development aircraft will be far too high to cause visual and/ or noise disturbance to birds on the ground.

Paragraph 4.2.13 confirms that there is also no habitat within 2km of the Proposed Development that is likely to be used by birds from this Ramsar site.

APPENDIX C. CITATIONS

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name: Aston Rowant

Unitary Authority/County: Buckinghamshire, Oxfordshire

SAC status: Designated on 1 April 2005

Grid reference: SU727972

SAC EU code: UK0030082

Area (ha): 127.75

Component SSSI: Aston Rowant SSSI

Site description:
Aston Rowant is one of the largest surviving complexes of beech *Fagus sylvatica* woodland, mixed scrub, juniper and chalk grassland in the Chilterns. The woodland is dominated by beech, together with pedunculate oak *Quercus robur*, wild cherry *Prunus avium*, common whitebeam *Sorbus aria*, ash *Fraxinus excelsior*, hazel *Corylus avellana* and holly *Ilex aquifolium*, particularly on the deeper soils of the plateau. The ground flora includes sanicle *Sanicula europaea*, dog's mercury *Mercurialis perennis*, sweet woodruff *Galium odoratum*, wood dog-violet *Viola riviniana*, yellow archangel *Lamiastrum galeobdolon* and bramble *Rubus fruticosus* agg. in the open areas. The woods also contain a number of uncommon plants characteristic of the Chilterns beechwoods including violet helleborine *Epipactis purpurata*, white helleborine *Cephalanthera damasonium* and wood barley *Hordelymus europaeus*.

In the dry coombes there are stands of open scrub dominated by juniper *Juniperus communis*, intermixed with grassland. Mixed scrub of elder *Sambucus nigra*, privet *Ligustrum vulgare*, hawthorn *Crataegus monogyna*, wayfaring-tree *Viburnum lantana*, buckthorn *Rhamnus cathartica*, yew *Taxus baccata*, whitebeam, dogwood *Cornus sanguinea* and bramble is present on Beacon Hill and on the margins of the juniper scrub. The scrub also contains heavily rabbit-grazed areas with bare ground colonised by wild candytuft *Iberis amara*, a species with a British distribution centred on the Chilterns.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)
- *Juniperus communis* formations on heaths or calcareous grasslands. (Juniper on heaths or calcareous grasslands)

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0030082
Date of registration: 14 June 2005

Signed: Trevor Salmon

On behalf of the Secretary of State for Environment, Food and Rural Affairs

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Chilterns Beechwoods
Unitary Authority/County:	Buckinghamshire, Hertfordshire, Oxfordshire, Windsor and Maidenhead
SAC status:	Designated on 1 April 2005
Grid reference:	SP975134
SAC EU code:	UK0012724
Area (ha):	1276.48
Component SSSI:	Ashridge Commons and Woods SSSI, Aston Rowant Woods SSSI, Bisham Woods SSSI, Bradenham Woods, Park Wood and The Coppice SSSI, Ellesborough and Kimble Warrens SSSI, Hollowhill and Pullingshill Woods SSSI, Naphill Common SSSI, Tring Woodlands SSSI, Windsor Hill SSSI

Site description:
The Chilterns Beechwoods represent a very extensive tract of ancient semi-natural beech *Fagus sylvatica* forests in the centre of the habitat's UK range. The woodland is an important part of a mosaic with species-rich chalk grassland and scrub. A distinctive feature in the woodland flora is the occurrence of the rare coralroot *Cardamine bulbifera*. Standing and fallen dead timber provide habitat for dead-wood (saproxylic) invertebrates, including stag beetle *Lucanus cervus*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*). (Dry grasslands and scrublands on chalk or limestone)

Qualifying species: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following species listed in Annex II:

- Stag beetle *Lucanus cervus*

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0012724
Date of registration: 14 June 2005
Signed: Trevor Salmon
On behalf of the Secretary of State for Environment, Food and Rural Affairs

EC Directive 79/409 on the Conservation of Wild Birds: Special Protection Area (SPA)

Name: Lee Valley

Unitary Authority/County: Essex, Hertfordshire, London Borough of Haringey and London Borough of Waltham Forest.

Consultation proposal: Amwell Quarry Site of Special Scientific Interest (SSSI), Rye Meads SSSI, Turnford & Cheshunt Pits SSSI and Walthamstow Reservoirs SSSI have been recommended as a Special Protection Area because of the site's European ornithological interest.

The Lee Valley SPA comprises a series of embanked water supply reservoirs, sewage treatment lagoons and former gravel pits that display a range of man-made and semi-natural wetland and valley bottom habitats.

Boundary of SPA: The SPA boundary is coincident with the above SSSI boundaries. See SPA map for further detail.

