EASTERLY ALTERNATION INFRASTRUCTURE PROJECT

Environmental Impact Assessment
Environmental Statement, Volume II
Chapter 12: Biodiversity

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12.1 Introduction

12.1.1 This Chapter reports the outcome of the assessment of effects arising from the Proposed Development with respect to terrestrial ecology and ornithology. This Chapter details the methodology used within the Ecological Impact Assessment (EcIA), an overview of the baseline conditions, justification for the effects included or excluded from assessment, and finally the results of the assessments of these effects.

12.1.2 Details of the data and sources of information used to inform this assessment can be found in **Section 12.3**.

12.1.3 This Chapter should be read in conjunction with:

- **Chapter 3: Description of the Proposed Development**;
- **Chapter 6: Air Quality**; and
- **Chapter 7: Noise and Vibration**.

12.1.4 This Chapter is supported by:

- **Appendix 12.1: Report to Inform the Appropriate Assessment;**
- **Appendix 12.2: HRA Screening Report;**
- **Appendix 12.3: Preliminary Ecological Appraisal**;
- **Appendix 12.4: Biodiversity Net Gain Assessment**;
- **Appendix 12.5: Justification for Scoped Out Ecological Features**;
- **Appendix 12.6: Arboricultural Impact Assessment**; and
- **Appendix 12.7: Biodiversity Figures**.

12.1.5 Habitats Regulations Assessment (HRA) reports of the effects of the Proposed Development on nearby European designated sites have also been provided in **Appendix 12.1: Report to Inform the Appropriate Assessment** and **Appendix 12.2: HRA Screening Report**. **Appendix 12.1: Report to Inform the Appropriate Assessment** provides the LBH with the information necessary to enable compliance with duties under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) (the “Habitats Regulations”).

12.1.6 A Preliminary Ecological Appraisal (PEA) for the Proposed Development was completed in 2023. This is provided as **Appendix 12.3: Preliminary Ecological Appraisal**.

12.1.7 Provisional Biodiversity Net Gain (BNG) calculations have been completed for the Proposed Development and are provided as **Appendix 12.4: Biodiversity Net Gain Assessment**.

12.2 Relevant legislation, policy and technical guidance

12.2.1 This section identifies the relevant legislation, planning policy and technical guidance that has informed the assessment of effects with respect to biodiversity. Further information on policies relevant to the Proposed Development is provided in **Chapter 4: Legislation, Policy Context and Planning History**.

12.2.2 A summary of relevant planning policy is provided in **Table 12.1**.

Table 12.1 Summary of planning policy relevant to biodiversity

Policy reference	Summary
National planning policies	
National Planning Policy Framework (NPPF)[1] - December 2023	Section 15, paragraph 180 requires planning policies and decisions to contribute and enhance the local and natural environment by minimising impacts on these features and providing net gains for biodiversity. Paragraph 185 states that to protect and enhance biodiversity, plans should: "*Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation.*" And promote: "*The conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*" Paragraph 186 states that when determining planning applications, if significant harms to biodiversity cannot be avoided, mitigated, or compensated for, then planning permission should be refused. Planning permission should also be refused if irreplaceable habitats are lost or deteriorate as a result of a development.
The Airports National Policy Statement: new runway capacity and infrastructure at airports in the	The Airports National Policy Statement (ANPS) forms part of the overall framework of national policy and may be a material consideration in making decisions on Town and Country Planning Act 1990 (TCPA)[3] planning applications. The following paragraphs are most relevant to biodiversity: Paragraphs 5.84 to 5.105. Of particular note is paragraph 5.85 which states:

[1] Department for Levelling Up, Housing and Communities (2023) *National Planning Policy Framework*. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf [Accessed: 14 October 2024].

[3] HM Government (1990) *The Town and Country Planning Act 1990 (as amended)*. [Online] Available at: https://www.legislation.gov.uk/ukpga/1990/8/contents [Accessed: 14 October 2024].

Policy reference	Summary
south east of England[2]	"*The Government's biodiversity strategy is set out in Biodiversity 2020: A Strategy for England's wildlife and ecosystem services. Its aim is to halt overall biodiversity loss, support healthy, well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people*."
A Green Future: Our 25 Year Plan to Improve the Environment[4]	This document lays down the UK Government's 25 Year Environment Plan, a which aims to achieve the following: a) Clean air; b) Clean and plentiful water; c) Thriving plants and wildlife; d) A reduced risk of harm from environmental hazards such as flooding and drought; e) Using resources from nature more sustainably and efficiently; f) Enhanced beauty, heritage and engagement with the natural environment; g) Mitigating and adapting to climate change; h) Minimizing waste; i) Managing exposure to chemicals; j) Enhancing biosecurity. To achieve these objectives, the Plan defines actions to be undertaken in the following six key areas: 1) Using and managing land sustainably; 2) Recovering nature and enhancing the beauty of landscapes; 3) Connecting people with the environment to improve health and wellbeing; 4) Increasing resource efficiency and reducing pollution and waste; 5) Securing clean, productive and biologically diverse seas and oceans; 6) Protecting and improving the global environment.
Local planning policies	
The London Plan 2021[5] **Policy G6**	Under Policy G6 require protection of protected species and habitats as follows: "*A - Sites of Importance for Nature Conservation (SINCs) should be protected. And.* *C - Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:* *1) avoid damaging the significant ecological features of the site* *2) Minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site* *3) deliver off-site compensation of better biodiversity value.* *D - Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process.*"

[2] Department for Transport (2018) *Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England*. [online] Available at: https://assets.publishing.service.gov.uk/media/5e2054fc40f0b65dbed71467/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf [Accessed: 14 October 2024].

[4] Department for Environment, Food and Rural Affairs (2023) *A Green Future: Our 25 Year Plan to Improve the Environment*. Available at: https://www.gov.uk/government/publications/25-year-environment-plan [Accessed: 14 October 2024].

[5] Greater London Authority (2021) *The London Plan*. [online] Available at: https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf [Accessed: 14 October 2024].

Policy reference	Summary
Hillingdon Local Plan Policy EM1[6]	The LBH will ensure that climate change mitigation is addressed at every stage of the development process.
Hillingdon Local Plan Policy EM7[6]	The LBH will ensure that biodiversity and geodiversity value of Sites of Importance for Nature Conservation (SINCs) will be protected and enhanced. Populations of protected species/species and habitats identified on Biodiversity Action Plans will be protected and enhanced. The council will look for biodiversity improvements to be made as part of all developments where feasible.
Hillingdon Local Plan Strategic Objective SO8[6]	Supporting the key policies are a number of strategic objectives including; "*SO8: Protect and enhance biodiversity to support the necessary changes to adapt to climate change. Where possible, encourage the development of wildlife corridors.*"
London Borough of Hillingdon Local Plan Part 2[7]. Policy DMEI 7: Biodiversity Protection and Enhancement	This policy states that: a) "*The design and layout of new development should retain and enhance any existing features of biodiversity or geological value within the site. Where loss of a significant existing feature of biodiversity value is unavoidable, replacement features of equivalent biodiversity value should be provided on-site. Where development is constrained and cannot provide high quality biodiversity enhancements on site, then appropriate contributions will be sought to deliver off-site improvements through a legal agreement.* b) *If development is proposed on or near to a site considered to have features of ecological of geological value, applicants must submit appropriate surveys and assessments to demonstrate that the Proposed Development would not have unacceptable effects. The development must provide a positive contribution to the protection and enhancement of the site or feature of value.* c) *All development alongside, or that benefits from a frontage on to a main river or the Grand Union Canal will be expected to contribute to additional biodiversity improvements.* d) *Proposals that result in significant harm to biodiversity which cannot be avoided, mitigated, or, as a last resort, compensated for, will normally be refused.*"
London Borough of	Development proposals within the Heathrow Airport boundary will only be supported where:

[6] London Borough of Hillingdon (2012) *Hillingdon Local Plan: Part 1 – Strategic Policies*. [online] Available at: https://www.hillingdon.gov.uk/media/3080/Local-Plan-Part-1---Strategic-Policies/pdf/npLocal_Plan_Part_1_Strategic_Policies_15_feb_2013_a_1_1.pdf?m=1598370401647 [Accessed: 14 October 2024].

[7] London Borough of Hillingdon (2020) *Hillingdon Local Plan Part 2: Development Management Policies*. [online] Available at: https://www.hillingdon.gov.uk/media/3084/Hillingdon-Local-Plan-Part-2-Development-Management-Policies/pdf/pdLPP2_Development_Management_Policies_-_ADOPTED_VERSION_JAN_2020_1.pdf?m=1598370641570 [Accessed: 02 October 2024].

Policy reference	Summary
Hillingdon Local Plan Part 2[7]. Policy DMAV 2: Heathrow Airport	*iv)* "*there are no other significant adverse environmental impacts; where relevant, an environmental impact and/or transport assessment will be required with appropriate identification of mitigation measures; and* *v) they comply with all other relevant policies of the Local Plan.*"

Legislation

12.2.3 The following legislation, as presented in **Table 12.2** is relevant to the assessment of the effects on identified biodiversity receptors:

Table 12.2 Summary of biodiversity legislation relevant to the Proposed Development

Legislation	Summary
The Environment Act 2021[8]	The Environment Act 2021 translates aspects of the UK Government's A Green Future: Our 25 Year Plan to Improve the Environment[4] plan into legislation. The Environment Act has made it mandatory for the vast majority of development projects to deliver a 10% BNG as a requirement of their consent. The Environment Act 2021 inserted Schedule 7A to the TCPA 1990[3] which, together with various implementing regulations, now sets out the statutory framework for the provision of BNG in connection with development.
The Conservation of Habitats and Species Regulations 2017 (as amended)[9]	The Conservation of Habitats and Species Regulations 2017 (as amended) transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') and elements of Directive 2009/147/EC on the conservation of wild birds ('the Birds Directive') in England. The Conservation of Habitats and Species Regulations 2017 (as amended) provide for the designation and protection of "*European sites*", the protection of "*European protected species*", and the adaptation of planning and other controls for the protection of European Sites. Under the Regulations, competent authorities have a general duty to have regard to the Habitats Directive. Provides legal protection of animals listed in schedule two and plants in schedule five of the legislation. The Regulations are amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[10] following the United Kingdom's withdrawal from the European Union (EU). These changes, allow for new administrative and regulatory arrangements and the creation of a national site network comprising the protected sites already designated under the Habitats and Birds Directives, and any further sites designated under these Regulations.

[8] HM Government (2021) *Environment Act 2021*. [online] Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents [Accessed: 14 October 2024].

[9] HM Government (2017) *The Conservation of Habitats and Species Regulations 2017*. [online] Available at: https://www.legislation.gov.uk/uksi/2017/1012/contents [Accessed: 14 October 2024].

[10] HM Government (2019) *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*. [online] Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111176573 [Accessed: 14 October 2024].

Legislation	Summary
Natural Environment and Rural Communities (NERC) Act 2006[11] (as amended)	Section 40 of the NERC Act 2006 states "*every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving and enhancing biodiversity.*" The NERC Act 2006 also places a duty on the Secretary of State under Section 41 of the Act[11] to maintain lists of species and habitats which are regarded as being of principal importance for the conservation of biodiversity in England. These Habitats of Principal Importance (HPI) and Species of Principal Importance (SPI) are used to guide decision makers in implementing their duties to have regard to the conservation of biodiversity in England when carrying out their normal functions.
Countryside and Rights of Way Act (CRoW) 2000[12]	*The* CRoW Act 2000, amongst other elements, details further measures for the management and protection of Sites of Special Scientific Interest (SSSIs) and strengthens wildlife enforcement legislation.
Badger Act 1992[13]	The Badger Act 1992 provides legal protection for badgers by making it illegal to kill or injure a badger, disturb a badger while occupying a sett, or to damage or obstruct a badger sett.
Wildlife and Countryside Act (WCA) 1981 (as amended)[14]	The WCA 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in England and is the mechanism by which the Convention on the Conservation of European Wildlife and Natural Habitats (the "Bern Convention") is implemented in England. The WCA 1981 (as amended) affords various levels of protection to species of plants and animals listed in Schedules one, five, six, and eight of the Act, with Schedule nine listing species which it is an offence to allow to spread in the wild.

Technical guidance

12.2.4 A summary of the technical guidance for assessing biodiversity is given in **Table 12.3**.

Table 12.3 Summary of technical guidance for biodiversity relevant to the Proposed Development

Reference	Summary
Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact	Provides guidance that is relevant to the assessment of likely significant effects on biodiversity.

[11] HM Government (2006) *Natural Environment and Rural Communities Act 2006*. [online] Available at: https://www.legislation.gov.uk/ukpga/2006/16/contents [Accessed: 14 October 2024].

[12] HM Government (2000) *Countryside and Rights of Way Act 2000*. [online] Available at: https://www.legislation.gov.uk/ukpga/2000/37/contents [Accessed: 14 October 2024].

[13] HM Government (1992) *Protection of Badgers Act 1992*. [online] Available at: https://www.legislation.gov.uk/ukpga/1992/51/contents [Accessed: 14 October 2024].

[14] HM Government (1981) *Wildlife and Countryside Act 1981*. [online] Available at: https://www.legislation.gov.uk/ukpga/1981/69 [Accessed: 14 October 2024].

Reference	Summary
Assessment in the UK and Ireland: Terrestrial, Freshwater, and Coastal[15] 2019	
Guidelines for Preliminary Ecological Appraisals (PEAs) 2017[16]	Provides best practice guidance for those undertaking PEAs within the UK.
The Statutory Biodiversity Metric – User Guide (2024)[17]	Provides details of how to use and apply the Statutory Metric.
Bat Survey Guidelines for Professional Ecologists: Good Practice Guidelines[18]	Provides guidance on the recommended level of bat survey effort to fully assess project impacts on roosting and foraging/commuting bats within the UK.
Ecology of the European Otter[19]	Provides guidance on otter ecology and habitat requirements within the UK, including within freshwater and coastal habitats.
Bird Monitoring Methods: A Manual of Techniques for Key UK Species 1998[20]	Provides guidance for surveying and monitoring techniques to assess breeding success and monitor population levels for UK bird species.
Surveying Badgers 1989[21]	Provides best practice guidance for surveying for and assessing badger activity within the UK.

[15] Chartered Institute of Ecology and Environmental Management (2019) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, and Coastal*. [online] Available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010044/TR010044-001949-Cambridgeshire%20County%20Council,%20Huntingdonshire%20District%20Council%20and%20South%20Cambridgeshire%20District%20Council%20-%20CIEEM%20-%20Guidelines%20for%20Ecological%20Impact%20Assessment%20in%20the%20UK%20and%20Ireland.pdf [Accessed: 14 October 2024].

[16] Chartered Institute of Ecology and Environmental Management (2017) *Guidelines for Preliminary Ecological Appraisal, second edition*. [online] Available at: https://cieem.net/wp-content/uploads/2019/02/Guidelines-for-Preliminary-Ecological-Appraisal-Jan2018-1.pdf [Accessed: 14 October 2024].

[17] Department for Environment Food and Rural Affairs (2024) The Statutory Biodiversity Metric – User Guide. [online] Available at: https://assets.publishing.service.gov.uk/media/65c60e0514b83c000ca715f3/The_Statutory_Biodiversity_Metric_-_User_Guide_.pdf [Accessed: 14 October 2024].

[18] The Bat Conservation Trust Bat Conservation Trust (2023) *Bat Surveys for Professional Ecologists: Good Practice Guidelines, 4th edition*. Available at: https://cdn.bats.org.uk/uploads/pdf/Resources/For-professionals/Bat-Survey-Guidelines-4th-edition-AMENDED-27.03.24.pdf?v=1711530492&_gl=1*13arcps*_ga*MTc4NzQzNDA3NS4xNzI4OTAzMjA1*_ga_G28378TB9V*MTcyODkwMzIwNS4xLjAuMTcyODkwMzIwNS4wLjAuMA. [Accessed: 14 October 2024].

[19] Chanin, P. (2003) *Ecology of the European Otter*. [online] Available at: https://publications.naturalengland.org.uk/file/82038 [Accessed: 14 October 2024].

[20] Gilbert, G., Gibbons, D. and Evans, J. (1998) *Bird Monitoring Methods: A Manual of Techniques for Key UK Species*.

[21] The Mammal Society (1989) *Surveying Badgers*.

Reference	Summary
Great crested newt mitigation guidelines 200122	Provides good practice guidance for surveying for and assessing great crested newt (GCN) (*Triturus cristatus*) populations within the UK.
Survey protocols for British herpetofauna 2013[23]	Provides good practice guidance for surveying for and assessing populations of reptiles within the UK.

12.3 Baseline conditions

Defining the Study Area

12.3.1 The potential for effects on biodiversity receptors depends upon the geographical "Zone of Influence" (ZoI); the area within which the environmental changes could affect receptors. In establishing the extent of the ZoI for biodiversity, consideration has been paid to the nature of the activities associated with the Proposed Development both at the construction and operational phases.

