

Draft Heathrow Expansion National Policy Statement

Habitats Regulations Assessment

Department for Transport

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Quality information

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1. Introduction

1.1 Background

AECOM has been commissioned to undertake an independent Statement to Inform Habitats Regulations Assessment (HRA) in support of the review of the Airports National Policy Statement (ANPS), renamed to the Heathrow Expansion National Policy Statement, for the Department for Transport (DfT).

DfT is responsible for setting national aviation policy, working with the aviation industry, including airlines, airports, the Civil Aviation Authority (CAA), and NATS (the UK's National Air Traffic Service). Aviation policy is crucial in supporting DfT's priorities to grow the economy, improve transport users' experience and reduce environmental impacts. On 29 January 2025 the Government announced its support for a third runway at Heathrow Airport as part of its plans to go further and faster to kickstart economic growth. The Government is committed to harness the opportunities Heathrow expansion creates to deliver a modern, efficient transport system that attracts international investment, improves connectivity and enhances the UK's global competitiveness.

The Airports National Policy Statement (Airports NPS) was designated in 2018 and significant global, policy and legislative changes have taken place since that time. New environmental and climate obligations have been introduced, patterns of travel have changed, and other airports have received planning approval to expand. To ensure that the basis for decision making on development consent applications for a third runway at Heathrow Airport takes these changes into account and aligns with the Government's four tests for Heathrow expansion on climate change, noise, air quality and economic growth across the country, as set out by the Secretary of State in a statement to the House of Commons on October 22 2025, the Government decided to review the Airports NPS.

To help determine the approach to the review, the Government invited potential scheme promoters to submit proposals, to ensure the review could consider up to date Heathrow expansion proposals. Seven proposals were received and assessed. Following that assessment, two potential schemes remained under active consideration with a view to reaching a final decision on a single scheme to inform the Airports NPS review. On 25 November 2025 the Government decided that the Heathrow Northwest Runway scheme, brought forward by Heathrow Airport Limited, offered the most credible and deliverable option and would be the single scheme to inform the Airports NPS review.

The Policy Review has taken into consideration the Airports NPS's uniqueness in being the only single-site national policy statement, and that the Government is not revisiting the appropriate location for additional runway capacity in the South East of England decided in the 2018 Airports NPS. Instead, the Government has considered whether there remains a strong case for expanding hub capacity at Heathrow, via a Heathrow Northwest Runway scheme, that it can meet its four tests and that the requirements it places on an applicant are robust and up to date.

In light of this, the Airports NPS has been renamed the Heathrow Expansion NPS (HENPS) to reflect that the document does not reconsider the strategic location

(Heathrow) of additional runway capacity, and to clarify that the document was, and continues, to have effect, for the purposes of Section 14 of the Planning Act 2008 in relation to the provision of a Northwest Runway at Heathrow Airport only. The HENPS does not affect Government policy on wider aviation issues, for which the 2013 Aviation Policy Framework and any subsequent policy statements apply.

The HENPS sets out:

- The Government's policy on the need for increased capacity at Heathrow Airport;
- Why the Government has decided that a Heathrow Northwest Runway scheme will inform the review of the Airports NPS; and
- The specific requirements that a scheme must demonstrate and meet in order to make an application for development consent that is compliant with the draft HENPS. The policies in the draft HENPS will have effect in relation to a Northwest Runway scheme, having a runway length of up to 3,500m and forming part of a scheme which, on completion, is capable of enabling at least 260,000 additional air transport movements (ATMs) per annum¹; It will also have effect in relation to any new terminal infrastructure or reconfiguration of terminal facilities associated with a Heathrow Northwest Runway scheme at Heathrow Airport.

For a scheme to be compliant with the draft HENPS, the Secretary of State would expect to see these key elements comprised in its design, and their implementation and delivery secured. Other NPSs may also be relevant to decisions on nationally significant infrastructure projects at airports but, if there is conflict between the HENPS and other NPSs, the conflict should be resolved in favour of the HENPS as the HENPS is most relevant to the scheme.