Size of SPA: The SPA covers an area of 447.87 ha.

European ornithological interest of SPA: The SPA is of European importance because:

a) the site qualifies under **article 4.1** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of a species listed on Annex I, in any season:

Annex I species	5 year peak mean 1992/93 - 1996/97	% GB population
Bittern *Botaurus stellaris*	6 individuals - wintering	6%

b) the site qualifies under **article 4.2** of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species (other than those listed on Annex I), in any season:

Migratory species	5 year peak mean 1993/94 -1997/98	% of population
Shoveler *Anas clypeata*	406 individuals - wintering	1.0% NW/Central Europe
Gadwall *Anas strepera*	456 individuals - wintering	1.5% NW Europe

Bird figures from: Wetland Bird Survey (WeBS) database.

Non-qualifying species of interest
In addition, the site supports nationally important numbers of Cormorant *Phalacrocorax carbo*, Great Crested Grebe *Podiceps cristatus*, Tufted Duck *Aythya fuligula*, Pochard *Aythya ferina* and Grey Heron *Ardea cinerea*.

Status of SPA
Lee Valley was classified as a Special Protection Area on 22 September 2000.

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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

FOR OFFICE USE ONLY.

DD MM YY

Designation date | Site Reference Number

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

2. Date this sheet was completed/updated:

Designated: 22 September 2000

3. Country:

UK (England)

4. Name of the Ramsar site:

Lee Valley

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

Refer to Annex III of the *Explanatory Notes and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:

i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* □;
ii**) an electronic format** (e.g. a JPEG or ArcView image) Yes
iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* □;

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

51 34 51 N 00 02 58 W

9. General location:

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

The Lee Valley site comprises four SSSIs spaced along the valley from just downstream of Ware in Hertfordshire to Finsbury Park in London, a total distance of about 24 km. The whole site is contained within the Lee Valley Regional Park.

Administrative region: Essex; Greater London; Hertfordshire

10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 447.87

Min. 10
Max. 29
Mean 20

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Lee Valley comprises a series of embanked water supply reservoirs, sewage treatment lagoons and former gravel pits along approximately 24 km of the valley. These waterbodies support internationally important numbers of wintering gadwall and shoveler and nationally important numbers of several other bird species.

The site also contains a range of wetland and valley bottom habitats, both man-made and semi-natural, which support a diverse range of wetland fauna and flora.

13. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

2, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar Criterion 2

The site supports the nationally scarce plant species whorled water-milfoil *Myriophyllum verticillatum* and the rare or vulnerable invertebrate *Micronecta minutissima* (a water-boatman).

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

Qualifying Species/populations (as identified at designation):

Species with peak counts in spring/autumn:

Northern shoveler , *Anas clypeata*, NW & C Europe	287 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Gadwall , *Anas strepera strepera*, NW Europe	445 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)

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

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Soil & geology	neutral, mud, clay, alluvium, nutrient-rich, gravel
Geomorphology and landscape	lowland, valley, floodplain
Nutrient status	highly eutrophic
pH	circumneutral
Salinity	fresh
Soil	no information
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Greenwich, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/greenwich.html) Max. daily temperature: 14.8° C Min. daily temperature: 7.2° C Days of air frost: 29.1 Rainfall: 583.6 mm Hrs. of sunshine: 1461.0

General description of the Physical Features:

A series of wetlands and reservoirs occupy about 20 km of the Lee valley. The site comprises embanked water supply reservoirs, sewage treatment lagoons and former gravel pits that support a range of man-made, semi-natural and valley bottom habitats.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

A series of wetlands and reservoirs occupy about 20 km of the Lee valley. The site comprises embanked water supply reservoirs, sewage treatment lagoons and former gravel pits that support a range of man-made, semi-natural and valley bottom habitats.

18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Other, Maintenance of water quality (removal of nutrients), Water supply

19. Wetland types:

Human-made wetland, Inland wetland

Code	Name	% Area
7	Gravel / brick / clay pits	30
6	Reservoirs / barrages / dams	30
Other	Other	29
8	Sewage farms	7
U	Peatlands (including peat bogs swamps, fens)	4

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Open water, plus associated wetland habitats including reedbeds, fen grassland and woodland supporting a number of wetland plant and animal species including internationally important numbers of wintering wildfowl.