12.3.2 For the purposes of this assessment of biodiversity effects, two separate Study Areas, a "Core Biodiversity Study Area" and an "Extended Biodiversity Study Area", have been used when identifying potential effects relating to the construction and operational phases of the Proposed Development, in particular, with respect to European Sites.

12.3.3 The Proposed Development includes a relatively small area for construction works and are restricted to areas within the operational airfield to facilitate changes to taxiways and an area for the construction of a noise barrier at the north-western end of the northern runway. **Figure 12.1** of **Appendix 12.7: Biodiversity Figures** shows the Survey area and the defined ZoI for the construction phase of the Proposed Development and is defined as the "Core Biodiversity Study Area".

12.3.4 For effects during construction, the ZoI has been defined as follows:

- Those areas that will be directly affected by the enabling works; and
- The land surrounding the Proposed Development to a radius of 2km so that biodiversity receptors that could be affected by construction activities can be considered (this being a precautionary distance for which it is considered that such activities could result in changes to the baseline biodiversity environment).

12.3.5 The Survey Area was restricted to areas accessible outside of the Airport boundary, primarily covering the areas of habitat expected to be impacted by the proposed noise barrier construction.

[22] English Nature (2001) *Great Crested Newt Mitigation Guidelines*. [online] Available at: https://mokrady.wbs.cz/literatura_ke_stazeni/great_crested_newt_mitigation_guidelines.pdf [Available at: 14 October 2024].

[23] Sewell, D., Griffiths, R.A., Beebee, T.J.C., Foster, J. and Wilkinson, J.W. (2013) *Survey protocols for British herpetofauna, Version 1.0*. [online] Available at: https://inquiry.leedstrolleybus.org/wp-content/uploads/2015/06/G-4-30.pdf [Accessed: 14 October 2024].

12.3.6 During operation, the Proposed Development would facilitate a change to aircraft movements on both the northern and southern runways during easterly operations and as such the study area has been defined as the current Heathrow Airport ownership boundary. For effects during the operational phase, the ZoI has been defined as follows:

- For protected species and habitats not associated with European Sites, a ZoI of 2km (from the Survey area shown in **Figure 12.1** of **Appendix 12.7**), as used for the construction phase has been applied.
- In consideration of effects on European Sites only (and as detailed in the HRA Report), the ZoI has been extended to a wider and more precautionary distance of up to 18km from the Airport boundary. This has been derived from peer-reviewed scientific literature, and systematically collected and verified data (see **Appendix 12.2**) and is only used when considering the potential for effects related to air quality, disturbance of species associated with European Sites due to increased noise levels and other effects from over flying, and the risk of bird strike.

12.3.7 **Figure 12.2** (**Appendix 12.7**) shows the Airport boundary and the defined ZoI for the operational phase of the Proposed Development and is defined as the "Extended Biodiversity Study Area".

12.3.8 The biodiversity desk study includes an ecological data search which aimed to collect information on:

- European (protected) Sites up to 18km from the Airport boundary;
- National statutory and non-statutory nature conservation sites and Habitats of Principal Importance (as identified in the Natural England Priority Habitats Inventory[24] occurring either on the Airport, or within a 2km radius of the enabling works; and
- Legally protected or otherwise notable species that occur either on the Airport, or within a 2km radius of the enabling works.

12.3.9 In addition to the desk-based information gathered, a PEA (**Appendix 12.3: Preliminary Environmental Appraisal**) was completed on 03 March 2023 within the area required for the enabling works (the "Survey Area"). Following changes to the Proposed Development and the increased extent of the noise barrier, additional visits to review the habitats present were also completed on 26 October 2023 and 17 April 2024. This only included access to the areas outside of the operational airfield. Full details of this survey are provided in the PEA (included as **Appendix 12.3**). **Figure 12.3** (**Appendix 12.7**) shows the area subject to habitat survey and is defined as "the Survey Area".

Sources of Information

12.3.10 Sources of desk study biodiversity information used to inform the assessment are summarised in **Table 12.4**

[24] Natural England (2024) *Priority Habitats Inventory (England)*. [online] Available at: https://www.data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitats-inventory-england [Accessed: 14 October 2024].

Table 12.4 Summary of sources of desk study biodiversity information

Data	Data source
Statutory biodiversity sites	Joint Nature Conservation Committee (JNCC) and the Multi-Agency Geographic Information for the Countryside (MAGIC) website[25].
Non-statutory biodiversity sites	Greenspace Information for Greater London / Thames Valley Environmental Records Centre
Ancient woodland	MAGIC website[25]
Records for priority species	Greenspace Information for Greater London/Thames Valley Environmental Records Centre
Records of granted European Protected Species Licenses	MAGIC website[25]
Ponds – (potential GCN breeding habitat	The geographical context of the Proposed Development area was examined using the relevant Ordnance Survey 1:10 000 scale maps and freely available satellite imagery. These were used to identify key landscape features that may be important for GCNs. In particular, the location and connectivity of ponds and other waterbodies within 500m of the Proposed Development area was considered.

Current baseline

12.3.11 A summary of the statutory and non-statutory designated sites present within the Core Biodiversity Study Area and the Extended (European Sites only) Biodiversity Study Area is provided in **Table 12.5** and shown on **Figures 12.1** and **12.2** (**Appendix 12.7**). The current baseline for other ecological features for the area surrounding the Proposed Development is summarised in **Table 12.6**. The biodiversity data used in the preparation of this section has been sourced from:

- An extended phase 1 habitat survey undertaken in August 2011 which accompanied the 2013 application (41573/APP/2013/1288)[26];
- A desk study conducted in 2012;
- Data collected as part of the Heathrow Expansion Project (HEP) (collected between 2017 and 2019);
- An updated PEA (see **Appendix 12.3**) comprising a desk study and site surveys conducted in March 2023 (with additional updates completed in October 2023 and April

[25] Department for Environment Food and Rural Affairs (n.d.) *Magic Map Application*. [online] Available at: https://magic.defra.gov.uk/magicmap.aspx [Accessed: 14 October 2024].

[26] London Borough of Hillingdon (n.d.) *Planning Application Details*. [online] Available at: https://planning.hillingdon.gov.uk/OcellaWeb/planningDetails?reference=41573/APP/2013/1288&back=no [Accessed: 14 October 2024].

2024). Site surveys comprised a UK Habitat Classification Survey (UKHab)[27] survey and assessment of the potential to support protected/notable species within the Proposed Development (excluding areas within the operational Airport boundary); and

- Data and supporting information collated as part of the production of the HRA Report (**Appendix 12.1: Report to Inform Appropriate Assessment** and **Appendix 12.2: HRA Screening Report**).

Table 12.5 Summary of baseline ecological information

Designated Site	Distance from Airport	Summary of Designation
European/International Statutory Designated Sites present within Extended Biodiversity Study Area		
South West London Waterbodies Special Protection Area (SPA)	0.7km from Heathrow Airport Boundary	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 1), in any season: • Gadwall Anas strepera. • Shoveler Anas clypeata.
South West London Waterbodies Ramsar	0.7km from Heathrow Airport Boundary	**Criterion 6** • Gadwall *Anas strepera*. • Shoveler *Anas clypeata*.
Windsor Forest & Great Park Special Areas of Conservation (SAC)	6.8km from Heathrow Airport Boundary	**Annex I Habitats:** • 9190 Old acidophilous oak woods with *Quercus robur* on sandy plains. **Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:** • 9120 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*). **Annex II species:** • 1079 Violet click beetle *Limoniscus violaceus*.
Richmond Park SAC	9km from Heathrow Airport Boundary	**Annex II species:**

[27] UKHab (2020) *UK Habitat Classification – Habitat Definitions V1.1* [online]. Available at https://ukhab.org/ [Accessed: 14 October 2024].

Designated Site	Distance from Airport	Summary of Designation
		• 1083 Stag beetle *Lucanus cervus*.
Thursley, Ash, Pirbright & Chobham SAC	11.6km from Heathrow Airport Boundary	**Annex I Habitats:** • 4010 Northern Atlantic wet heaths with Erica tetralix. • 4030 European dry heaths. • 7150 Depressions on peat substrates of the Rhynchosporion.
Wimbledon Common SAC	12km from Heathrow Airport Boundary	**Annex I Habitats:** • 4010 Northern Atlantic wet heaths with *Erica tetralix.* • 4030 European dry heaths. **Annex II species:** • 1083 Stag beetle *Lucanus cervus.*
Thames Basin Heaths SPA	12km from Heathrow Airport Boundary	**Article 4.2 species:** **Annex II migratory:** • European nightjar *Caprimulgus europaeus.* • Woodlark *Lullula arborea.* • Native: Dartford warbler *Sylvia undata.*
Burnham Beeches SAC	12.5km from Heathrow Airport Boundary	**Annex I Habitats:** • 9120 Atlantic acidophilous beech forests with *ilex* and sometimes also *Taxus* in the shrub layer *Quercion robori-petraeae* or *Ilici-Fagenion.*
National Statutory Designated Sites present within Core Biodiversity Study Area		
Staines Moor Site of Special SSSI	1.7km from Proposed Development	The largest area of alluvial meadow in Surrey, supporting important populations of wintering wildfowl. Waterbodies within the Site support a diverse range of wetland plants, many of which are nationally or locally uncommon.
Wraysbury Reservoir SSSI	1.9km from Proposed Development	The reservoir regularly supports nationally important numbers of wintering cormorant, great crested grebe, gadwall and shoveler.
Non-statutory Designated Sites present within Core Biodiversity Study Area		
Lower Colne SINC (M059) Site of Metropolitan Importance (SMI)	0km from Proposed Development	The Site is roughly 140 hectares (ha) in area and consists of one of the finest river systems in London, including sections of the rivers Colne, Wraysbury and Frays which collectively support a

Designated Site	Distance from Airport	Summary of Designation
		diverse aquatic and marginal flora, including several plants with a restricted London distribution. A short section of the Duke of Northumberland's River is immediately adjacent to the location of the proposed noise barrier.
Old Slade Lake Local Wildlife Site (LWS)	1.3km from Proposed Development	The Site consists of a complex of flooded gravel pits fringed by secondary woodland, scrub, ruderal grassland, tree planting and a stretch of the Colne Brook.
Colne Valley Reservoirs and Gravel Pits Biodiversity Opportunity Area (BOA)	1.9km from Proposed Development	An area of extensive standing water present in the reservoirs and gravel pits which are important sites for birds.

Table 12.6 Identified ecological features and current Proposed Development area baseline

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
Habitats (On airfield)	The habitat survey conducted within the Heathrow Airport boundary as part of the 2013 application (41573/APP/2013/1288)[26] identified the presence of species poor grassland and hard standing. All grassland present within the airfield is managed to a maximum sward height of 15 to 20cm, which is in line with the Airport's bird strike management policy.	The habitat surveys conducted in 2018 did not extend to any habitat located within the airfield boundary.	The PEA conducted in 2023/2024 did not extend to any habitat located within the airfield boundary. A review of aerial imagery of on airfield areas did not find any obvious difference from the habitats recorded previously, with the airfield habitats consisting of grassland with large areas of hard standing present. Given that the grassland is managed in the same way as it was in 2013, it is considered that there will have been no change in the grassland type and quality.	On airfield habitats were considered to be of low quality overall and of limited conservation value. The grassland is managed with a long sward height and low diversity of plant species to deter potential pest species. The habitats supports some bird species (such as skylark and starling) but have been categorised as "Modified Grassland" for the purposes of this assessment and the accompanying BNG calculation.
Habitats (Off Airfield)	The desk study identified the presence of HPIs within 2km of the Proposed Development including reedbeds, purple moor grass and rush pasture, floodplain grazing marsh, lowland meadow, wood pasture and parkland, woodland, acid grassland, standing water, and fen though none were present within the Proposed Development itself. A habitat survey conducted in 2013 identified areas of scattered hazel, crack willow, English oak, and field maple scrub, bordered by species	Habitats identified during the 2018 surveys comprised broad-leaved plantation woodland, amenity grassland, semi-improved grassland, scattered scrub, tall ruderal and dense, continuous scrub.	The PEA undertaken in 2023/2024 identified a range of habitats within the Survey Area. Broadleaved woodland with dense mixed scrub bordering was present along the north-eastern site boundary. The Duke of Northumberland's River flows through the centre of the northern part of the Survey Area, flowing from east to west. It has small areas of marginal vegetation present within the channel; however, the river is highly modified in this area with the	Habitats within the Survey Area were identified to be common and widespread within the surrounding area. The habitats identified have remained consistent between survey years and are subject to regular anthropogenic disturbance and management. The Twin Rivers are a canalised section of the Duke of Northumberland's and Longford River which flows around the western and southern boundary of the Airport.

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	poor grassland. Occasional semi-mature trees were present within the survey area, of the same species composition as the scattered scrub. Patches of emergent and marginal vegetation were present along the edges of the Duke of Northumberland's River. No habitats were identified within the Survey Area that qualified as Habitats of Principal Importance.		banks mostly steep and lacking in dense vegetation. Modified grassland is present adjacent to both sides of the watercourse within the Survey Area. The Survey Area was extended in August 2023 to include a small area of the boundary to the north. The additional walkover survey identified the presence of a hedgerow with trees within the northern section immediately adjacent to an area of hard standing/sealed surface which is part of the car park in this location.	They are part of Heathrow's network of biodiversity sites which provided over 175ha of habitat which is managed for biodiversity and are accredited under the Wildlife Trusts Biodiversity Benchmark.[28]
Notable plant species	No notable plant species were observed during surveys in 2013 with habitats identified unlikely to support such species.	No notable plant species were observed during surveys in 2018 with habitats identified unlikely to support such species.	Records of seven notable plant species were returned within the 2023 desk study, including bluebell, cornflower, and yellow vetchling. The closest record is that of a cornflower located 850m north of the Survey Area boundary. The 2023/2024 PEA did not identify any notable plant species within the Survey Area and the habitats present were subject to regular disturbance and	The habitats present are considered to be of low ecological value, subject to regular anthropogenic disturbance and management and therefore unlikely to support notable or protected plant species.

[28] The Wildlife Trusts (n.d.) *Biodiversity Benchmark*. [online] Available at: https://www.wildlifetrusts.org/partnerships/working-businesses/biodiversity-benchmark. [Accessed: 14 October 2024].