Under section 104 of the Planning Act 2008, the Secretary of State must decide any application in accordance with any relevant NPS unless he or she is satisfied that to do so would:

- Lead to the UK being in breach of its international obligations;
- Be unlawful;
- Lead to the Secretary of State being in breach of any duty imposed by or under any legislation;
- Result in adverse impacts of the development outweighing its benefits; or
- Be contrary to legislation about how the decisions are to be taken².

¹ The draft HENPS stipulates the length of the new runway to ensure that the new infrastructure can accommodate the largest commercial aircraft, as they operate many of the long haul flights that support the UK's position as a major aviation hub

² Planning Act 2008, section 104 – decisions in cases where an NPS has effect

2. Habitats Regulations Assessment (HRA)

2.1 Legislative Context

The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 (“the Withdrawal Act”). This established a transition period, which ended on 31 December 2020. The Withdrawal Act retains the body of existing EU-derived law within our domestic law. During the transition period EU law applies to and in the UK. The UK is no longer a member of the European Union. However, Habitats Regulations Assessment will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019³.

The HRA process applies the ‘Precautionary Principle’⁴ to Habitats sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the Habitats site(s) in question. Plans and projects with predicted adverse impacts on Habitats sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Over-riding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

The need for Appropriate Assessment (**Box 1**) is set out in the Conservation of Habitats and Species Regulations 2017 (as amended) (“Habitats Regulations”).

Box 1: The legislative basis for Appropriate Assessment

Conservation of Habitats and Species Regulations 2017 (As Amended)

With specific reference to Plans, Regulation 105 (1) states that:

Where a land use plan –

“(a) is likely to have a significant effect on European Site or a European offshore marine site (either alone or in-combination with other plans, or projects, and

(b) is not directly connected with or necessary to the management of the site,

The plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site’s conservation objectives.

³ these don’t replace the 2017 Regulations but are just another set of amendments

⁴ The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: “When human activities may lead to morally unacceptable harm [to the environment] that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis”.

Over the years, the term ‘Habitats Regulations Assessment’ (HRA) has come into wide currency to describe the overall process set out in the Habitats Regulations, from screening through to identification of IROPI. This has arisen in order to distinguish the overall process from the individual stage of "Appropriate Assessment". Throughout this report the term HRA is used for the overall process and restricts the use of Appropriate Assessment to the specific stage of that name.

In spring 2018 the ‘Sweetman’ European Court of Justice ruling⁵ clarified that ‘mitigation’ (i.e., measures that are specifically introduced to avoid or reduce a harmful effect on a Habitats site that would otherwise arise) should **not** be taken into account when forming a view on likely significant effects. Mitigation should instead only be considered at the Appropriate Assessment stage. This HRA has been cognisant of that ruling.

The Heathrow Expansion National Policy Statement is treated as a Plan for the purposes of HRA. As such, it is subject to HRA at plan level in accordance with the tiering of HRA described below and the methodology set out in Section 3.

2.2 Tiering of HRA

Advocate-General Kokott’s advice⁶ regarding tiering of HRA for a multi-tiered planning system as quoted in the previous section is central to the approach of tiering HRA. In other words, in a multi-tier planning system the HRA at each tier must be done at the level appropriate to that tier. HRA must acquire more detail as the planning system tiers are negotiated until the fullest level of detail is achieved at the Development Consent Order stage.

For a high-level plan such as the draft HENPS, the HRA must also be suitably high level, reflecting the fact that the specific details of construction such as construction methods, timing and deployable mitigation measures, and refined noise and air quality modelling tailored to the details of the specific proposal for which planning permission is to be sought are not yet available. The HRA for the draft HENPS is therefore more precautionary than that at the Development Consent Order (DCO) level. As a result, the fact an adverse effect on integrity cannot be dismissed for draft HENPS does not mean that following further work for the it may not be possible to draw a different conclusion.

There is therefore a distinction between the level of detail required in a plan for it to pass the HRA tests, including the derogation tests if required, and that required for a subsequent DCO. This is because a plan is an intentionally higher-tier document that by design does not present all the details for a particular harmful proposal. In contrast, once planning permission is granted there is no further tier in the planning approval process. As such all matters regarding the derogations including compensation must be fully detailed at the time planning consent is granted.