Ecosystem services

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Nationally important species occurring on the site
Higher Plant
Myriophyllum verticillatum (nationally scarce)

Invasive non-natives:
Impatiens glandulifera, Fallopia japonica

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in **12**. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Birds

Species currently occurring at levels of national importance:

Species with peak counts in spring/autumn:

Great cormorant , *Phalacrocorax carbo carbo*, NW Europe	419 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)
Tufted duck , *Aythya fuligula*, NW Europe	2081 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9-2002/3)
Common coot , *Fulica atra atra*, NW Europe	2032 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Great bittern , *Botaurus stellaris stellaris*, W Europe, NW Africa	1 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Smew , *Mergellus albellus*, NW & C Europe	14 individuals, representing an average of 3.7% of the GB population (5 year peak mean 1998/9-2002/3)
Water rail , *Rallus aquaticus*, Europe	17 individuals, representing an average of 3.7% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information

Nationally important species occurring on the site
Invertebrate
Micronecta minutissima (RDB3)

Invasive non-native:
Mustela vison

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23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Environmental education/ interpretation
Non-consumptive recreation
Scientific research
Sport fishing
Tourism

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	+
Local authority, municipality etc.	+	+
Private	+	+
Other	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	+
Fishing: recreational/sport	+	+
Freshwater aquaculture		+
Grazing (unspecified)		+
Industry		+
Sewage treatment/disposal	+	+
Flood control		+
Mineral exploration (excl. hydrocarbons)		+
Transport route		+
Domestic water supply	+	+
Urban development		+
Non-urbanised settlements		+

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

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

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
No factors reported	NA				

For category 2 factors only. What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	+
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	+
Site management statement/plan implemented	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

· Wetland Bird Survey counts
· Various University of Hertfordshire projects
· Ongoing SSSI unit monitoring

· Rye Meads used for experimental study of fish predation by cormorants
· Monitoring of recently created reedbed at Rye Meads

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Various activities organised by Lee Valley Regional Park Authority. Schools visits to Rye Meads RSPB reserve. Projects by University of Hertfordshire students. The Heritage Lottery Fund is considering a partnership bid for funds for a new visitor centre at Rye Meads.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The whole site is within the Lee Valley Regional Park, with a large area forming the River Lee Country Park. The whole site supports high levels of visitor pressure; principally for purposes of angling, walking, cycling and birdwatching; with boating on the adjacent canal. These activities are mostly well regulated and at current levels are not considered to threaten the interest (although they may reduce the potential for enhancing the interest).

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

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

33. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see **15** above), list full reference citation for the scheme.

Site-relevant references

Batten, LA, Bibby, CJ, Clement, P, Elliot, GD & Porter, RF (1990) *Red Data Birds in Britain. Action for rare, threatened and important species*. Poyser, London, for Nature Conservancy Council and Royal Society for the Protection of Birds

Bibby, CJ (1981) Wintering bitterns in Britain. *British Birds*, **74**(1), 1-10

Day, JCU & Wilson, J (1978) Breeding bitterns in Britain. *British Birds*, **71**, 285-300

Fox, AD (1988) Breeding status of the gadwall in Britain and Ireland. *British Birds*, **81**(1), 51-66

Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge. www.wwt.org.uk/publications/default.asp?PubID=14

Rose, PM & Scott, DA (1997) *Waterfowl population estimates*. 2nd edn. Wetlands International, Wageningen (Wetlands International Publication, No. 44) www.wetlands.org/IWC/wpe2/WPE2-toc.htm

Stone, BH, Sears, J, Cranswick, PA, Gregory, RD, Gibbons, DW, Rehfisch, MM, Aebischer, NJ & Reid, JB (1997) Population estimates of birds in Britain and in the United Kingdom. *British Birds*, **90**(1), 1-22

Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.) www.jncc.gov.uk/UKSPA/default.htm

Stroud, DA, Mudge, GP & Pienkowski, MW (eds.) (1990) *Protecting internationally important bird sites: a review of the EEC Special Protection Area Network in Great Britain*. Nature Conservancy Council, Peterborough

Tucker, GM & Heath, MF (1994) *Birds in Europe: their conservation status*. BirdLife International, Cambridge (BirdLife Conservation Series, No. 3)

Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone**: +41 22 999 0170** • Fax: **+41 22 999 0169** • email: [redacted]

EC Directive 92/43 on the Conservation of Natural Habitats and of Wild Fauna and Flora

Citation for Special Area of Conservation (SAC)

Name:	Wormley Hoddesdonpark Woods
Unitary Authority/County:	Hertfordshire
SAC status:	Designated on 1 April 2005
Grid reference:	TL320059
SAC EU code:	UK0013696
Area (ha):	335.53
Component SSSI:	Wormley Hoddesdonpark Wood North SSSI, Wormley Hoddesdonpark Wood South SSSI

Site description:
Wormley Hoddesdonpark Woods has large stands of almost pure hornbeam *Carpinus betulus* (former coppice), with sessile oak *Quercus petraea* standards. Areas dominated by bluebell *Hyacinthoides non-scripta* do occur, but elsewhere there are stands of great wood-rush *Luzula sylvatica* with carpets of the mosses *Dicranum majus* and *Leucobryum glaucum*. Locally, a bryophyte community more typical of continental Europe occurs, including the mosses *Dicranum montanum*, *D. flagellare* and *D. tauricum*.