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
			management making the presence of notable plant species unlikely.	
Invertebrates	The 2013 application (41573/APP/2013/1288)[26] did not identify any protected or notable invertebrate species neither was any suitable habitat to support these species identified.	Although detailed invertebrate surveys were conducted as part of the HEP, survey areas did not overlap with the Proposed Development.	Records of 30 notable invertebrate species were returned within the 2023 desk study, including small heath, stag beetle, cinnabar, bearded chestnut, buff ermine, sallow, small squared-spot, and white ermine were returned within the desk study. The closest record is that of a small heath located approximately 250m north-east of the Survey Area boundary. Full details of all records received is provided within the PEA. The closest record was of a small heath located within the Lower Colne River Site of Metropolitan Importance. The 2023/2024 PEA identified common and widespread habitats within the Survey Area that are unlikely to provide suitable habitat to support a significant population of notable invertebrate species.	The habitats present are considered to be of low ecological value, subject to regular anthropogenic disturbance and management and therefore unlikely to support notable or protected invertebrate species.
Common Amphibians	The 2013 application (41573/APP/2013/1288)[26] identified suitable habitat to support common amphibians such as common toad.	Smooth newt and common toad were identified within waterbodies located approximately 200m north of the Proposed Development	No records of common amphibians were returned within the 2023 desk study. Broadleaved woodland and scrub identified within the Survey Area during the 2023/2024 PEA	No water bodies were identified within the 2023 Survey Area, and terrestrial habitats present are of limited value to amphibians as a commuting and foraging resource. The Proposed Development is

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
			provides suitable terrestrial habitat for common amphibians, additionally the PEA identified eight waterbodies within 500 m of the Survey Area. There is therefore a low risk of common amphibians being present within the Survey Area.	isolated due to the presence of major roads limiting potential for amphibians to occur.
Great crested newts	The 2013 application (41573/APP/2013/1288)[26] did not identify any ponds in or within 500 m of the Survey Area. It was concluded that the high density of major roads makes the GCN colonisation highly unlikely. A search of MAGIC[25] returned the presence of no granted European Protected Species Licenses for GCN within 2km of the Survey Area.	GCN surveys undertaken in 2017 and 2018 identified GCN within 2.5km of the Survey Area. Metabarcoding and eDNA analysis identified the presence of GCN within one pond 2.2km south-west. Presence and absence surveys undertaken in 2019 confirmed the presence of GCN within five ponds present south of the Airport, with breeding confirmed in two of these ponds. These ponds are located approximately 2.4km south of the Proposed Development.	No records of GCN were returned in the 2023 desk study. Broadleaved woodland and scrub identified within the Survey Area during the 2023 PEA provides suitable terrestrial habitat for GCN, however these habitats are isolated from the wider environment due to major roads and watercourses.	No ponds were identified within the Survey Area, and terrestrial habitats present are of limited value to GCN as a commuting and foraging resource. The Proposed Development is isolated due to the presence of major roads limiting potential for GCN presence within the Proposed Development.
Reptiles	The 2013 application (41573/APP/2013/1288)[26] identified suitable habitat to support grass snake within the Proposed Development and identified this species as being present within the local area through desk study records.	Reptile surveys conducted in 2017 and 2018 as part of the HEP did not record any reptile species within the Survey Area. Juvenile grass snake were identified at survey locations approximately 1km north and	Seven records of grass snake were returned within the 2023 desk study, all located approximately 700m south-west of the Survey Area boundary. The 2023 PEA found some areas of suitable habitat to support reptiles present within woodland	The Proposed Development is isolated from other reptile populations present within the surrounding areas due to the presence of major roads, the village of Longford and the Airport itself, limiting opportunities for colonisation by reptiles. The Duke

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
		500 m south-west of the Proposed Development.	margins and scrub, however this habitat was small in extent and subject to anthropogenic disturbance.	of Northumberland's River offers the only viable pathway by which grass snake in particular could colonise the Proposed Development.
Birds	The 2013 application (41573/APP/2013/1288)[26] identified suitable habitat to support notable nesting bird species within the scrub and marginal/aquatic vegetation.	Bird surveys were conducted as part of the assessment for the HEP in 2017 and 2018. Scoping surveys conducted identified habitats within the Survey Area as being suitable to support notable breeding bird species and provide suitable habitat to support over wintering bird species as well. Targeted Kingfisher surveys were undertaken along watercourses during 2017 - 2019. No Kingfisher were recorded associated with the Duke of Northumberland's River or River Colne within the Survey Area, however Kingfisher were observed both upstream and downstream of the Survey Area on these watercourses.	Records of 30 bird species were returned within the 2023 desk study, including records of kingfisher located within the Airport. Other species recorded in the area surrounding the Airport include song thrush, skylark, house sparrow, dunnock, kestrel, snipe, little ringed plover, and lapwing. The closest record was that of a kingfisher, which was located approximately 330 m east of the Survey Area boundary. Full details of all records received is provided within the PEA. A range of habitats were identified within the Survey Area during the 2023 PEA that could support notable nesting bird species. These habitats however were limited in extent and unlikely to	The Proposed Development includes relatively small areas (approximately 2ha in total) of habitat which have the potential to support small numbers of breeding birds. Notable bird species are likely to be restricted to those associated with the riparian habitats and could include species such as Kingfisher and Cetti's warbler and other species associated with scrub and woodland habitats such as song thrush and dunnock. Management of the airfield and surrounding areas is determined by Civil Aviation Authority (CAA) guidance described in CAP772 – Birdstrike Management for Aerodromes[29] and includes specific measures to discourage certain bird species from

[29] Civil Aviation Authority (2017) *CAP 772: Wildlife hazard management at aerodromes.* [Online] Available at: https://www.caa.co.uk/publication/download/13426 [Accessed: 14 October 2024].

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
		Twenty species of bird were recorded breeding within the Core Biodiversity Study Area during surveys conducted as part of the HEP in 2018. Of these, five SPI were recorded (dunnock, house sparrow, skylark, starling, and song thrush).	support significant numbers of any single species.	congregating on or near the Airport. At the Airport, measures include a "long grass policy" which maintains the sward at a height of 150 to 200mm and the use of netting over the Duke of Northumberland's River and Longford River where they pass directly adjacent to the airfield in the west.
Bats	The 2013 application (41573/APP/2013/1288)[26] did not identify any trees with potential to support a bat roost, however the Survey Area was assessed as being of potential value to commuting/foraging bats.	Bat activity surveys conducted in 2017 and 2018 as part of the HEP recorded at least eight species of bat using the Survey Area. Common and soprano pipistrelle were the most frequently recorded species, followed by the "big bat" species group (noctule, serotine, and Leisler's bat), with low levels of *Myotis* species, Nathusius pipistrelles and long-eared bats also recorded. No roosts were identified which coincide with the Survey Area; however, four confirmed roosts were identified within the residential houses located south of Bath Road (approximately 100m north of the Proposed Development). These roosts	An updated search of MAGIC[25] was conducted in 2024 which returned one granted European Protected Species License within 2km of the Survey Area, located approximately 900m north-east of the Proposed Development. This allowed for the damage and destruction of a resting place for brown long-eared bat and soprano pipistrelle. Records of brown long-eared bat, common pipistrelle, Daubenton's bat, noctule, Leisler's bat, soprano pipistrelle, and an unidentified *Myotis* species were returned within the 2023 desk study. The closest record related to a soprano pipistrelle located approximately 10 m north-east of the Survey Area boundary. Full	The Survey Area provides limited value to roosting bats due to an absence of suitable features such as buildings or mature trees. The area around and within the Airport is also subject to high levels of light pollution from street lighting and buildings. The watercourses and linear habitat features present provide value as a commuting and foraging resource for local bat populations known to be present within the local area.

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
		were confirmed to all be in use by soprano pipistrelle.	details of all records received is provided within the PEA. No information was returned as to indicating whether these records relate to bat roosts. No features were identified within the 2023 survey area that could support roosting bats. Habitats within the Survey Area were considered to provide value to commuting and foraging bats through the major watercourses and linear habitat features such as scrub and woodland edge.	
Brown hare	One record of brown hare was returned within the desk study, located within the Airport. The 2013 application did not identify any suitable habitat to support this species within the Survey Area.	No signs of brown hare were identified within the Survey Area during surveys conducted as part of the HEP.	The 2023 PEA did not identify any evidence of this species present within the Survey Area, with the major roads and watercourses present acting as a barrier to brown hare dispersal onto the Survey Area. No records of this species were returned during the desk study conducted of the Core Study Area.	No evidence of this species was identified during surveys conducted and given the lack of connectivity to more suitable habitat within the local area, it is considered highly unlikely that brown hare will be found on the Proposed Development area.
Water vole	Records of water vole were returned within the desk study, located within the Airport, north-west of Terminal 3. The 2013 application (41573/APP/2013/1288)[26] assessed The Duke of Northumberland's River as being	No signs of water vole were recorded during transect surveys, boat survey transects, and during water vole raft checks conducted as part of the HEP. Water vole rafts were located on the Duke of Northumberland's River within the Core Biodiversity Study Area.	The extent of canalisation within the Survey Area was found to be unchanged during the 2023 PEA, with areas of the watercourse outside of this area having steep banks and limited foraging material present making it unsuitable to support water vole.	No evidence of this species was identified during surveys conducted and habitat present on site was largely considered to be unsuitable to water vole due to the level of canalization present within the Survey Area.

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	unsuitable for water vole due to the high level of canalisation present.			
Otter	Records of otter were returned within the desk study, located on the eastern edge of Harmondsworth. The 2013 application (41573/APP/2013/1288)[26] identified that The Duke of Northumberland's River has the potential to support otter and is located immediately adjacent to the location of the new noise barrier.	Otter transect surveys were conducted on the River Colne and Duke of Northumberland's River in 2018. No signs of otter were identified within the Survey Area; however signs were identified on the River Colne north of the Colnbrook By-Pass.	The 2023 PEA did not identify any signs of otter using the watercourse and no records of this species were returned during the desk study. The Duke of Northumberland's River was assessed as providing potential value as a commuting and foraging route for otter.	Otter are known to be present on the River Colne both downstream and upstream of the 2023 survey area. It is therefore possible that otter do commute through the Survey Area and could potentially be impacted by the Proposed Development.
Badger	Records of badger were returned within the desk study, located at the eastern edge of Harmondsworth. The 2013 application (41573/APP/2013/1288)[26] did not identify any signs of badger or evidence of badger setts, however suitable habitat for badger foraging and sett creation is present on Survey Area.	The desk study conducted in 2019 identified 15 records of badger. Survey conducted did not identify any signs of badger activity or the presence of any badger setts within the Survey Area. The closest badger sett identified was located approximately 800m from the Proposed Development, which was classified as a partially used outlier sett.	No evidence of badger activity within the Survey Area was identified during the 2023 PEA and no records were returned of this species during the desk study. Habitats within the Survey Area were considered to offer limited value to badger as a commuting and foraging resource, such as the woodland and scrub. Major barriers to badger dispersal are present within the surrounding area, such as major roads and watercourses.	Badger are known to be present within the area surrounding the Proposed Development however the Survey Area is isolated due to the presence of major roads, limiting badger dispersal onto the Survey Area.
Invasive Species	The desk study returned records of five species listed on Schedule 9 of the WCA 1981 (as amended)[14,] comprising Chinese muntjac, demon shrimp, false acacia,	No invasive non-native species were identified within the Survey Area during surveys conducted as part of the HEP.	The 2023 PEA did not identify any evidence of invasive non-native species present within the Survey Area, however records of species listed on Schedule 9 of the WCA[14]	No evidence of invasive non-native species was identified during surveys conducted and is not considered to be a constraint to the Proposed Development.

Ecological Feature	2013 Baseline Summary	2017-2019 Baseline Summary	2023 Baseline Summary	Overall Baseline
	Japanese knotweed, and ring-necked parakeet. The closest record was that of ring-necked parakeet which was located approximately 650m north-east of the Survey Area.		were returned during the desk study. The closest plant record was that of Japanese knotweed located approximately 1.26km from the Survey Area boundary. The closest fauna record was that of a ring-necked parakeet located approximately 650m north-east of the Survey Area boundary.	

Future baseline

12.3.12 Determining a future baseline draws upon information about the likely future use and management of the Site in the absence of development, known population trends (for species) and climate change.

12.3.13 In this instance the future baseline in the absence of the Proposed Development is unlikely to be markedly different from the current baseline, as land use/management around the Airport is anticipated to remain largely unchanged. Areas within and adjacent to the Airport itself are subject to long term management to reduce the risk of wildlife hazards (in particular bird strikes)[29]. This includes adoption of a long grass policy within the airfield and active management of river corridors using netting. Whilst some species are subject to population contractions or expansion, prediction of population decreases or increases specific to the areas immediately surrounding the Proposed Development cannot be made. Therefore, it is reasonable to use the existing baseline as the basis of assessment.

12.4 Embedded environmental measures

12.4.1 As part of the project design process, a number of embedded environmental measures are proposed to reduce the potential for effects on biodiversity features in particular in relation to construction methods. A summary of these is detailed in a **Construction Environmental Management Plan** (CEMP) that would be secured via a planning condition. These measures include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements such as the Pollution Prevention and Control Act 1999[30].

12.4.2 As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures such as pollution prevention measures and dust as described below, they are considered to be inherently part of the Proposed Development and have therefore been considered within this assessment.

12.4.3 Embedded environmental measures included as part of the Proposed Development comprise:

- **Best environmental practice**: Guidance outlined in the Environment Agency's Pollution Prevention Advice and Guidance[31] and those outlined by the Construction Industry Research and Information Association guidance (CIRIA, 2015[32]) [33]would be followed at all stages of the Proposed Development. This would include measures to prevent dust and other emissions from entering the Duke of Northumberland's

[30] HM Government (1999) *Pollution Prevention and Control Act 1999*. [online] Available at: https://www.legislation.gov.uk/ukpga/1999/24/contents [Accessed: 14 October 2024].

[31] Environment Agency (2014) *Pollution prevention guidance (PPG)*. [online] Available at: https://www.gov.uk/government/collections/pollution-prevention-guidance-ppg [Accessed: 15 October 2024].

[32] Construction Industry Research and Information Association (CIRIA), (2015). *Environmental good practice on site guide*. *Fifth edition.* CIRIA, UK.

[33] It is acknowledged that this guidance has been withdrawn, although not replaced.

River and other watercourses beyond the Survey Area, plus associated habitats. Any chemicals and fuels should be stored in secure containers located away from watercourses, with spill kits also available. Noise and vibration would also be kept to the minimum necessary;

- **Nesting birds and vegetation removal**: Vegetation would be retained where possible though some removal may be required to facilitate construction. To avoid destruction of active bird nests, vegetation clearance would be undertaken outside the main breeding bird season (outside March to August) where practicable. Where this is not practicable, vegetation removal would be undertaken under supervision and avoidance of active nests may be necessary. If a nest is found, measures would be implemented appropriate to the species and associated level of protection to remove the risk of damaging or destroying active nests, young or eggs. This may include the creation of working buffers around nests or vegetation removal may have to be stopped until birds have fledged and the nest is no longer active;
- **Reptiles**: As described in **paragraph 12.4.1**, a method statement will be prepared to avoid contravening the WCA[14]. Best practice guidelines would be followed during the works such as conducting a pre-works check for the presence of any reptiles. Removal of suitable habitat would be designed to avoid the risk of injury to reptiles, through measures such as the gradual removal of habitat to displace reptiles in to adjoining habitats or capture and translocation of individual reptiles as found;
- **Bats**: Best practice guidance would inform the design of any lighting strategy required for the Proposed Development, specifically the joint guidance produced by the Bat Conservation Trust and the Institute of Lighting Professionals[34]. The lighting design will account for the likely effects on terrestrial ecology by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations – this is to decrease the potential displacement effects on light sensitive fauna such as bats; and
- **Otter**: Best practice guidelines would be followed during the works to minimise the risk of contravening the WCA[14] and The Conservation of Habitats and Species Regulations 2017 (as amended)[9], including making all contractors aware of the potential presence of otters, and where practicable, avoiding trenches uncovered overnight or leaving an escape plank/ramp if excavations cannot be covered. Any obvious mammal trails would be kept clear of obstruction.

Biodiversity Net Gain

12.4.4 BNG of at least 10% is considered as part of the Proposed Development as it will ensure enhancement is to be provided that will seek to deliver a net gain in biodiversity above the current baseline.

[34] Bat Conservation Trust (2023) *Bats and Artificial Lighting at Night, Guidance Note 8 Bats and Artificial Lighting*. [online] Available at: https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/ [Accessed: 14 October 2024].

12.4.5 Requirements for enhancements or provision of compensatory habitat will be determined following the confirmation of Proposed Development design and through further discussions with key stakeholders so that all proposals align with local initiatives where reasonably practicable, appropriate, and relevant. This will include reference to local plans such as the London Plan[5] and the supporting document Urban Greening for Biodiversity Net Gain: A Design Guide35. This guidance does not specify a quantified BNG requirement, such as the minimum recommended 10% net gain values described as part of the Environment Act 2021[8], however reference to local, regional and national requirements will inform the extent and nature of any mitigation for impacts on habitats and includes the creation of grassland habitat on airfield, replacing areas of redundant pavement. It is also anticipated that the applicant will identify additional opportunities to enhance or create habitats, addressing the loss of grassland and hedgerow habitats, in the wider Heathrow estate.

12.4.6 A provisional BNG calculation has been produced which is provided as **Appendix 12.4: Biodiversity Net Gain Assessment**. This has identified likely requirements for delivery of habitat creation or enhancement to offset any habitat loss which occurs as a result of the Proposed Development. Detailed information relating to the delivery of a 10% BNG, including an updated BNG statement and a Habitat Management and Monitoring Plan (HMMP) would be provided under the deemed condition imposed by paragraph 13 of Schedule 7A of the TCPA 1990[3] if permission is granted, and any offsite biodiversity gains would be delivered and maintained pursuant to a conservation covenant or planning obligation in accordance with the statutory BNG regime.

12.4.7 Detailed information relating to the delivery of a 10% BNG, including an updated BNG statement and a HMMP would only be provided if permission is granted and would be delivered as a condition prior to commencement of works.

12.5 Scope of the assessment

Scoping Report and Scoping Opinion

12.5.1 The Scoping Report (**Appendix 1.5: Scoping Report**), requesting a Scoping Opinion from LBH was submitted on 01 November 2023. The Scoping Opinion (**Appendix 1.6: Scoping Opinion**) was received from LBH on 01 February 2024 (dated 31 January 2024). Information received in the Scoping Opinion (**Appendix 1.6: Scoping Opinion**) has informed the scope of the biodiversity assessment. Further information on Environmental Impact Assessment (EIA) scoping can be found in **Chapter 5: Approach to the Environmental Impact Assessment**.

12.5.2 Several supporting scoping responses from consultees were provided alongside the Scoping Opinion (**Appendix 1.6: Scoping Opinion**) (albeit they do not form part of the Scoping Opinion itself). Despite not forming part of the Scoping Opinion, the supporting

[35] London Wildlife Trust (2021) *Urban Greening for Biodiversity Net Gain: A Design Guide*. [online]. Available at: https://www.london.gov.uk/sites/default/files/urban_greening_and_bng_design_guide_march_2021.pdf [Accessed: 14 October 2024].

scoping responses from consultees have also been considered where appropriate in this Environmental Statement. Those relevant to biodiversity are:

- Buckinghamshire Council;
- London Borough of Hounslow;
- The Ivers Parish Council; and
- Natural England.