2.3 Scope of the HRA

There are no standard criteria for determining the ultimate physical scope of an HRA of a Plan or Strategy document. Therefore, in considering the physical scope of the

⁵ People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

⁶ Opinion of Advocate-General Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland, paragraph 49.

<http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN>

assessment, we were guided primarily by the identified impact pathways (called the source-pathway-receptor model) rather than by arbitrary 'zones'. Using this approach, the following international sites are included in the scope of assessment:

- All sites within the Heathrow Expansion scheme boundary; and,
- Other sites shown to be linked to development within the boundary through a known impact 'pathway' (discussed below).

Briefly defined, impact pathways are routes by which the implementation of a Strategy document can lead to an effect upon a Habitats site. An example of this would be new residential development resulting in an increased population and thus increased recreational pressure, which could then affect Habitats sites by, for example, disturbance of wintering or breeding birds.

Guidance from the Ministry of Housing, Communities and Local Government (MHCLG) states that the HRA should be '*proportionate to the geographical scope of the [plan policy]*' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (MHCLG, 2006, p.6). More recently, the Court of Appeal ruled that providing the Council (competent authority) was duly satisfied that proposed mitigation could be 'achieved in practice' to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Core Strategy document). In this case the High Court ruled that for 'a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Reg 61 of the Habitats Regulations'.

2.4 The Layout of this Report

Chapter 3 of this report explains the methodology by which this HRA has been carried out, including the three essential tasks that form part of HRA. **Chapter 4** provides details of the relevant Habitats sites, including conservation objectives and current pressures and threats. **Chapter 5** provides background on the main impact pathways and the Screening Assessment; **Chapter 6** contains the Appropriate Assessment for the identified impact pathways, **Chapter 7** sets out the basis for a derogation.

2.5 Quality Assurance

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

All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2025).