Qualifying habitats: The site is designated under **article 4(4)** of the Directive (92/43/EEC) as it hosts the following habitats listed in Annex I:

- Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*. (Oak-hornbeam forests)

This citation relates to a site entered in the Register of European Sites for Great Britain.
Register reference number: UK0013696
Date of registration: 14 June 2005
Signed: Trevor Salmon
On behalf of the Secretary of State for Environment, Food and Rural Affairs

GLOSSARY AND ABBREVIATIONS

Term	Definition
AA	Appropriate Assessment
AADT	Annual Average Daily Traffic
AGL	Above ground level
ARN	Affected Road Network
CJEU	Court of Justice of the European Union
Critical load	The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.
DART	Direct Air to Rail Transit
DCO	Development Consent Order
DMRB	Design Manual for Roads and Bridges
EEA	European Economic Area
EIA	Environmental Impact Assessment
EPUK	Environmental Protection UK
ES	Environmental Statement
ft	Feet
GWDTE	Groundwater Dependent Terrestrial Ecosystem
JNCC	Joint Nature Conservation Committee
km	Kilometre
Ha	Hectares
HNO_3	Nitric acid
HRA	Habitats Regulations Assessment
ICAO	International Civil Aviation Organization
LALL	London Luton Airport
m	metre
MAGIC	Multi-Agency Geographic Information for the Countryside
mppa	Million Passengers Per Annum
μgm^{-3}	Microgram per cubic metre
N	Nitrogen
NSER	No Significant Effects Report
NE	Natural England
NH_3	Ammonia
NH_4+	Ammonium
NO2	Nitrogen Dioxide

Term	Definition
NO3	Nitrates
NOx	Oxides of nitrogen
PEIR	Preliminary Environmental Information Report
SAC	Special Area of Conservation
SO_2	Sulphur dioxide
SPA	Special Protection Area
Ramsar	A wetland of international importance identified under The Convention on Wetlands, known as the Ramsar Convention

REFERENCES

Ref 1 The Conservation of Habitats and Species Regulations 2017 (as amended). His Majesty's Stationary Office, London
Ref 2 [redacted]
Ref 3 Planning Inspectorate (2022). Advice Note Ten: Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects (version 9) https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-ten/
Ref 4 Tyldesley, D. & Chapman, C. (2022). The Habitats Regulations Assessment Handbook
Ref 5 Tyldesley, D. & Chapman, C. (2018). People Over Wind - some Implications of the Judgment. The Habitat Regulations Journal, 10, 19 to 23
Ref 6 Multi-Agency Geographic Information for the Countryside (MAGIC) website. For locations of Statutory Nature Conservation Sites and Habitats of Principal Importance. Available at www.magic.defra.gov.uk
Ref 7 Joint Nature Conservation Committee (JNCC) website. For details of Statutory Nature Conservation Sites. Available at https://jncc.gov.uk
Ref 8 Highways England (2020) Design Manual for Roads and Bridges LA115 Habitats Regulations Assessment (Jan 2020).
Ref 9 Highways England (2020) Design Manual for Roads and Bridges LA105 Air Quality (Nov 2019).
Ref 10 Natural England website. For details on European Sites http://publications.naturalengland.org.uk/category/6490068894089216
Ref 11 SKYbrary Aviation Safety (2021). Fuel Dumping: Guidance for Flight Crews
Ref 12 Peter Charles Boggis and Easton Bavants Conservation v Natural England and Waveney District Council, High Court of Justice Court of Appeal case C1/2009/0041/QBACF Citation No [2009] EWCA Civ. 1061 20th October 2009
Ref 13 UK Air Pollution Information System website https://www.apis.ac.uk/overview/pollutants/overview_SO2.htm
Ref 14 International Civil Aviation Organization (2011). Doc 9889, Airport Air Quality Manual. ICAO, Montreal.
Ref 15 Department for Transport (2021). Transport Analysis Guidance
Ref 16 Natural England Commissioned Report NECR207: *Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – a review of authoritative decisions.* 29 February 2016.
Ref 17 Hoang, T. (2013). *A literature review of the effects of aircraft disturbances on seabirds, shorebirds and marine mammals.* Presented to NOAA, Greater Farallones National Marine Sanctuary and the Seabird Protection Network.