12.5.3 This section provides an update to the scope of the biodiversity assessment based on the most up-to-date information and the Scoping Opinion (**Appendix 1.6: Scoping Opinion**). It updates the evidence base for scoping out elements following further iterative assessment and is summarised in **Appendix 12.5: Justification for Scoped Out Ecological Features**.

12.5.4 **Table 12.7** and **Table 12.8** set out the comments in relation to biodiversity received in the LBH Scoping Opinion and supporting responses from consultees and how they have been addressed in this Environmental Statement.

Table 12.7 Scoping Opinion comments received from LBH relating to biodiversity

Scoping Opinion comment	How is this addressed?
"***The approach to the assessment of likely biodiversity effects is acceptable. The previous submission found no likely significant environmental effects, but the biodiversity baseline has changed and would warrant further assessment.***"	An updated PEA (comprising desk study and site surveys) was completed in 2023/2024. This provides a contemporary baseline against which the assessments have been based. This has been further augmented with detailed survey data collected as part of the HEP which was collected between 2017 and 2019.
"***This is particularly necessary given the change in flightpaths over highly sensitive national and international level receptors. The baseline information should be shared with the LPA as soon as practicable and Natural England engaged in the subsequent development of the assessment.***"	A HRA report (**Appendices 12.1: Report to Inform Appropriate Assessment** and **12.2: HRA Screening Report**) and this chapter include consideration of impacts on the South West London Waterbodies SPA. Natural England have provided responses to both the Scoping report and also a Screening Response to the HRA Screening report (**Appendix 12.2: HRA Screening Report**).
"***29 - The impacts on biodiversity should be scoped into the Environmental Statement as set out in the Report.***"	This was agreed as part of the Scoping Report.

Table 12.8 Supporting scoping responses received from other consultees in relation to biodiversity

Supporting scoping responses received from consultees	How is this addressed?
Buckinghamshire Council "***It is also proposed that Climate Change Resilience is scoped out of detailed consideration in the EIA. This means***	Climate Change Resilience is considered within this as part of the Future Baseline and will further be

Supporting scoping responses received from consultees	How is this addressed?
that the vulnerability of assets and receptors to climate change will not have a dedicated section in the Environmental Statement. However, the EIA Scoping Report confirms that the impacts of climate change and appropriate mitigation will be considered in other relevant chapters of the EIA e.g. biodiversity and hydrology and hydrogeology."	addressed through habitat creation and enhancement to be determined through delivery of a 10% BNG.
Buckinghamshire Council "***Recommendation*** ***The Climate Response Team at have no objections to the proposal to scope out greenhouse gases and climate change from the EIA. This is subject to the following:*** ***The impacts of climate change and appropriate mitigation measures are appropriately considered within other chapters of the EIA e.g. biodiversity and hydrology.***"	As above.
Buckinghamshire Council "***It is noted that Burnham Beeches falls within the identified 'Extended Biodiversity Study Area' and will be considered further within the Environmental Statement due to the operational effects resulting in changes in the atmospheric concentration and deposition of nitrogen and potential for cumulative effects from other nearby developments. It is requested that Buckinghamshire Council is consulted further when a planning application comes forward.***"	The changes in oxides of nitrogen (NOx) are quantified in **Chapter 6: Air Quality** and discussed in greater detail in Section 5 of the HRA Report (**Appendix 12.1: Report to Inform Appropriate Assessment**). The greatest changes to concentrations of NOx outside of the airfield occur close to the western end of the northern runway. The increases in NOx in this area do not extend over any European sites or associated functionally linked land. The only European site within an area where the air quality modelling predicts any change from current baseline is the South West London Waterbodies SPA and Ramsar site. Therefore, based on the modelling described Burnham Beeches SAC has been screened out of further assessment.
London Borough of Hounslow "***WSP UK Ltd undertook an updated Preliminary Ecological Appraisal on the proposed site and detailed out the desk study and field survey following CIEEM PEA (2013) guidelines. It provides a list of the assessments on international and national designated statutory sites and non-statutory designated sites and protected, and notable species identified in the proposed site. The development on the proposed site may result in impacts on the habitats (statutory and non-statutory sites) and wildlife if unmitigated. The ecological assessment must consider fully***	Embedded measures are described in **Section 12.4**. Measures to address those described here are formalised through a CEMP which would be delivered as a condition of planning approval.

Supporting scoping responses received from consultees	How is this addressed?
the impact of the proposal on the commuting and foraging bats and breeding birds, otters and badgers and reptiles (grass snake). In the PEAR and Biodiversity (Section 11 in ES Scoping Report), no recommendations provided with respect to sensitive lighting plan (with respect to bats). Further detailed recommendations to be provided with respect to bats, breeding birds, otters and reptiles. In the PEAR, there are no opportunities for biological enhancement provided. In line with the recognised good practice and government policies on biodiversity and sustainability, all practical opportunities should be provided herewith and undertaken to harmonise the built development with the needs of wildlife. The report should be amended to provide biodiversity enhancement of the above-mentioned features. A watching brief for bats and breeding birds, grass snake, otters and badgers should be submitted to and approved by the LPA, and the development shall subsequently be carried in accordance with the approved details. The watching brief should include: ***Details of pre-development check (no more than a week prior to works beginning).*** ***Details of the toolbox talk with anyone involved in the construction of the development in order to make them aware of the potential presence of protected species and what to do in the event of finding any.*** ***Careful working procedures- to be defined in the statement.*** ***Details of who will be watching the construction and what qualifications they hold.*** ***A contingency plan of what to do in case of finding a bat roost, bird nests, otter setts.***"	
London Borough of Hounslow "***Biodiversity Net Gain has been mentioned in the EIA Scoping Report (see Section 11) but has not been detailed. Under the Environment Act 2021, all planning permissions granted in England will have to deliver at least 10% biodiversity net gain from January 2024. As part of the application, a completed BNG report (including Excel sheet of the Biodiversity Metric calculation) to be submitted.***"	A provisional BNG assessment has been produced and is provided as **Appendix 12.4: Biodiversity Net Gain Assessment**. Consideration of how a 10% BNG could be delivered within the wider Heathrow Estate is described within this report and summarised in **Section 12.6**.
London Borough of Hounslow "***Due to the sensitivities on site, a Construction Environment Management Plan (CEMP) detailing, in full, measures to protect existing habitat during construction works and the formation of new habitat to secure a habitat compensation and biodiversity net gain of no less than 10% shall be submitted, and the following information shall be provided: a) Current soil conditions of any areas designated***	A CEMP has been provided alongside the Planning Application. A detailed HMMP would be produced on confirmation of the final design and identification of habitat enhancement and creation locations.

Supporting scoping responses received from consultees	How is this addressed?
for habitat creation and detailing of what conditioning must occur to the soil prior to the commencement of habitat creation works (for example, lowering of soil pH via application of elemental sulphur). b) Descriptions and mapping of all exclusion zones (both vehicular and for storage of materials) to be enforced during construction to avoid any unnecessary soil compaction on area to be utilised for habitat creation. c) Details of both species composition and abundance where planting is to occur. d) Proposed management prescriptions for all habitats for a period of no less than 30 years. e) Assurances of achievability. f) Timetable of delivery for all habitats; and g) A timetable of future ecological monitoring to ensure that all habitats achieve their proposed management condition as well as description of a feed-back mechanism by which the management prescriptions can be amended should the monitoring deem necessary."	This will be submitted to the relevant Local Planning Authority for review and confirmation.
London Borough of Hounslow "***Lastly, we consider that the geographical scope of study should be expanded to include consideration of SINCs within Hounslow. LBH will work with Heathrow to ensure that these are captured fully as the application develops.***"	All SINCs within Hounslow are >2km from any areas of construction and are therefore, according to the methodology adopted and agreed at scoping, not considered for assessment.
The Ivers Parish Council "***The parish council request that ecological impact assessments are carried out at all non-statutory designated sites.***"	All SINCs within the Ivers Parish Council area are >2km from any areas of construction and are therefore, according to the methodology adopted, not considered for assessment.
Natural England "***Biodiversity and Geodiversity General principles The National Planning Policy Framework (paragraphs174-175 and 179-182) sets out how to take account of biodiversity and geodiversity interests in planning decisions. Further guidance is set out in Planning Practice Guidance on the natural environment. The potential impact of the proposal upon sites and features of nature conservation interest and opportunities for nature recovery and biodiversity net gain should be included in the assessment. Ecological Impact Assessment (EcIA) is the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems or their components. EcIA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal. Guidelines have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM). Local planning authorities have a duty to have regard to conserving biodiversity as part of their decision making.***	The NPPF and other local planning policies have been considered as part of this assessment as summarised in **Section 12.2**. Technical guidance developed by CIEEM has been used to inform the approach to assessment as described in **Section 12.6**. Habitat creation and/or enhancement is addressed through BNG as described in Sections 12.4 and 12.6 and **Appendix 12.4: Biodiversity Net Gain Assessment**.

Supporting scoping responses received from consultees	How is this addressed?
Conserving biodiversity can include habitat restoration or enhancement."	
Natural England "***Designated nature conservation sites International and European sites.*** ***The development site is within or may impact on the following European/internationally designated nature conservation site(s):*** ***South West London Waterbodies Ramsar*** ***South West London Waterbodies Special Protection Area (SPA)*** ***European site conservation objectives are available at http://publications.naturalengland.org.uk/category/6490068894089216 The ES should thoroughly assess the potential for the proposal to affect nationally and internationally designated sites of nature conservation importance, including marine sites where relevant. European sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA) fall within the scope of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations'). In addition paragraph 181 of the National Planning Policy Framework (NPPF) requires that potential SPAs, possible SAC, listed or proposed Ramsar sites, and any site identified or required as compensatory measures for adverse effects on habitat (European) sites, potential SPAs, possible SACs and listed or proposed Ramsar sites have the same protection as classified sites (NB. sites falling within the scope of regulation 8 of the Conservation of Habitats and Species Regulations 2017 are defined as 'habitats sites' in the NPPF). Under Regulation 63 of the Habitats Regulations, an appropriate assessment must be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are qualifying features of the site, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a designated site, for example by being linked hydrologically or geomorphologically.*** ***Should a likely significant effect on a European/Internationally designated site be identified (either alone or in-combination) or be uncertain, the competent authority (in this case the Local Planning Authority) may need to prepare an appropriate assessment in addition to the consideration of impacts through the EIA***	Impacts on the South West London Waterbodies SPA/Ramsar sites are summarised in **Section 12.7** of this chapter and in **Appendix 12.1: Report to Inform Appropriate Assessment** and **Appendix 12.2: HRA Screening Report**.

Supporting scoping responses received from consultees	How is this addressed?
process. Further guidance is set out in Planning Practice Guidance on appropriate assessment https://www.gov.uk/guidance/appropriate-assessment This should also take into account any agreed strategic mitigation solution that may be being developed or implemented in the area to address recreational disturbance, nutrients, or other impacts."	
Natural England "***Nationally designated sites*** ***The development site is within or may impact on the following Site of Special Scientific Interest:*** ***Kempton Park Reservoirs*** ***Thorpe Park No. 1 Gravel Pit*** ***Wraysbury No. 1 Gravel Pit*** ***Wraysbury Reservoir*** ***Wraysbury & Hythe End Gravel Pits*** ***Langham Pond*** ***Staines Moor*** ***Sites of Special Scientific Interest are protected under the Wildlife and Countryside Act 1981 and paragraph 180 of the NPPF. Further information on the SSSI and its special interest features can be found at www.magic.gov.*** ***Natural England's SSSI Impact Risk Zones can be used to help identify the potential for the development to impact on a SSSI. The dataset and user guidance can be accessed from the Natural England Open Data Geoportal.*** ***The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are interest features of the SSSI, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a site, for example by being linked hydrologically or geomorphologically.***"	Only Staines Moor SSSI and Wraysbury Reservoir are within 2km of the Proposed Development. Likely effects on these sites are considered in **Section 12.7**. All other sites are >2 km away and were not scoped in for assessment.
Natural England "***Protected Species The conservation of species protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017 is explained in Part IV and Annex A of Government Circular 06/2005 Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System.***	Impacts on protected species are considered in **Section 12.7**.

Supporting scoping responses received from consultees	How is this addressed?
The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area. ***The area likely to be affected by the development should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and, where necessary, licensed, consultants.*** ***Natural England has adopted standing advice for protected species, which includes guidance on survey and mitigation measures. A separate protected species licence from Natural England or Defra may also be required.***"	
Natural England "***District Level Licensing for Great Crested Newts District level licensing (DLL) is a type of strategic mitigation licence for great crested newts (GCN) granted in certain areas at a local authority or wider scale. A DLL scheme for GCN may be in place at the location of the development site. If a DLL scheme is in place, developers can make a financial contribution to strategic, off-site habitat compensation instead of applying for a separate licence or carrying out individual detailed surveys. By demonstrating that DLL will be used, impacts on GCN can be scoped out of detailed assessment in the Environmental Statement.***"	GCN were scoped out of the assessment as per **Table 12.11, Section 12.5**.
Natural England "***Priority Habitats and Species Priority Habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest, on the Magic website or as Local Wildlife Sites. Lists of priority habitats and species can be found here. Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely.***	Impacts on priority species and habitats are considered in **Sections 12.5** and **12.7**.

Supporting scoping responses received from consultees	How is this addressed?
Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land. Sites can be checked against the (draft) national Open Mosaic Habitat (OMH) inventory published by Natural England and freely available to download. Further information is also available here. ***An appropriate level habitat survey should be carried out on the site, to identify any important habitats present. In addition, ornithological, botanical, and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:*** ***Any historical data for the site affected by the proposal (e.g. from previous surveys)*** ***Additional surveys carried out as part of this proposal*** ***The habitats and species present*** ***The status of these habitats and species (e.g. whether priority species or habitat)*** ***The direct and indirect effects of the development upon those habitats and species*** ***Full details of any mitigation or compensation measures*** ***Opportunities for biodiversity net gain or other environmental enhancement.***"	
Natural England "***Ancient Woodland, ancient and veteran trees*** ***The ES should assess the impacts of the proposal on any ancient woodland, ancient and veteran trees, and the scope to avoid and mitigate for adverse impacts. It should also consider opportunities for enhancement.*** ***Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland.*** ***The wood pasture and parkland inventory sets out information on wood pasture and parkland. The ancient tree inventory provides information on the location of ancient and veteran trees.*** ***Natural England and the Forestry Commission have prepared standing advice on ancient woodland, ancient and veteran trees.***"	No ancient woodland or trees were identified within the ZoIs used for construction. Ancient woodland habitats, associated with Windsor Forest & Great Park SAC have been considered in **Section 12.5** and are subject to consideration with the HRA reports provided as **Appendices 12.1: Report to Inform Appropriate Assessment** and **12.2: HRA Screening Report**.
Natural England "***Biodiversity net gain Paragraph 174 of the NPPF states that decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.***	A provisional BNG assessment has been produced and is provided as **Appendix 12.4: Biodiversity Net Gain Assessment**. Approaches for delivery of a 10% net gain are described within this report and summarised in **Sections 12.4** and **12.6**.

Supporting scoping responses received from consultees	How is this addressed?
Biodiversity Net Gain is additional to statutory requirements relating to designated nature conservation sites and protected species. ***The ES should use an appropriate biodiversity metric such as Biodiversity Metric 3.0 together with ecological advice to calculate the change in biodiversity resulting from proposed development and demonstrate how proposals can achieve a net gain.*** ***The metric should be used to:*** ***assess or audit the biodiversity unit value of land within the application area*** ***calculate the losses and gains in biodiversity unit value resulting from proposed development*** ***demonstrate that the required percentage biodiversity net gain will be achieved*** ***Biodiversity Net Gain outcomes can be achieved on site, off-site or through a combination of both. On-site provision should be considered first. Delivery should create or enhance habitats of equal or higher value. When delivering net gain, opportunities should be sought to link delivery to relevant plans or strategies e.g. Green Infrastructure Strategies or Local Nature Recovery Strategies.*** ***Opportunities for wider environmental gains should also be considered.***"	

Overview of assessment

12.5.5 The CIEEM guidelines[15] recognise that an appropriate EcIA cannot consider in detail every individual species or habitat that may potentially be present at a site or be affected by a development. The EcIA process therefore aims to focus the assessment on those ecological features that could be 'significantly' affected by the Proposed Development (for example where the effects on the ecological features are of sufficient concern that they could influence the decision about whether or not planning permission should be granted), or for which the development could result in the contravention of relevant legislation. The EcIA process therefore includes a 'scoping' stage (which excludes those ecological features that cannot be 'significantly' affected), and a 'detailed assessment' stage, which examines more closely the potential effects of the Proposed Development on those ecological features that could be subject to 'significant' effects. Detailed assessments may also be undertaken where it is considered appropriate to examine the predicted effects on a feature in more detail, for example due to consultee comments. This section summarises the approach to and outcomes of the EcIA detailed assessment stage.