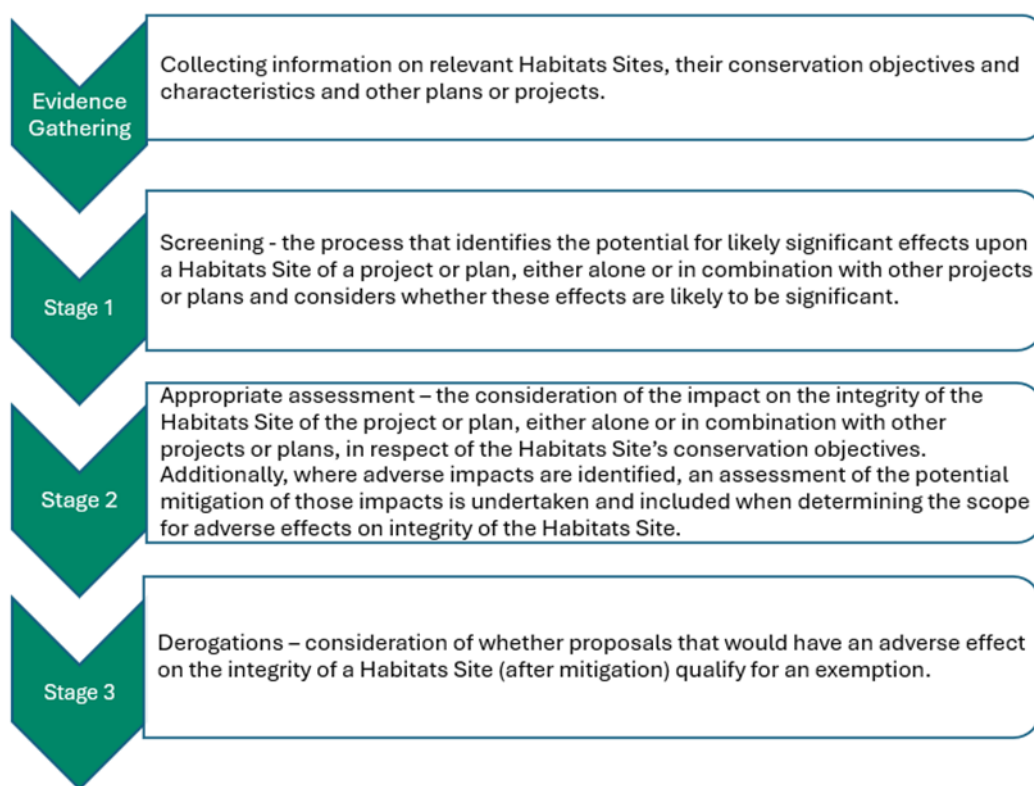
3. Methodology

3.1 Introduction to HRA Methodology

The HRA will be carried out with reference to the general EC guidance on HRA⁷ and that of the UK government⁸.

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

Figure 1. Four Stage Approach to Habitats Regulations Assessment.



3.2 Description of HRA Tasks

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

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

⁷ European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.

⁸ [Habitats regulations assessments: protecting a Habitats site - GOV.UK](#). Note that at time of writing there is a consultation on updates to this guidance. However, the updates improve clarity and provide detail rather than fundamentally changing the HRA process.

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

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

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

In the Waddenzee case⁹, the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive, including that:

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

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

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

3.2.2 HRA Task 2 – Appropriate Assessment

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

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

⁹ Case C-127/02

effect on site integrity (in other words, disruption of the coherent structure and function of the Habitats site(s)).

In 2018 the Holohan ruling¹⁰ handed down by the European Court of Justice included among other provisions paragraph 39 of the ruling stating that *'As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, ... typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area'* [emphasis added].

In evaluating significance, AECOM will rely on professional judgement as well as the results of bespoke studies, supported by appropriate evidence/data, and previous stakeholder consultation regarding the impacts of the HENPS on Habitats Sites considered within this assessment.

3.2.3 HRA Task 3 – Mitigation

Where necessary, measures will be recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on Habitats sites. There is considerable precedent, both nationally and locally, concerning the level of detail that a Plan document needs to contain regarding mitigation for recreational impacts on Habitats sites, for example. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.

3.2.4 HRA TASK 4- Derogation

In certain circumstances, a plan-making authority/competent authority can adopt a plan, notwithstanding the fact that the AA concludes it will have adverse effects on the integrity of a Habitats site. This is known as a derogation. Derogations were required for the 2018 ANPS, and whilst any requirement for derogations in respect of the HENPS cannot be assumed on the basis of previous assessments, an updated derogations assessment has been deemed necessary for the draft HENPS based on the Appropriate Assessment and proposed mitigation. This is a precautionary approach, as project design and therefore project specific mitigation measures are not available. A plan must pass each of the following three sequential legal tests for a derogation to be granted:

- There are no feasible alternative solutions that would be less damaging to the Habitats site while still meeting the objective of the plan or proposal.
- The proposal needs to be carried out for imperative reasons of overriding public interest.
- The necessary compensatory measures can be secured.

Since the tests are sequential, a project or plan that cannot meet a given test fails the derogations and therefore does not progress to the later tests.

There is a distinction between the level of detail required in a plan for it to pass the derogation tests, and that required for a subsequent DCO. A plan is an intentionally higher-tier document that by design does not present all the details for a particular

¹⁰ Case C-461/17

proposal, or all the investigation work that will be developed as detailed design proceeds.

It leaves flexibility for design of a subsequent DCO including as regards avoidance, mitigation and compensation of adverse effects on a Habitats site. In contrast, once a DCO is made there is no further tier in the planning approval process other than discharge of conditions. As such all matters regarding the derogations including compensation must be fully detailed at the time planning consent is granted.

At the plan-making stage, the decision maker must be satisfied that the derogation tests are met at the strategic plan level and are capable of being met at the project level. In light of this, the duty on DfT as the Competent Authority for this plan is to be satisfied that, the derogations tests have been adequately appraised, and where necessary, compensation is achievable in principle and likely to be achievable and effective in practice.