Identification of activities and potential effects

12.5.6 The construction and operation of the Proposed Development may result in a number of environmental changes and potentially significant effects, which were first identified in Table 11.8 of the Scoping Report (**Appendix 1.5**) and are summarised below:

- Permanent or temporary land cover changes to habitats, resulting in;
  - Reduction in the availability of foraging and commuting habitat and resting or breeding sites (of any fauna).
  - Killing or injury of fauna through the removal of occupied resting or breeding sites.
  - Loss of ecological connectivity through severance of habitats resulting in fragmentation;
- Changes in noise, light, vibration, and movement levels due to construction activities, resulting in;
  - Disturbance and displacement of species susceptible to noise/visual disturbance resulting in a reduction of energy intake and/or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.
- Dust emissions from construction activities, resulting in;
  - Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports; and
- Changes in airspace operations, resulting in;
  - Increases in the atmospheric concentration and deposition of nitrogen; and
  - Disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual birds.

Spatial scope

12.5.7 Through an understanding of the activities associated with the Proposed Development (**Chapter 3: Description of the Proposed Development**) and the resulting environmental changes (summarised above), it is possible to identify ecological features that cannot be subject to potentially significant effects due to either; an absence of effect pathways, or certainty that incorporated environmental measures will be successful in preventing a significant effect occurring. In order to identify such ecological features, all the activities and consequent environmental changes associated with the construction, and operation of the Proposed Development have therefore been considered.

12.5.8 Given these environmental changes, the spatial scope of the biodiversity assessment covers the area of the Proposed Development, together with the ZoIs that have formed the basis of the Study Area described in **Section 12.3**. However, ZoIs differ depending on the type of environmental change (for example the change from the existing baseline) as a result of the Proposed Development and the ecological feature being considered.

12.5.9 The most straightforward ZoI to define is the area affected by land-take and direct land-cover changes associated with the Proposed Development. This ZoI is the same for all potentially affected ecological features.

12.5.10 By contrast, for each environmental change that can extend beyond the area affected by land-take and land-cover change (for example increased noise associated with construction activities), the ZoI may vary between ecological features, dependent upon their sensitivity

to the change and the precise nature of the change. For example, a badger might only be disturbed by noise generated very close to its sett, while nesting marsh harrier might be disturbed by noise generated at a much greater distance; other species (for example many invertebrates) may be unaffected by changes in noise at all. In view of these complexities, the definition of the ZoIs that extend beyond the land-take area was based upon professional judgement informed as far as possible by a review of published evidence (for example disturbance criteria for various species) and discussions with other environmental aspects.

12.5.11 The spatial extent of the assessment therefore reflects the area occupied by the ecological feature that is being assessed and the ZoI of the changes that are likely to affect it. Where part of a designated site overlaps with a ZoI, an assessment would be made of the effects on the designated site as a whole as large sections of a designated site, may be unaffected by activities or changes. A similar approach has been taken for areas of notable habitat. For species that occur within the ZoI, the assessment has considered the total area that is used by the affected individuals or the local population of the species (for example for foraging or as breeding territories).

12.5.12 It should be noted that the avoidance of potential effects through design are implicitly taken into account through the consideration of each ZoI.

12.5.13 **Table 12.9** provides a summary of the ZoIs for the identified activities and effects.

Table 12.9 Zone of Influence associated with identified effects of the Proposed Development

Activity	Effect	Zone of Influence and Justification
Construction effects anticipated within Core Biodiversity Study Area		
Permanent or temporary land take / changes to habitats	Reduction in the availability of foraging and commuting habitat and resting or breeding sites. Killing or injury of fauna through the removal of occupied resting, feeding or breeding sites. Loss of ecological connectivity through severance of habitats resulting in fragmentation.	Within the Proposed Development.
Changes in noise, light, vibration, and movement levels due to construction activities	Disturbance and displacement of species susceptible to noise/visual disturbance resulting in a reduction of energy intake and/or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.	Noise / vibration: i. ZoI will not extend more than 400 – 500m (typical construction noise is almost always indistinguishable from background noise at this distance due to natural attenuation alone). ii. No major sources of vibration (for example piling) required during works.

Activity	Effect	Zone of Influence and Justification
		Visual disturbance (for example increased human presence): iii. Rarely considered to significantly affect birds over 300m from source[36].
Dust emissions from construction activities	Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.	Institute of Air Quality Management Guidance on Assessment of dust from demolition and construction[37] defines potentially sensitive ecological receptors as occurring within: i. 50m of the boundary of the Site; or 50m of the route(s) used by construction vehicles on the public highway for sections of highway up to 500 m from the point where the public highways meet the access point to the construction works.
Operational effects anticipated within Extended Biodiversity Study Area		
Changes in airspace operations	Changes in the atmospheric concentration and deposition of nitrogen. Potential for cumulative effects from other nearby developments.	All aircraft, whether departing or arriving, will be at altitudes greater than 3,000ft when more than 18km from an airfield. This is a precautionary ZoI with UK's Air Quality Expert Review Group suggesting that ground level effects are unlikely to be detectable once an aircraft is above 1,000ft, but with assessment typically being undertaken out to 3,000ft.
Changes in airspace operations	Disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual birds.	All aircraft, whether departing or arriving, will be at altitudes greater than 3,000ft when more than 18km from an airfield. This is precautionary based on the upper range of recorded disturbance to birds within the scientific literature and does not

[36] Institute of Estuarine and Coastal Studies (2009) *Construction and waterfowl: Defining sensitivity, response, impacts and guidance*. [online] Available at: https://hoverclub.org.uk/langstone/Assessments_reports/Construction%20and%20waterfowl%20Response_impact_guidance.pdf [Accessed: 14 October 2024].

[37] Institute of Air Quality Management (2023). *Guidance on the assessment of dust from demolition and construction*, *Version 2.1*. [online] Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-dust-2023-BG-v6-amendments.pdf [Accessed: 14 October 2024].

Activity	Effect	Zone of Influence and Justification
		take account of lateral distances from individual flightlines.

Temporal scope

12.5.14 The temporal scope of the assessment of effects on biodiversity is consistent with the period over which the Proposed Development would be carried out, as defined in **Chapter 3: Description of the Proposed Development**, and therefore covers the construction and operational phases. The construction phase is currently assumed to occur between July 2025 and June 2027 and this incorporates works predominantly occurring on airfield with a small section off airfield to construct the proposed noise barrier. The operational phase is assumed to be ongoing following commencement of the easterly alternation operations.

Ecological features

12.5.15 The starting point for defining which ecological features are taken forward to the detailed assessment stage is to use the baseline data collected in the desk study and field surveys to determine which of the identified ecological features are 'important' at the level of the project. Following CIEEM guidance[15], the importance of ecological features is determined using a geographic scale and described in relation to UK legislation and policy, and with regard to the extent of habitat or size of population that may be affected by the Proposed Development.

12.5.16 The importance of ecological features can therefore differ from that which would be conferred solely by legislative protection or identification as a conservation notable species. For example, a small length of hedgerow (a Section 41 habitat – see **Table 12.10**)

even if deemed to be 'important' with regard to The Hedgerows Regulations[38], is unlikely to be considered to have greater than 'local' importance due to the extent of this habitat type across a given county.

12.5.17 Wherever possible, information regarding the extent and population size, population trends and distribution of the ecological features is used to inform the categorisation and determine importance at the project level. Where detailed criteria or contextual data are not available, professional judgement is used to determine importance. A justification of all determinations of importance are provided in **Table 12.10**.

[38] HM Government (1997) *The Hedgerows Regulations 1997*. [online] Available at: https://www.legislation.gov.uk/uksi/1997/1160/contents [Accessed: 14 October 2024]

Table 12.10 Importance of the Proposed Development for ecological features

Geographic context of importance	Description
International or European	European sites including SPAs, SACs, candidate SACs and Sites of Community Importance (SCI), Potential SPAs, and Ramsar sites (designated under international convention). Areas of habitat or populations of species which meet the published selection criteria based on discussions with Natural England and field data collected to inform the EcIA for designation as a European site, but which are not themselves currently designated at this level.
National	A nationally designated site including SSSIs and National Nature Reserves Areas (and the populations of species which inhabit them) which meet the published selection criteria guidelines for selection of biological SSSIs, but which are not themselves designated. Section 41 habitats and species, species included within the International Union for Conservation of Nature Red list, and legally protected species that are not addressed directly in Part 2 of the "Guidelines for Selection of Biological SSSIs" but can be determined to be of national importance using the principles described in Part 1 of the guidance. Areas of Ancient Woodland such as woodland listed within the Ancient Woodland Inventory and ancient and veteran trees.
Regional	Regularly occurring Section 41 habitats or populations of Section 41 species (as listed under the NERC Act 2006[11]), Red listed, and legally protected species may be of regional importance in the context of published information on population size and distribution.
County (Greater London)	Local Nature Reserves and Non-Statutory Designated sites including: SINCs of County Importance. Areas which based on field data collected to inform the EcIA meet the published selection criteria for those sites listed above (for habitats or species, including those listed in relevant Local Biodiversity Action Plans) but which are not themselves designated.
Local	Section 41 habitats and species, Red listed and legally protected species that based on their extent, population size, quality etc., are determined to be at a lesser level of importance than the geographic contexts above. Common and widespread semi-natural habitats occurring within the Study Area in proportions greater than may be expected in the local context. Common and widespread native species occurring within the Study Area in numbers greater than may be expected in the local context.

Geographic context of importance	Description
Negligible	Common and widespread semi-natural habitats and species that do not occur in levels elevated above those of the surrounding area. Areas of heavily modified or managed land uses (for example hard standing used for car parking, as roads etc.)

12.5.18 Where protected species are present and there is the potential for impacts on them, those species are considered as 'important' features. With the exception of such species receiving specific legal protection, or those subject to legal control (such as invasive species), all ecological features determined to be important at negligible level are scoped out of the assessment. This approach is consistent with that described in CIEEM guidance[15].

12.5.19 All legally protected species and ecological features that are of sufficient importance are then taken through to detailed assessment.

12.5.20 All ecological features that were determined to be important at a 'local' or 'negligible' level were 'scoped out' of the assessment at this stage, with the exception of:

- Species receiving specific legal protection or subject to legal control (for example invasive species); or
- Features which consultees specifically indicated that the Environmental Statement should consider.

12.5.21 This is because effects on features that are only important at a 'local' or 'negligible' level would not influence the decision-making about whether or not consent should be granted for the Proposed Development (for example a significant effect in EcIA terms could not occur). Specific justification for the exclusion of these ecological features from detailed assessment is provided in

12.5.22 **Table 12.9**.

12.5.23 Legally protected species and ecological features that are sufficiently important, such that effects upon them as a result of the Proposed Development could be significant, have been taken through to the next stage of the assessment.

Table 12.11 Importance of identified ecological features

Ecological feature	Importance (Legislative)	Importance (Project)	Scoped In / Out	Justification
Statutory Designated Sites (International) - South West London Waterbodies SPA and Ramsar	International	International	In – Operational phase only	The only statutory designated site of international importance which will be subject to changes in levels of atmospheric nitrogen concentration and deposition is South West London Waterbodies SPA and Ramsar. This site is located approximately 0.7km west of the airport boundary and is therefore within the ZoI for effects identified during operation. Wraysbury Reservoir, King George VI and Staines Reservoirs will be overflown directly or closely by increased numbers of aircraft arriving from the west onto the southern runway. Therefore consideration of impacts of disturbance will also be subject to assessment.
All other statutory designated sites (International)	International	International	Out – All construction and operation effects	All other statutory designated sites of international importance are located at a great enough distance from the airport boundary so that no changes in the levels of atmospheric nitrogen concentration of deposition will occur to the designated sites or any functionally linked land as a result of the Proposed Development. **Section 6.7** in **Chapter 6: Air Quality** provides greater detail of the modelling results and assessment of effects on ecological receptors. Of the international sites scoped in (based on the ZoIs described in **Table 12.7** only Thames Basin Heaths SPA includes fauna (i.e. birds) which could be susceptible to disturbance caused by overflight by aircraft. A literature review included in **Appendix 12.2: HRA Screening Report** concluded that birds are typically tolerant of aircraft overflight when a plane is above 2,000ft (610m). Therefore, as this site is >12km from the airfield it is anticipated that any overflight by departing or arriving aircraft will be in excess of 2,000ft and therefore not detectable to the species included.

Ecological feature	Importance (Legislative)	Importance (Project)	Scoped In / Out	Justification
Statutory Designated Sites (National)	National	National	In – Operational phase only	Multiple designated sites are present and includes sites which overlap with the South West London Waterbodies SPA and Ramsar. Therefore, effects identified are also considered for the component sites on a precautionary basis. All identified sites are beyond the ZoIs identified for construction effects described in **Table 12.7**.
Non-statutory designated sites	Local	Negligible	Out – All construction and operation effects	The closest site (Lower Colne SMI) is 0.14km from the Core Biodiversity Study Area but is upstream and separated by the village of Longford. All identified sites are beyond the ZoIs identified for construction effects described in **Table 12.7**.
Habitats	Local	Negligible	Out – All construction and operation effects	No HPIs have been identified within the Proposed Development Area.
Notable plant species	National	Negligible	Out – All construction and operation effects	Given the nature of the habitats present it is considered highly unlikely that any notable plant species would occur
Terrestrial invertebrates	National	Negligible	Out – All construction and operation effects	The Proposed Development would not result in significant habitat loss with only small areas of common/widespread habitat to be impacted therefore risk to notable invertebrate species is considered to be of negligible risk.
Common amphibians	National	Negligible	Out – All construction and operation effects	The Proposed Development is unlikely to support populations of amphibians and local populations are isolated from the Proposed Development.

Ecological feature	Importance (Legislative)	Importance (Project)	Scoped In / Out	Justification
GCN	European	Local	Out – All construction and operation effects	GCN are known to be present in the wider area (>500m) but are isolated from the Proposed Development due to roads and other major barrier to movement.
Reptiles	National	Local	In – Construction phase only	Suitable habitat to support reptiles is present within the Proposed Development and this species is known to be present within the local environment.
Birds	National	Local	In – Construction phase only	Habitat suitable to support notable breeding bird species is present within the Proposed Development.
Bats	European	Local	In – Construction phase only	Suitable habitat to support foraging bats is present within the Proposed Development, with significant linear features present that can provide suitable commuting habitat for bats.
Brown Hare	Local	Negligible	Out – All construction and operation effects	Baseline evidence indicates that brown hare are a rare species within the Study Area and are extremely unlikely to occur.
Water vole	National	Negligible	Out – All construction and operation effects	Baseline evidence indicates that water vole are a rare species within the Study Area and are extremely unlikely to occur.
Otter	European	Local	In – Construction phase only	Suitable habitat to support otter is present adjacent to the Proposed Development, with the Duke of Northumberland's River providing suitable commuting and foraging habitat for this species.
Badger	National	Negligible	Out – All construction and operation effects	Badger are present in the wider area (nearest known badger sett is approximately 800m) but are isolated from the Proposed Development by roads and other major developments.

Ecological feature	Importance (Legislative)	Importance (Project)	Scoped In / Out	Justification
Invasive non-native species	National	Negligible	Out – All construction and operation effects	No evidence of this invasive species was observed during survey of the Proposed Development and is not anticipated to have dispersed into the area since the survey was carried out.

Pathways for potentially significant effects

12.5.24 Ecological features that are scoped into the assessment (for instance those of sufficient importance occurring within a relevant ZoI) are summarised in **Table 12.12**. For each ecological feature presented in **Table 12.12**, the potential environmental changes and effects resulting from the Proposed Development are provided in **Table 12.12**. These potentially significant biodiversity effects are taken forward into the assessment in **Section 12.7**.

12.5.25 **Appendix 12.5: Justification For Scoped Out Ecological Features** provides the same information for those ecological features of greater than local importance scoped out of further assessment based on a relevant ZoI and the potential environmental changes and effects resulting from the Proposed Development.

Table 12.12 Potentially significant biodiversity effects

Activity	Effect	Ecological Features (s) scoped in for assessment
Construction effects anticipated within Core Biodiversity Study Area		
Permanent or temporary land take / changes to habitats	Reduction in the availability of foraging and commuting habitat and resting or breeding sites. Killing or injury of fauna through the removal of occupied resting or breeding sites. Loss of ecological connectivity through severance of habitats resulting in fragmentation.	Reptiles (grass snake) Birds Bats Otter
Changes in noise, light, vibration, and movement levels due to construction activities	Disturbance and displacement of species susceptible to noise/visual disturbance resulting in a reduction of energy intake and/or an increase in energy expenditure potentially leading to a reduction in survival and productivity rates.	Reptiles (grass snake) Birds Bats Otter
Dust emissions from construction activities	Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.	Reptiles (grass snake) Birds Bats Otter
Operational effects anticipated within Extended Biodiversity Study Area		
Changes in airspace operations	Changes in the atmospheric concentration and deposition of nitrogen. Potential for cumulative effects from other nearby developments.	South West London Waterbodies SPA and Ramsar

Activity	Effect	Ecological Features (s) scoped in for assessment
		Wraysbury Reservoir SSSI[39] Staines Moor SSSI[39]
Changes in airspace operations	Disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual birds.	South West London Waterbodies SPA and Ramsar Wraysbury Reservoir SSSI Staines Moor SSSI

12.6 Assessment methodology

12.6.1 The generic project-wide approach to the assessment methodology is set out in **Chapter 5: Approach to EIA**, and specifically in **Section 5.8**. However, whilst this has informed the approach that is set out in this chapter, it is necessary to set out how this methodology is applied, and adapted as appropriate, to address the specific needs of the biodiversity assessment, which follows standard industry guidance provided[15].

12.6.2 For each scoped-in ecological feature, effects are assessed against the predicted baseline conditions for that feature during construction and operation. The future baseline as outlined in **Section 12.3** is unlikely to be markedly different from the current baseline, as land use/management around the Airport is anticipated to remain largely unchanged.

12.6.3 Areas within and adjacent to the Airport itself are subject to long term management to reduce the risk of wildlife hazards (in particular bird strikes)[29]. This includes adoption of a long grass policy and active management of river corridors using netting. Whilst some species are subject to population contractions or expansion, prediction of population decreases or increases specific to the areas immediately surrounding the Proposed Development cannot be made. Therefore, it is reasonable to use the existing baseline as the basis of assessment.

Significance evaluation methodology

12.6.4 CIEEM[15] defines a significant effect as one "*that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general*".

12.6.5 When considering potentially significant effects on ecological features, whether these be negative or positive, the following characteristics of environmental change are taken into account:

- Extent – the spatial or geographical area over which the environmental change may occur;

[39] Wraysbury Reservoir SSSI and Staines Moor SSSI are both component parts of the South West London Waterbodies SPA.

- Magnitude – the size, amount, intensity or volume of the environmental change;
- Duration – the length of time over which the environmental change may occur;
- Frequency – the number of times the environmental change may occur;
- Timing – the periods of the day/year etc. during which an environmental change may occur; and
- Reversibility – whether the environmental change can be reversed through restoration actions.

Magnitude of change

12.6.6 Although the characteristics described in **paragraph 12.6.5** are all important in assessing effects by using information about the way in which habitats and species are likely to be affected, a scale for the magnitude of the environmental change, as a result of the Proposed Development, is described in **Table 12.13** to provide an understanding of the relative change from the baseline position, be that negative or positive changes.

Table 12.13 Guidelines for the assessment of the scale of magnitude

Scale of change	Criteria and resultant effect
High	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a large area of habitat or large proportion of the wider species population is affected. For designated sites, integrity is compromised. There may be a change in the level of importance of the feature in the context of the Proposed Development.
Medium	The change permanently (or over the long-term) affects the conservation status of a habitat/species, reducing or increasing the ability to sustain the habitat or the population level of the species within a given geographic area. Relative to the wider habitat resource/species population, a small-medium area of habitat or small-medium proportion of the wider species population is affected. There may be a change in the level of importance of this feature in the context of the Proposed Development.
Low	The quality or extent of designated sites or habitats or the sizes of species' populations, experience some small-scale reduction or increase. These changes are likely to be within the range of natural variability and they are not expected to result in any permanent change in the conservation status of the species/habitat or integrity of the designated site. The change is unlikely to modify the evaluation of the feature in terms of its importance.
Very Low	Although there may be some effects on individuals or parts of a habitat area or designated site, the quality or extent of sites and habitats, or the size of species populations, means that they would experience little or no change. Any changes are also likely to be within the range of natural variability and there would be no short-

Scale of change	Criteria and resultant effect
	term or long-term change to conservation status of habitats/species feature or the integrity of designated sites.
Negligible	A change, the level of which is so low, that it is not discernible on designated sites or habitats or the size of species' populations, or changes that balance each other out over the lifespan of a project and result in a neutral position.

Determining significance – adverse and beneficial effects

12.6.7 Adverse effects are assessed as being significant if the favourable conservation status of an ecological feature would be lost as a result of the Proposed Development. Positive effects are assessed as those where a resulting change from baseline improves the quality of the environment (such as increases species diversity, increases the extent of a particular habitat etc., or halts or slows down an existing decline). For a positive effect to be considered significant, the conservation status would need to positively increase in line with a magnitude of change of "high" as described in **Table 12.11**.

12.6.8 Conservation status is defined as follows (as per CIEEM[15]):

- *"For habitats, conservation status is determined by the sum of the influences acting on the habitat that may affect its extent, structure and functions as well as its distribution and typical species within a given geographical area*
- *For species, conservation status is determined by the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area*".

12.6.9 The decision as to whether the conservation status (or level of importance) of an ecological feature would be affected is made using professional judgement, drawing upon the information produced through the desk study, field survey and assessment of how each feature is likely to be affected by the Proposed Development.

12.6.10 A similar procedure is used where designated sites may be affected by the Proposed Development, except that the focus is on the effects on the integrity of each site; defined as:

> *"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".*

12.6.11 The assessment of effects on integrity draws upon the assessment of effects on the conservation status of the features for which the Site has been designated.

Approach to mitigation and compensation

12.6.12 The mitigation hierarchy has been applied to biodiversity[15] to ensure the design of the Proposed Development first seeks to avoid significant harm, to mitigate where it is unavoidable, and, as a last resort, to compensate for residual effects that remain after avoidance and mitigation measures are implemented. The avoidance of significant harm

has been considered through the design process and potential mitigation measures associated with conservation of notable and legally protected flora and fauna have been actively considered.

12.6.13 As an example, the design of the noise barrier has been subject to extension and re-design throughout the process. With each design iteration, consideration of the impact to biodiversity were considered (alongside other factors) to select the most appropriate design approach. Optioneering found that larger designs may require loss of areas of larger areas of woodland and scrub. With reference to the arboriculture report (**Appendix 12.6: Arboricultural Impact Assessment**), only those habitats (and more specifically individual trees) for which impacts were unavoidable will be permanently impacted by the construction of the noise barrier. Embedded measures, such as those described in **Section 12.4** with further ensure that impacts on legally protected and notable flora and fauna would be avoided.

12.6.14 In addition, the project has sought to identify potential ecological enhancements that would be proportionate to the Proposed Development, and which would deliver ecological benefits commensurate to the Proposed Development.

12.6.15 BNG calculations have been used to quantify the area and types of habitat enhancement or creation which will be required to account for areas of habitat loss associated with the construction of the noise barrier and loss of grassland habitats on airfield.

12.6.16 Environmental measures designed to eliminate, minimise or mitigate the risk of impact on species are described in **Section 12.4**.

12.7 Assessment of biodiversity effects

South West London Waterbodies SPA and Ramsar

12.7.1 The effects of the Proposed Development on the South West London Waterbodies SPA/Ramsar are assessed against the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended)[9] in a separate HRA report (**Appendix 12.1: Report to Inform Appropriate Assessment**). This section draws on that report but assesses the effects on the interest features of the Site in the context of The Town and Country Planning (Environmental Impact Assessment) Regulations 201740 (the 'EIA Regulations'). There are some key differences between these assessments that should be recognised; in particular:

- A 'significant' effect in EIA terms is not equivalent to a 'likely significant effect' (for instance the 'screening test' or 'test of significance' in HRA terms).

[40] HM Government (2017) *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017*. [Online] Available at: https://www.legislation.gov.uk/uksi/2017/571/contents [Accessed: 14 October 2024].

- Mitigation is taken into account when assessing the significance of any effects in the EIA (this is not appropriate for the HRA screening stage test of significance, in accordance with case law).

Baseline

12.7.2 South West London Waterbodies SPA and Ramsar Site comprises a series of embanked water supply reservoirs and former gravel pits that support a range of man-made and semi-natural open-water habitats, covering an area of approximately 828ha.

12.7.3 This 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:

- Gadwall (5 year peak mean 1993/94 -1997/98 – 710 individuals); and
- Shoveler (5 year peak mean 1993/94 -1997/98 – 853 individuals).

12.7.4 This site is also designated under Ramsar Criterion 6 for supporting internationally important populations of the above species.

12.7.5 This designated site is located approximately 0.7km from the Proposed Development. No suitable habitat to support large numbers of the qualifying features of this designated site is found within the Survey Area. Impacts are therefore limited to those associated with operation and potential overflight of South West London Waterbodies SPA and Ramsar.

Assessment of effects: Changes in the atmospheric concentration and deposition of nitrogen

12.7.6 The changes in oxides of nitrogen (NO_x) as a result of the Proposed Development are quantified in **Chapter 6: Air Quality**.

12.7.7 Increases in NO_x production are anticipated to occur as a result of changes in how aircraft will taxi when on the airfield, restricting the majority of change to concentrations and deposition within the airport boundary. The increases in NO_x in this area do not extend over any European sites or associated functionally linked land.

12.7.8 Due to the proximity of South West London Waterbodies SPA and Ramsar designated site to the Heathrow Airport boundary, some changes to the levels of NO_x concentration and deposition rates are predicted to occur. The critical level of NO_x for this site is 30µg/m^3; this is the level of pollutants above which direct adverse effects on receptors (including habitats) may occur. This level is not exceeded in any modelled scenario and therefore no effect on supporting habitats of populations of gadwall and shoveler within the designated site is predicted.

12.7.9 Nitrogen deposition rates are predicted to remain relatively stable within the South West London Waterbodies SPA and Ramsar designated site, with changes from the baseline ranging from an increase of 0.01kg/ha/yr to a decrease of 0.05kg/ha/yr dependent on location within the designated site. No critical load has been determined for this site, which is the exposure level of a pollutant below which significant effects on habitats do not occur,

however assuming a minimum critical load of 10kg/ha/yr the modelled worst case scenario would represent 0.1% of the critical load.

12.7.10 This European site comprises mainly of eutrophic open water, much of which is pumped from the River Thames, used as drinking water for London and then replaced regularly (i.e. within the reservoirs). This ensures that the addition of very small levels of nitrogen will not result in any detectable changes on water chemistry both due to the large dilution effect, and the constant movement of water through the drinking water system.

12.7.11 At the closest area of functionally linked land[41] that is not a drinking water reservoir (Colne Mere, which is part of the Wraysbury and Hythe End Gravel Pits SSSI) the increase in nitrogen deposition is predicted to be 0.02kg/ha/yr which represents 0.2% of its minimum critical load. These flooded gravel pits are adjacent to the M25 and are also eutrophic and therefore unlikely to be affected by a small increase in nitrogen deposition.

12.7.12 The location and nature of the habitats supporting gadwall and shoveler will not be detectably changed based on the level of additional nitrogen deposition (or the reduction of nitrogen deposition in some parts of the SPA / Ramsar site) predicted. The modelled year for changes to air quality is 2028, over time the annual emissions of nitrogen oxides has been reducing, with this trend predicted to continue as transport (particularly road traffic) decarbonises. Therefore, the small increases predicted also take place against a background of reducing levels of nitrogen deposition that have occurred over the past three decades.

12.7.13 Therefore, the magnitude of change upon South West London Waterbodies SPA and Ramsar as a result of a changes in atmospheric concentration and deposition of nitrogen is Very Low, leading to a **negligible effect** that is **Not Significant** on a feature of International importance.

Assessment of effects: Disturbance of birds due to aircraft movements

12.7.14 Gadwall and shoveler wintering on the South West London Waterbodies SPA and Ramsar site could be disturbed by the overflight of aircraft due both to the noise created and the visual presence of aircraft (including shadow cast). A literature review undertaken to support the HRA assessment (included in **Appendix 12.2: HRA Screening Report**) for this designated site concluded that birds are typically tolerant of aircraft overflight when the plane is above 2,000ft (610m).

12.7.15 The South West London Waterbodies SPA and Ramsar site is approximately 0.7km due west of the Airport perimeter. In this location Wraysbury Reservoir is the closest waterbody within the designation boundary, with Wraysbury I (north and south) and Wraysbury II (north and south) also directly overflown (see **Figure 5.1** in **Appendix 12.1: Report to Inform Appropriate Assessment**). The Staines Reservoirs (north and south) and King George VI Reservoir are not regularly overflown due to their position, but they do lie close enough to

[41] Natural England (2016) *Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects - a review of authoritative decisions (NECR207)*. [online] Available at: https://publications.naturalengland.org.uk/file/6572958821646336 [Accessed: 14 October 2024].

existing flight paths to be exposed to both the aural and visual stimuli associated with aircraft (which occurs already). Other waterbodies within the designation boundary (namely St Anne's Lake, Beesborough Reservoir, Kempton Park East Reservoir and Red House Reservoir) are at too great a distance and in geographic locations where any overflight takes place well above 2,000ft.

12.7.16 The South West London Waterbodies SPA and Ramsar site is also supported by a range of flooded gravel pits and drinking water reservoirs that make up functionally linked land. These include locations that are currently overflown such as Horton Lake and Colne Mere. For the purposes of this assessment it is assumed that all lakes lying between Brands Hill and Hythe End could be supporting gadwall and shoveler from the SPA and Ramsar site.

12.7.17 The Proposed Development would see an increase in the number of flights landing on the southern runway during easterly operations. These flights at the lowest (when over the Wraysbury Reservoir) will be at an altitude between 1000 and 600ft. The southern runway is also used for aircraft departing in a westerly direction with regular overflight of the waterbodies immediately west of the airfield (including Wraysbury Reservoir and Wraysbury and Hythe End Gravel Pits). Surveys have been conducted of the behavioural responses to disturbance events of birds within waterbodies that are both within and functionally linked to the South West London Waterbodies SPA and Ramsar site. These surveys took place over winter in 2016/2017, 2018/2019, and 2023/2024. A full summary of the results is provided within **Appendix 12.1: Report to Inform Appropriate Assessment**, however of the disturbance events recorded, the majority did not result in a behavioural response to gadwall or shoveller, with tufted duck found to be the most prone to disturbance. Most disturbance events recorded were attributed to members of the public due to the presence of public footpaths within Staines Reservoir. Less than 1% of overflights recorded resulted in a behavioural response of shoveller or gadwall.

12.7.18 When arriving aircraft are approaching in a straight line, as opposed to banking towards the allotted flight path soon after take-off aircraft are less likely to create visual and aural disturbance to birds. Observed disturbance response during surveys found waterbirds more likely to respond to aircraft manoeuvring aircraft rather than those that passed over directly. Therefore, each additional plane landing on the southern runway will likely be less disruptive than others that already regularly take off over the South West London Waterbodies SPA and Ramsar site. The gadwall and shoveler present already display high levels of tolerance to aircraft overflight and therefore the addition of a relatively small number of flights is unlikely to result in further levels of disturbance. The additional aircraft would not be expected to increase the level of disturbance events markedly across the South West London Waterbodies SPA and Ramsar site as tolerance is already built up and the type of flight activity (lower noise and predictable course) is not that which causes disturbance events.

12.7.19 Therefore, the magnitude of change upon South West London Waterbodies SPA and Ramsar as a result of disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual is Very Low, leading to a **negligible effect** that is **Not Significant** on a feature of International importance.

Wraysbury Reservoir SSSI

12.7.20 Wraysbury Reservoir SSSI is a component part of South West London Waterbodies SPA which has been assessed for impacts relating to operation earlier in this section. This includes consideration of impacts on individual sites. No significant effects have been identified.

12.7.21 In addition to the species listed as qualifying features of the South West London Waterbodies SPA and Ramsar site, Wraysbury Reservoir SSSI also supports nationally important numbers of cormorant *Phalacrocorax carbo* and *great crested grebe Podiceps cristatus.*

12.7.22 A review of Wetland Bird Survey (WeBS) for Wraysbury Reservoir shows that the site supports a five-year peak mean of 84 cormorant and 154 great crested grebe for the period 2017/2018 – 2021/2022. Other species present at this site in notable numbers include tufted duck *Aythya fuligula* (17/18 – 21/22 peak mean of 1,355 birds), coot *Fulica atra* (17/18 – 21/22 peak mean of 610 birds), black headed gull *Choicocephalus ridibundus* (17/18 – 21/22 peak mean of 250 birds), and mallard *Anser platyrhynchos* (17/18 – 21/22 peak mean of 154 birds).

12.7.23 None of the qualifying species of this SSSI were identified on site during the survey and there is no suitable habitat to support these species present within the Proposed Development. Impacts are therefore limited to those associated with operation and potential overflight of Wraysbury Reservoir SSSI.