3.2.5 Test 1 Consider alternative solutions

To allow a derogation the plan making authority must decide that there is no alternative solution that would be less damaging to the site while still meeting the objective of the plan. The plan making authority should consider whether the proposal could:

- be delivered at a different location
- use different routes across a site
- change its scale, size, design, method or timing

To constitute a genuine alternative solution, the alternative must:

- achieve the same overall objective as the original proposal
- be financially, legally and technically feasible
- be less damaging to the relevant Habitats site and not have an adverse effect on the integrity of any other Habitats site

If there are, or appear to be, one or more alternative solutions, the plan making authority cannot include the original proposal within the plan. In those circumstances, there is no need to do test 2 or test 3.

If there are no alternative solutions, the proposal passes test 1 and the plan making authority can move to test 2.

3.2.6 Test 2: Consider imperative reasons of overriding public interest

If there are no feasible alternative solutions, the plan making authority must next be able to show that there are imperative reasons of overriding public interest (IROPI) why the proposal must go ahead. The plan making authority must decide if the need for the proposal is:

- imperative - it is essential that it proceeds
- in the public interest – it delivers a public interest benefit, not just benefits for private interests

- overriding - the imperative public interest outweighs the harm, or risk of harm, to the integrity of the Habitats site that is predicted by the appropriate assessment.

According to government guidance¹¹, plans or projects that only provide short-term or very localised benefits are less likely to be able to show imperative reasons of overriding public interest than more strategic plans or projects.

Some of the designated habitats and species of Special Areas of Conservation (SAC) are Europe-wide 'priority habitats' in danger of disappearance, as defined in the Habitats Directive. Where such priority habitats are at play, there is a stricter test applied at the IROPI stage.

3.2.7 Test 3: Compensatory measures

If there are no feasible alternative solutions and the plan making authority has shown that there are imperative reasons of overriding public interest, it is necessary to make sure that suitable compensatory measures are capable of being secured at the DCO stage. Such measures will need to fully offset the harm to coherence of structure and function (effect on integrity) which will or could be caused to the site.

Regarding derogations, the focus at the plan-making stage is to ensure that there is scope for suitable compensatory provision. This includes regarding its scale, its technical feasibility, and the likelihood that adequate areas for compensation can be identified. The precise details of the specific compensation parcels to be secured, and technical matters such as landowner agreements, are deferred to the individual scheme (DCO) level.

The derogations stage of the HENPS HRA report will therefore seek to explore whether a sufficient framework exists to ensure that suitable compensation is capable of being delivered when and where it is needed, and that there is a high degree of confidence that sufficient land in appropriate places will be available for the compensation to be delivered.

Following public consultation, the derogations documentation will be finalised and submitted to the 'appropriate authority' (the relevant Secretary of State) in line with Regulation 107 of the Habitats Regulations, which provides that the appropriate authority has 21 days to prohibit adoption of the plan, based on the derogation materials. The appropriate authority may do this either indefinitely or during such period as may be specified in the direction.

3.3 Geographical Scope of the HRA

There are no standard criteria for determining the ultimate physical scope of an HRA. Rather, the source-pathway-receptor model should be used to determine whether there is any potential pathway connecting development to any Habitats sites.

In the case of the HENPS the following search areas were adopted:

- 15 km as a basic criterion for identification of Habitats sites
- 22 km for Special Protection Areas (SPA) designated for pink footed goose (based on the distance used by Natural England in their Aviation Sensitivity Maps)

¹¹ <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site#derogation>

- 30 km from the option boundary for Special Areas of Conservation (SAC) which list bats as a qualifying feature. The 30 km zone drew on guidance from Design Manual for Roads and Bridges.

These distances are indicative guidelines, Habitats sites outside of these distances have been considered where a credible impact pathway exists.

3.4 Confirming Other Plans and Projects That May Act ‘In Combination’

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

In considering the potential for combined regional housing, employment and mixed-use sites, and other development to impact on Habitats Sites the primary consideration is the impact of visitor numbers – i.e., recreational pressure and urbanisation.

When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e., to ensure that those projects or plans (which in themselves may have minor impacts) are not simply dismissed on that basis but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan or policy would otherwise be screened out because its individual contribution is inconsequential.