Assessment of effects: Changes in the atmospheric concentration and deposition of nitrogen

12.7.24 Wraysbury Reservoir is a component part of the South West London Waterbodies SPA and Ramsar, the assessment for which (see **paragraphs 12.7.6 to 12.7.13**) has concluded that any increases in the levels of atmospheric nitrogen concentration and deposition as a result of the Proposed Development will not exceed the critical level of 30µg/m^3. This will therefore not have an effect on the habitat present within Wraysbury Reservoir SSSI and its ability to support the qualifying features of this SSSI.

12.7.25 Therefore, the magnitude of change upon Wraysbury Reservoir SSSI as a result of a changes in atmospheric concentration and deposition of nitrogen would be Very Low, resulting in a **negligible effect** that is **Not Significant** on a feature of National importance.

Assessment of effects: Disturbance of birds due to aircraft movements

12.7.26 Wraysbury Reservoir is a component part of the South West London Waterbodies SPA and Ramsar, the assessment for which (see **paragraphs 12.7.14-12.7.19**) has concluded that any increase in the numbers of flights is highly unlikely to result in an increased level of disturbance due to the nature of the additional flights (i.e. landing aircraft) and the apparent tolerance to the species present for which the SSSI is designated. This will therefore not have an effect on the qualifying features of Wraysbury Reservoir SSSI.

12.7.27 Therefore, the magnitude of change upon Wraysbury Reservoir SSSI as a result of a disturbance caused by aircraft would be Very Low, resulting in a **negligible effect** that is **Not Significant** on a feature of National importance.

Staines Moor SSSI

12.7.28 Staines Moor SSSI encompasses three reservoirs and areas of alluvial meadows and grassland. This includes, King George VI reservoir and the two Staines Reservoirs basins (north and south), along with terrestrial and riparian habitats associated with Staines Moor and Poyle Meadows which lies to the west of King George VI reservoir. The South West London Waterbodies SPA and Ramsar site designation only covers the three reservoir sites. The SPA and Ramsar site have been assessed for impacts relating to operation earlier in this section and no significant effects have been identified.

12.7.29 Staines Moor SSSI is also designated for the presence of alluvial meadows and the diverse flora that are supported within this habitat, including small water-pepper (*Polygonum minus*) which is uncommon in Britain. The alluvial meadows also support the oldest known *anthills* of *Lasius flavus* in Britain.

12.7.30 In addition to the species listed as qualifying features of the South West London Waterbodies SPA and Ramsar site, Staines Moor SSSI also supports over 1% of the total wintering British populations of tufted duck, pochard, and goosander. The site also regularly supports populations of wintering golden plover, redshank, ruff, snipe, and dunlin. A review of WeBS data for this site indicates that, between the three reservoirs included within the designation, the site supports a five year average of 2,175 tufted duck, 204 pochard, and 1 goosander for the period 2017/2018 – 2021/2022.

12.7.31 None of the qualifying species of this SSSI were identified on site during the survey and there is no suitable habitat to support these species present within the Survey Area. Impacts are therefore limited to those associated with operation and potential overflight of Staines Moor SSSI.

Assessment of effects: Changes in the atmospheric concentration and deposition of nitrogen

12.7.32 Staines Moor SSSI partially forms a component part of the South West London Waterbodies SPA and Ramsar, the assessment for which has concluded that any increases in the levels of atmospheric nitrogen concentration and deposition as a result of the Proposed Development will not exceed the critical level of 30µg/m^3. This will therefore not have an effect on the habitat present within Staines Moor SSSI and its ability to support the qualifying features of this SSSI.

12.7.33 Therefore, the magnitude of change upon Staines Moor SSSI as a result of a changes in atmospheric concentration and deposition of nitrogen would be Very Low, resulting in a **negligible effect** that is **Not Significant** on a feature of National importance.

Assessment of effects: Disturbance of birds due to aircraft movements

12.7.34 Staines Moor SSSI is a component part of the South West London Waterbodies SPA and Ramsar, the assessment for which (see **paragraphs 12.7.14** to **12.7.19**) has concluded that due to the position of the King George VI Reservoir landing aircraft are unlikely to regularly overfly the reservoir, though the reservoir may be within range of both the aural and visual stimuli associated with the aircraft. However, the apparent tolerance to existing levels of noise and the observations made of the species present during surveys completed

in 2016/17, 2018/19 and 2023/24 make it unlikely that any change in behaviour would be observed. This will therefore not have an effect on the qualifying features of Staines Moor SSSI.

12.7.35 Therefore, the magnitude of change upon Staines Moor SSSI as a result of a disturbance caused by aircraft would be Very Low, resulting in a **negligible effect** that is **Not Significant** on a feature of National importance.

Reptiles – Grass snake

Baseline

12.7.36 The desk study conducted at the Scoping stage of this assessment returned records of grass snake located approximately 700m south-west of the Survey Area, with previous surveys undertaken in the vicinity identifying grass snake records located approximately 1km north and 500m south-west of the Survey Area. Off-airfield habitat suitable to support grass snake was identified within the Survey Area in close proximity to the area where the proposed noise barrier would be constructed. This includes areas of immature woodland and scrub habitat adjacent to the access track which runs alongside the Duke of Northumberland's River. This area was small in extent and subject to human disturbance from habitat management associated with the area.

12.7.37 The Duke of Northumberland's River provides a potential dispersal route for grass snake in particular. This, and the small area of suitable habitat identified means that there is the potential for a small population of grass snake to occur within the Proposed Development in particular in the area associated with the noise barrier construction. Therefore, a precautionary approach has been taken to include this species in the assessment. No other reptile species (such as slow worm) are included.

Assessment of effects: Reduction in the availability of foraging and commuting habitat and resting or breeding sites and Loss of ecological connectivity through severance of habitats resulting in fragmentation.

12.7.38 Changes and loss of habitat on airfield will include an estimated permanent loss of 4ha of grassland habitat. The Proposed Development will include the re-instatement of approximately 0.49ha of grassland being lost to create working compounds, creation of an estimated 1.36ha of grassland due to the removal of pavement adjacent to the northern runway and a further 2.52ha adjacent to the southern runway. This is not anticipated to impact reptile populations due to the surrounding habitat being largely unsuitable for this species group.

12.7.39 The airfield has a regular habitat management plan to reduce the risk of bird strike which maintains a sward height that is generally of value limited for biodiversity. It is therefore considered sub-optimal for supporting reptiles and in particular grass snake. Further to this, constant movement of aircraft and other vehicles within the airfield results in high levels of disturbance and vibration further reducing its suitability for grass snake. It is not anticipated that grass snake would easily disperse into this area from the surrounding habitat as the airfield itself is surrounded by busy roads and therefore isolated from populations in the wider area.

12.7.40 The noise barrier is proposed to be approximately 781m in length and will be either 5m or 7m in height dependent on location. The noise barrier will be constructed to replace an existing 3m high wooden noise barrier and security fence along its proposed extents and therefore a working width of 2m to 3m around the proposed noise barrier has been assumed for the purposes of this biodiversity assessment.

12.7.41 The noise barrier will be 5m and 7m in height, the top 2m and 4m respectively of the barrier will be constructed from transparent Perspex type material. The bottom 3m of barrier will be constructed from non-transparent material, with an external wooden finish. Posts will be constructed along the length of the barrier at centres of approximately 3m.

12.7.42 Taking into account the assumed working area along the length of the noise barrier and the availability of hardstanding immediately adjacent on one side, the habitats that will be lost to facilitate the construction comprise approximately 112m of a hedgerow with trees, 0.01ha of ruderal habitat, 0.02ha of neutral grassland and 0.01ha of bare ground. These habitats are considered to be of limited suitability for grass snake, however they may provide some shelter, basking and foraging opportunities Therefore, there is potential for individual reptiles to be impacted through loss of resting and feeding habitat.

12.7.43 As part of the embedded environmental measures for the Proposed Development, a sensitive vegetation removal strategy will be employed, comprising a two-staged cut, where the vegetation will first be cut to approximately 0.2m in height, allowing any individual reptiles to disperse to nearby undisturbed habitats or be removed by hand and translocated locally to nearby suitable habitat adjacent to the twin rivers. The remaining vegetation will then be left for 24 hours before being cut to ground level.

12.7.44 Therefore, the magnitude of change upon reptiles as a result of a small reduction in the availability of foraging and commuting habitat and resting or breeding sites, and a loss of ecological connectivity through severance of habitats would be Very Low, resulting in a **negative effect** that is **Not Significant** on a feature of Local importance.

Assessment of effects: Killing or injury of reptiles through the removal of occupied resting, or breeding sites.

12.7.45 Suitable habitat to support this species was identified in off-airfield habitats within woodland margins, scrub, and watercourse embankments present within the Survey Area.

12.7.46 The installation of the noise barrier is predicted to result in the loss of approximately 112m of a hedgerow with trees, 0.01ha of ruderal habitat, 0.02ha of neutral grassland and 0.01ha of bare ground. As part of the embedded environmental measures, a check for the presence of reptiles will be conducted before any vegetation clearance takes place and the vegetation will be removed following a two-stage cut, as described in **paragraph 12.7.43** to allow any reptiles to disperse into adjacent habitat and avoiding potential injury.

12.7.47 Therefore, the magnitude of change upon reptiles as a result of the loss of resting/breeding sites resulting in killing or injury would be **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Assessment of effects: Increased noise, vibration, light and movement levels (resulting in disturbance)

12.7.48 Due to the current levels of noise, vibration, light, and movement present within the airfield, the Proposed Development is not considered to lead to a noticeable increase in the levels of these potential disturbance. These current levels also contribute to making the on-airfield habitats unsuitable to support reptiles and therefore are not predicted to result in any impacts against this species.

12.7.49 Although an increase in noise is inevitable during construction, it would be occurring within what is already a high noise environment with baseline noise from planes and adjacent roads contributing to noise levels. Any species, including grass snake which do occur in vicinity of the Airport are assumed to be already tolerant of noise and vibration associated with the airfield and therefore highly unlikely to be affected, if present.

12.7.50 Therefore, the magnitude of change upon reptiles as a result of increased noise, movement, vibration, light, and movement levels is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Assessment of effects: Increased dust levels resulting in habitat damage and degradation, resulting in a reduction in ability to support notable fauna.

12.7.51 It is not anticipated that any excess dust produced as part of the on-airfield works will impact any habitats with potential to support reptiles due to the distance these works will be located from suitable habitat.

12.7.52 Regardless of the distances involved, as part of the embedded environmental measures associated with the Proposed Development, standard best environmental practices measures will be employed throughout the construction period which will contain methods to limit and contain any dust emissions created as part of the Proposed Development.

12.7.53 Therefore, the magnitude of change upon reptiles as a result of an increase in dust levels resulting in habitat damage and degradation is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Birds

Baseline

12.7.54 Breeding bird species which occur on the airfield include skylark (which nests in grassland areas) and starling (which forage widely on the airfield). The airfield features approximately 200ha of grassland habitat which provides potential nesting and foraging opportunities for these species.

12.7.55 Habitats present off airfield include relatively small areas (approximately 2ha in total) with the potential to support breeding birds, such as scrub, broadleaved woodland, riparian habitats, and hedgerow.

12.7.56 The desk study returned records of 30 notable bird species within the Core Biodiversity Study Area and although not all of these species will nest within the Proposed Development, there is potential that some of them may be encountered.

12.7.57 Notable bird species are likely to be restricted to those associated with the riparian habitats and could include species such as kingfisher and Cetti's warbler. Other notable species associated with scrub and woodland habitats such as song thrush and dunnock are also likely to occur.

12.7.58 At Heathrow, measures to reduce suitability of on-airfield habitats to grazing birds include a "long grass policy" which maintains the sward at a height of 150-200mm for on-airfield areas of grassland and the use of netting over the Duke of Northumberland's River and Longford River where they pass directly adjacent to the airfield in the west.

12.7.59 For the purposes of the biodiversity assessment, it is assumed that an assemblage of breeding birds is present within and adjacent to the Proposed Development which could include the following notable breeding birds in low numbers;

- Cetti's warbler;
- Kingfisher;
- Dunnock;
- House sparrow;
- Skylark;
- Starling; and
- Song thrush.

Assessment of effects: Reduction in the availability of foraging and commuting habitat and resting or breeding sites and Loss of ecological connectivity through severance of habitats resulting in fragmentation

12.7.60 Changes and loss of habitat on airfield will include an estimated permanent loss of 4ha of grassland habitat. The Proposed Development will include the re-instatement of approximately 0.47ha of grassland being lost to create working compounds, creation of an estimated 1.36ha of grassland due to the removal of pavement adjacent to the northern runway and a further 2.52ha adjacent to the southern runway.

12.7.61 The works associated with the installation of the noise barrier will result in the loss of approximately 112m of a hedgerow with trees which is considered suitable to provide foraging and nesting opportunities for protected and notable bird species. This includes species identified such as dunnock, house sparrow, sterling and song thrush. Given the extent of the areas of habitat impacted and the observed distribution of breeding birds in this area as part of the 2018 HEP it is predicted that the number of territories or nests would be very small (<5 territories) for all individuals.

12.7.62 As described in **paragraph 12.7.68**, vegetation removal is required to facilitate the Proposed Development including permanent and temporary loss of habitat both on and off airfield.

12.7.63 As part of the embedded environmental measures for the Proposed Development, vegetation removal will be conducted in such a way to avoid impacts on nesting birds. Only

vegetation removal necessary to facilitate the Proposed Development would be undertaken, maintaining as much connectivity and available habitat as possible.

12.7.64 On airfield construction will also see the replacement of areas of redundant concrete with new areas of grassland, with a comparable area of habitat created.

12.7.65 Compensatory habitat creation as part of the commitment to BNG will be created to ensure that the post-development layout provides greater value to the environment than the baseline. Habitat creation and enhancement will be carried out within the wider Heathrow estate with the exact locations to be confirmed, however, habitats to be created or enhanced should be suitable for birds providing a greater extent of suitable nesting bird habitat for species typical of the local breeding bird assemblage.

12.7.66 Therefore, the magnitude of change upon birds as a result of a reduction in the availability of foraging and commuting habitat and resting or breeding sites, and a loss of ecological connectivity through severance of habitats is **Very Low** and is **Not Significant** on features of Local importance.

Assessment of effects: Killing or injury of birds through the removal of occupied resting or breeding sites.

12.7.67 It is anticipated that suitable bird habitat which will require removal to facilitate construction of the Proposed Development, will comprise approximately 40ha of grassland on-airfield and approximately 112m of a hedgerow with trees, and 0.04ha of grassland and ruderal habitats off airfield. Therefore, there is a risk of death or injury to birds as part of the Proposed Development.

12.7.68 As part of the embedded environmental measures included for the Proposed Development, all vegetation clearance will aim to take place outside of the nesting bird season (March – August, inclusive). If it is not possible to achieve this, a check for the presence of nesting birds will be conducted before any vegetation clearance takes place. If an active nest is found, vegetation clearance will halt, and a buffer set up around the active nest to avoid further disturbance. Vegetation clearance can only proceed once the chicks are considered to have fledged and the nest is no longer in use.

12.7.69 Therefore, the magnitude of change upon birds as a result of the loss of resting/breeding sites resulting in killing or injury is **Negligible**, on features of Local importance and therefore **Not Significant**.

Assessment of effects: Increased noise, vibration, light and movement levels (resulting in disturbance)

12.7.70 Due to the current levels of noise, vibration, light, and movement present within the airfield, the Proposed Development is not considered to lead to a noticeable increase in the levels of these potential disturbance factors.

12.7.71 It is anticipated that the construction period for the noise barrier component of the Proposed Development will be approximately 10 weeks, and due to the working width limits present along the route of the noise barrier, no heavy plant is anticipated to be required. The on-airfield works are anticipated to commence in July 2025 and finish in June 2027. Although an increase in noise is inevitable, it will likely be similar to the background noise already

present within the Proposed Development that local bird populations will have become habituated to.

12.7.72 Therefore, the magnitude of change upon birds as a result of increased noise, movement, vibration, light, and movement levels is **Negligible**, on features of Local importance and therefore **Not Significant**.

Assessment of effects: Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.

12.7.73 Dust deposition may have an impact on the suitability of the on-airfield and off-airfield habitats to support protected or notable bird species.

12.7.74 As part of the embedded environmental measures associated with the Proposed Development, standard best environmental practices measures will be employed throughout the construction phase which will contain methods to limit and contain any dust emissions created as part of the Proposed Development.

12.7.75 Therefore, the magnitude of change upon birds as a result of an increase in dust levels resulting in habitat damage and degradation is **Negligible**, on features of Local importance and therefore **Not Significant**.

Bats

Baseline

12.7.76 Records of brown long-eared bat, common pipistrelle, Daubenton's bat, noctule, Leisler's bat, soprano pipistrelle, and an unidentified Myotis species were returned within the 2023 desk study. Additionally, bat activity surveys conducted to support the HEP (completed in 2017 and 2018) recorded at least eight species of bat in areas which overlap with the 2023 Survey Area. Common and soprano pipistrelle were the most frequently recorded species, followed by the "big bat" species group (noctule, serotine, and Leisler's bat), with low levels of Myotis species, Nathusius pipistrelles and long-eared bats also recorded.

12.7.77 No features were identified within on-airfield areas and within the off-airfield survey area that could provide suitability to support roosting bats and have therefore not been considered within this assessment.

12.7.78 The watercourses and linear habitat features present within or adjacent to the Proposed Development provide value as a commuting and foraging resource for bat populations known to be present within the local area.

Assessment of effects: Reduction in the availability of foraging and commuting habitat and resting or breeding sites; and Loss of ecological connectivity through severance of habitats resulting in fragmentation

12.7.79 On-airfield habitats are considered to be unsuitable to support bats, due to the high level of disturbance and artificial lighting present providing unsuitable conditions for roosting, as well as limiting commuting and foraging opportunities. The change in land cover proposed to take place on-airfield will therefore have no impact on local bat populations.

12.7.80 Off-airfield habitats provide suitable commuting and foraging habitat for local bat populations due to the mix of habitats present and the presence of edge features, for example woodland edge, scrub edge, river embankments which are all likely to be used regularly by bats, combined with the presence of the Duke of Northumberland's River which is a major linear feature and provides connectivity across the urban environment.

12.7.81 As part of the embedded environmental measures included for the Proposed Development, vegetation clearance will be carried out sensitively and only where needed to facilitate construction. Although it is anticipated that approximately 112m of a hedgerow with trees will need to be removed to facilitate the construction of the noise barrier the loss of trees or woody species would be minimised to ensure that commuting and foraging habitat will be maintained throughout the Proposed Development, along the northern side of the noise barrier that will continued to provide value to local bat populations.

12.7.82 Therefore, the magnitude of change upon bats as a result of a reduction in the availability of foraging and commuting habitat and resting or breeding sites, and a loss of ecological connectivity through severance of habitats is **Very Low** and is **Not Significant** on a feature of Local importance.

Assessment of effects: Killing or injury of bats through the removal of occupied resting or breeding sites.

12.7.83 On-airfield habitats and structures do not provide suitable opportunities for roosting bats due to the high level of anthropogenic disturbance and artificial lighting present.

12.7.84 No features were identified within the Survey Area that could support roosting bats. Although it is anticipated that approximately 112m of a hedgerow with trees will need to be removed to facilitate the construction of the noise barrier, no features suitable to support roosting bats were identified. Vegetation removal anticipated to occur to facilitate the Proposed Development will be limited as much as possible, with trees to be removed assessed as being too immature to develop features that might support a bat roost.

12.7.85 Therefore, the magnitude of change upon bats as a result of the loss of resting/breeding sites resulting in killing or injury is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Assessment of effects: Increased noise, vibration, light and movement levels (resulting in disturbance)

12.7.86 Although an increase in noise is inevitable during construction, it would be occurring within what is already a high noise environment with baseline noise from planes and adjacent roads contributing to noise levels. Artificial lighting within the airfield and alongside adjacent roads and buildings is widespread which would discourage bat species which are particularly intolerant of light from foraging in the immediate vicinity of the airfield.

12.7.87 Any species, including bats which do occur in vicinity of the Airport are assumed to be already tolerant of noise, vibration and artificial light associated with the airfield and therefore highly unlikely to be affected, if present.

12.7.88 Habitats adjacent to the location of the proposed noise barrier were considered to provide suitable habitat for commuting and foraging bats, with surveys conducted as part of the HEP

(in 2017 and 2018) within the proximity of the noise barrier recorded at least eight species of bat using the habitats associated with the Duke of Northumberland's River.

12.7.89 Construction of the noise barrier will be limited to the area adjacent to already existing infrastructure (the Pod Car Parking for Terminal 5) and it will be anticipated to take approximately 10 weeks. On airfield works are proposed to commence in July 2025 and finish in June 2027.

12.7.90 As detailed in **Chapter 3: Description of the Proposed Development**, night time working will be required as part of the construction process to deliver the Proposed Development within stated timeframes. Any additional lighting required to deliver this night time working will be required to minimise potential effects on terrestrial ecology by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations to decrease the potential displacement effects on light sensitive fauna such as bats. This will be based on best practice guidance issued by the Bat Conservation Trust and the Institute of Lighting Professionals[34].

12.7.91 Therefore, the magnitude of change upon bats as a result of increased noise, movement, vibration, light, and movement levels is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Assessment of effects; Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.

12.7.92 On-airfield habitats have limited suitability to support bats due to the high levels of disturbance and artificial lighting present. Therefore, any dust emissions associated with construction, even whilst suitably controlled, will have no impact on the suitability of the habitat to support protected or notable bat species.

12.7.93 Off-airfield habitats considered to provide suitable habitat to support bats comprise woodland, scrub, riparian habitats, and the Duke of Northumberland's River, which can be sensitive to dust emissions.

12.7.94 As part of the embedded environmental measures associated with the Proposed Development, standard best environmental practices measures (as detailed in the CEMP) will be employed throughout the construction phase which will contain methods to limit and contain any dust emissions created as part of the Proposed Development.

12.7.95 Therefore, the magnitude of change upon bats as a result of an increase in dust levels resulting in habitat damage and degradation is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Otter

Baseline

12.7.96 The desk study did not return any records of otter within the Core Biodiversity Study Area, and previous surveys conducted as part of the HEP (conducted in 2018) only recorded signs of otter north of the Colnbrook By-Pass approximately 400m from the Proposed

Development, with no signs of otter recorded on the Duke of Northumberland's River. No confirmed or potential otter resting sites were identified on the River Colne.

12.7.97 Despite this, habitats present within the Survey Area are suitable to support otter due to the presence of the Duke of Northumberland's River with suitable associated bankside habitat including reedbeds and riparian vegetation.

12.7.98 Habitats present on-airfield are not suitable for otter and are not considered further within this assessment.

Assessment of effects: Reduction in the availability of foraging and commuting habitat and resting or breeding sites; and Loss of ecological connectivity through severance of habitats resulting in fragmentation

12.7.99 No impacts to the watercourse are anticipated and no in channel works are required as part of the Proposed Development. Riparian habitats will be maintained throughout the construction phase.

12.7.100 Due to the design of the noise barrier, construction will not result in the loss of significant areas of terrestrial habitat adjacent to the Duke of Northumberland's River, although work will take place immediately adjacent to this watercourse. However, given the high levels of vehicular and human disturbance within this area, it is not considered likely that otter would occur regularly and are likely to only do so as transitory individuals.

12.7.101 Therefore, the magnitude of change upon otters as a result of a reduction in the availability of foraging and commuting habitat and resting or breeding sites, and a loss of ecological connectivity through severance of habitats is **Very Low**, resulting in a **negative effect** that is **Not Significant** on a feature of Local importance.

Assessment of effects: Killing or injury of fauna through the removal of occupied resting or breeding sites.

12.7.102 As part of the embedded environmental measures associated with the Proposed Development, a Precautionary Working Method Statement will be developed that includes measures to identify potential features associated with otter. Measures are likely to include, pre-works checks of work areas and the presence of an Ecological Clerk of Works during vegetation removal. A toolbox talk will also be given to all operatives working as part of the construction of the Proposed Development, making all staff aware of the potential presence of otters.

12.7.103 Therefore, the magnitude of change upon otter as a result of the loss of resting/breeding sites resulting in killing or injury is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

Assessment of effects: Increased noise, vibration, light and movement levels (resulting in disturbance)

12.7.104 The works proposed to be carried out on-airfield as part of the Proposed Development are located over 500m from the location of the Duke of Northumberland's River and are therefore not anticipated to lead to any increase in disturbance to otter.

12.7.105 Construction of the noise barrier will be limited to the area adjacent to existing infrastructure and will therefore be limited in the scale of construction equipment and duration required to completion.

12.7.106 As detailed in **Chapter 3: Description of the Proposed Development**, night time working will be required as part of the construction process to deliver the Proposed Development within stated timeframes.

12.7.107 Any additional lighting required to deliver this night time working will be required to minimise potential effects on terrestrial ecology by taking measures to minimise lighting usage, minimise light spill, use most appropriate wave lengths of light and locate lighting in the most appropriate locations to decrease the potential displacement effects on light sensitive fauna such as bats. This will be based on best practice guidance issued by the Bat Conservation Trust and the Institute of Lighting Professionals[34].

12.7.108 Therefore, the magnitude of change upon otter as a result of increased noise, movement, vibration, light, and movement levels is **Very Small**, resulting in a **negative effect** that is **Not Significant** on a feature of Local importance.

Assessment of effects: Loss or damage of sensitive flora through smothering resulting in effects on habitat composition and the fauna that it supports.

12.7.109 Off-airfield habitats considered to provide suitable habitat to support otters comprise woodland, riparian habitats, and the Duke of Northumberland's River, all of which may be sensitive to dust emissions.

12.7.110 As part of the embedded environmental measures associated with the Proposed Development, standard best environmental practices measures (as described in the CEMP) will be employed throughout the construction phase which will contain methods to limit and contain any dust emissions created as part of the Proposed Development.

12.7.111 Therefore, the magnitude of change upon otters as a result of an increase in dust levels resulting in habitat damage and degradation is **Negligible**, on a feature of Local importance and therefore **Not Significant**.

12.8 Cumulative effects

12.8.1 The assessment has inherently considered the potential impacts of noise and air quality on sensitive biodiversity receptors (i.e. potential intra-project effects).

12.8.2 The assessment has considered the implications of the Proposed Development on biodiversity features in isolation of potential effects from other projects and activities. However, the EIA Regulations[40] also require the potential for the cumulative effects of the Proposed Development with other existing and/or approved projects to be assessed. Cumulative effects can result from individually insignificant but collectively significant actions taking place over a period of time or concentrated in a location. An assessment inter-project effects is considered within in **Chapter 13: Cumulative Effects**.

12.9 Biodiversity Net Gain

12.9.1 The Proposed Development will result in the loss of the following habitats:

- Sections of grassland associated with runway and taxiway margins to be replaced with hardstanding and pavement (comprising of 3.96ha of modified grassland);
- The grassland, located north of the proposed noise barrier access (comprising 0.02ha of modified grassland);
- The gravelled access north of Wright Way that falls within the development area of the proposed noise barrier (comprising 0.01ha of artificial unvegetated; unsealed surface);
- The ruderal/ephemeral vegetation north of the proposed noise barrier access (comprising 0.01ha of ruderal/ephemeral); and
- The native hedgerow with trees that falls within the development area of the proposed noise barrier (comprising 0.112km of native hedgerow with trees).

12.9.2 Unmitigated this results in the loss of an estimated 8.08 Area habitat units and 0.99 Hedgerow units. The Proposed Development will include creation of 3.88ha grassland habitats on airfield, which will replace redundant areas of hardstanding and also additional re-instatement of 0.47ha of modified grassland which will be replaced with hardstanding to create a working compound. Given that this area would be in operation for two years or more this is considered to be permanent loss of habitat which is then re-created rather than temporary loss.

12.9.3 Due to the close proximity of the Duke of Northumberland's River, there is a requirement to include consideration for watercourse habitats. Whilst it is not anticipated that any impacts would occur, it would still be a requirement to provide a net gain of 10% for watercourse habitats.

12.9.4 The wider Heathrow Estate features a number of opportunities for habitat enhancement and potentially habitat creation such as diversification of grassland and scrub, re-instatement of hedgerows, watercourse management, and habitat creation of woodland, grassland or orchards. To achieve a 10% BNG for area habitats, hedgerows and watercourses it is estimated that the following areas or lengths of habitat creation or enhancement would be required:

- Enhancement of approximately 0.5 – 1.5 ha area habitats (such as grassland, scrub or woodland);
- Enhancement or creation of approximately 150-200m of hedgerows; and
- Enhancement of between 80 and 100m of watercourse habitats.

12.9.5 A strategic approach to BNG delivery will consider the availability of habitats within the wider Heathrow estate. Detailed information relating to the delivery of a 10% BNG, including an updated BNG statement and a HMMP would be provided under the deemed condition imposed by paragraph 13 of Schedule 7A of the TCPA 1990[3] if permission is granted, and

any offsite biodiversity gains would be delivered and maintained pursuant to a conservation covenant or planning obligation in accordance with the statutory BNG regime.

12.9.6 Further detail is provided in **Appendix 12.4: Biodiversity Net Gain Assessment**.

12.10 Summary and conclusion

12.10.1 The scope of the biodiversity assessment was determined through a combination of a desk study to identify existing biological data relating to the Core Biodiversity Study Area, a site survey, the receipt of the Scoping Opinion from the LBH and consultation with other relevant stakeholders. A desk study exercise was conducted to determine the statutory and non-statutory designated sites that could potentially be significantly affected by the Proposed Development. A UKHab survey was conducted to assess the importance of the flora and habitats across the Survey Area. Habitat suitability assessments were undertaken for GCN, birds, reptiles, water vole, badger, otter, and bats. Additionally, a review of biodiversity survey data collected as part of the HEP was reviewed for any results relevant to the location of the Proposed Development and used to inform the assessment where appropriate.

12.10.2 The desk study identified 10 statutory designated nature conservation sites within the Core and Extended Biodiversity Study Areas, with the closest site South West London Waterbodies SPA and Ramsar located approximately 1.7km from the location of the Proposed Development. Three non-statutory designated sites were identified within the Core Biodiversity Study Area, with the closest site located immediately adjacent to the Proposed Development. The Proposed Development is not anticipated to have any effects on these statutory and non-statutory designated sites.

12.10.3 The habitat surveys concluded that the Proposed Development is dominated by habitats of limited ecological value which are common within an urban environment, such as modified grassland, mixed scrub, other broadleaved woodland, and a hedgerow with trees. The Proposed Development will be limited to areas adjacent to existing infrastructure, with standard best practice measures to be included throughout the construction period to minimise risk of degradation and loss of habitats and as such will not have an impact on these habitat features.

12.10.4 Protected species assessments concluded that the Proposed Development and immediately adjacent areas has suitability to support grass snake, nesting birds, commuting and foraging bats, and otter. The design of the Proposed Development and the embedded environmental measures have focused on avoiding important habitat for the species, minimising potential for injury, killing, disturbance, and displacement of individuals. Measures include the completion of pre-works checks for the presence of reptiles and nesting birds prior to vegetation clearance taking place and the development of a method statement for reptiles, bats, and otters.

12.10.5 The assessment has not identified any significant effects on biodiversity receptors as a result of the Proposed Development across both the construction and operational phases. **Table 12.14** contains a summary of the assessment of effects of the Proposed Development upon biodiversity.

Table 12.14 Summary of assessment of effects on biodiversity features

Feature	Importance of feature	Predicted effect	Magnitude of change	Significance
South West London Waterbodies SPA and Ramsar	European / International	Changes in the atmospheric concentration and deposition of nitrogen	Negligible	Not Significant
		Disturbance of birds due to aircraft movements resulting in a reduction in the fitness of individual birds.	Negligible	Not Significant
Wraysbury Reservoir SSSI	National	Changes in the atmospheric concentration and deposition of nitrogen	Negligible	Not Significant
Staines Moor SSSI	National	Changes in the atmospheric concentration and deposition of nitrogen	Negligible	Not Significant
Grass Snake	Local	Reduction in available habitat and resting or breeding sites	Very Low negative	Not Significant
		Killing or injury through removal of resting sites	Negligible	Not Significant
		Increased noise, vibration, light, and movement levels	Negligible	Not Significant
		Increased dust emissions resulting in habitat degradation.	Negligible	Not Significant
Birds	Local	Reduction in available habitat and resting or breeding sites	Very Low negative	Not Significant
		Killing or injury through removal of resting sites	Negligible	Not Significant
		Increased noise, vibration, light, and movement levels	Negligible	Not Significant
		Increased dust emissions resulting in habitat degradation.	Negligible	Not Significant
Bats	Local	Reduction in available habitat and resting or breeding sites	Very Low negative	Not Significant
		Killing or injury through removal of resting sites	Negligible	Not Significant
		Increased noise, vibration, light, and movement levels	Negligible	Not Significant
		Increased dust emissions resulting in habitat degradation.	Negligible	Not Significant
Otter	Local	Reduction in available habitat and resting or breeding sites	Very Low negative	Not Significant

Feature	Importance of feature	Predicted effect	Magnitude of change	Significance
		Killing or injury through removal of resting sites	Negligible	Not Significant
		Increased noise, vibration, light, and movement levels	Negligible	Not Significant
		Increased dust emissions resulting in habitat degradation.	Negligible	Not Significant