The following plans are considered to have the potential to act in-combination with the HENPS.

- Hillingdon Council Local Plan 2012-2026
- London Borough of Hounslow Local Plan 2015
- Royal Borough of Windsor and Maidenhead Local Plan 2013-2033
- London Borough of Richmond upon Thames Local Plan 2024-2039
- Spelthorne Borough Council Local Plan 2024-2039/40
- The Local Development Plan for Slough Borough Council
- Ealing Local Plan
- Ealing Regulation 22 Local Plan 2024
- London Borough of Merton Local Plan 2024
- The London Plan 2021 (currently being updated)
- The Mayor’s Transport Strategy 2022 revision
- London Environment Strategy 2018
- London Growth Plan

In addition, we searched for any Nationally Significant Infrastructure Projects and other airport strategies with the potential to impact the draft HENPS. It should be noted that, while the broad potential impacts of these other projects and plans have been considered, we have not carried out full HRA on each of these plans – we have however drawn upon existing HRAs that have been carried out for surrounding

authorities and plans. The above plans were all screened out for further assessment given the relatively high level nature of the draft HENPS and the requirement for additional, detailed assessment through the DCO process for any development proposals for a third runway at Heathrow

4. Habitats Sites

The Zone of Influence (Zol) of a development is the area over which ecological features may be impacted by biophysical changes as a result of the project or plan¹². The Zol will vary for different impacts and for different ecological features, depending on their sensitivity to environmental change. It is therefore appropriate to identify different Zol for different impacts and features. As recommended in CIEEM (2022b), professionally accredited or published studies and guidance, where available, should be used to determine the likely Zol, as well as professional judgement. However, CIEEM also highlight that establishing the Zol should be an iterative process informed by both desk study and field survey. Where limited information is available, the Precautionary Principle is adopted and a Zol adopted on that basis. CIEEM's recommended approach has been followed in this AA Screening and NIS.

A 15 km buffer has been used to identify Habitats sites of relevance to the Scheme. This zone was chosen for consistency with the 2018 HRA of the ANPS. Consideration was also given to impact pathways which may connect the Scheme to a Habitats site at a greater distance than 15 km (the source—pathway-receptor approach). However, no linking impact pathways to Habitats sites more than 15km afield were identified.

In the case of the HENPS, it has been determined that the Habitats sites identified in Table 1 require consideration. The locations of these Habitats sites in relation to the Heathrow boundary are illustrated in Appendix A, Figure 1A. These are the same sites as those considered the HRA for the 2018 ANPS.

¹² CIEEM (2024). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

Table 1. Habitats Sites for consideration and their location in relation to Heathrow Expansion Strategy Area

Habitats site	Location and reason for inclusion
South West London Waterbodies SPA	Adjacent to Heathrow Expansion Policy Statement area. Susceptible to recreational pressure, disturbance, water pollution, invasive species, changes in site management and natural changes to site conditions. Designated for Gadwall non-breeding and Shoveler
South West London Waterbodies Ramsar site	Adjacent to Heathrow Expansion Policy Statement area. Designated for Gadwall non-breeding and Shoveler Susceptible to the same pressures as the SPA above.
Windsor Forest & Great Park SAC	6.2km west at its closest point Susceptible to changes in air quality, changes in site management, invasive species, disease. Designated for beech and oak woodlands and violet click beetle
Richmond Park SAC	10km east at its closest point Designated for Stag beetle
Burnham Beeches SAC	10.2km north-west at its closest point Susceptible to changes in air quality, recreational disturbance, habitat fragmentation, and damage due to deer. Designated for acidiphilous beech forests with ilex
Thursley, Ash, Pirbright & Chobham SAC	10.8km south-west at its closest point Susceptible to recreational disturbance, disturbance due to military use, changes in air quality, undergrazing, invasive species, hydrological changes, wildfire/arson, Designated for Northern Atlantic wet heaths, European dry heaths and depressions on peat substrates of the Rhynchosporion
Thames Basin Heaths SPA	10.8km south-west at its closest point Susceptible to recreational disturbance, disturbance due to military use, changes in air quality, undergrazing, invasive species, hydrological changes, wildfire/arson. Designated for Dartford warblers, nightjar and woodlark

Habitats site

Location and reason for inclusion

Wimbledon Common SAC

11.1km east at its closest point Susceptible to recreational disturbance, changes in air quality, habitat fragmentation and invasive species. Designated for Northern Atlantic wet heaths with *Erica tetralix*, European dry heaths and stag beetle.

Source: www.magic.defra.gov.uk

This was based upon a search of surrounding Habitats sites and based on the vulnerabilities of the interest features of the Habitats sites. All the above sites were subjected to the initial screening exercise. It should be noted that the presence of a conceivable pathway linking the HENPS area to a Habitats site does not mean that likely significant effects will occur.

The reason for designation, conservation objectives and environmental vulnerabilities of the Habitats Sites are detailed in Appendix A.

5. Likely Significant Effects

The draft HENPS was screened to assess the potential for Likely Significant Effects. This involved considering whether there were any pathways by which the expansion of Heathrow Airport could lead to an effect on a Habitats Site.

Based upon Natural England Site Improvement Plans, Conservation Objectives for Habitats sites, Supplementary Advice on the Conservation Objectives, and professional judgement, there are six impact pathways that require consideration. These are detailed in Table 2 overleaf. An X in the Screening Matrix indicates that there is the potential for likely significant effects. Given the proximity of the Heathrow Expansion Policy Statement area to South West London Waterbodies SPA and Ramsar site, the presence of other Habitats sites within 15 km of the Policy Statement area, and the presence of linking impact pathways as identified in Table 2 below, it is considered likely significant effects cannot be dismissed. Therefore, Appropriate Assessment is required to investigate these effects more fully and determine whether adverse effects on integrity will arise. This is identical to the conclusion reached in 2018 for the ANPS.

Further details of the impact pathways are set out in the Appropriate Assessment sections. Impact pathways in respect of disturbance include recreational use and construction and operational activities, habitat loss includes loss due to infrastructure associated with the development of a third runway, such as changes to the highway network, air quality considers construction and operational activities, including traffic movements, hydrological impacts includes water quality and flow changes, whilst operational management addresses impacts related to operational management of a third runway.

In-combination effects are the cumulative effects of the draft HENPS when considered alongside other proposed, consented or ongoing plans or projects. It should be noted that where an LSE is identified alone, this is sufficient to trigger Appropriate Assessment.

Table 2. Screening Matrix of Likely Significant Effects on Habitats Sites

Habitats site	Impact with the Potential to Result in a LSE					
	Direct Habitat Loss	Disturbance	Hydrological changes	Air Quality	Operational Management	In-combination
South West London Waterbodies SPA and Ramsar	X	X	X	X	X	X
Windsor Forest & Great Park SAC				X		X
Burnham Beeches SAC				X		X
Thursley, Ash, Pirbright and Chobham SAC				X		X
Wimbledon Common SAC				X		X
Richmond Park SAC				X		X
Thames Basin Heaths SPA				X		X

6. Appropriate Assessment

An Appropriate Assessment looks at the potential effects in more detail in order to establish whether adverse effects on the integrity of Habitats Sites will occur, having given consideration to any mitigation measures, and the potential for any further in-combination effects.

This Appropriate Assessment has incorporated the following steps:

- Gathering additional information on, and exploring the reasons for, the relevant Habitats Sites designations;
- Determining the nature of the environmental conditions required to maintain the integrity of the Habitats Sites and the trends in associated environmental processes;
- Identifying whether the proposed HENPS could lead to an impact on any identified processes that support the sites;
- Determining whether the identified impact could result in an adverse effect on the integrity of Habitat Sites; Identifying other plans and projects that might affect these sites in-combination with the proposed policy and establishing whether there are any adverse in-combination effects; and
- Identifying mechanisms to enable the delivery of measures to avoid or mitigate for any identified potential effects.

6.1 Effects of Disturbance

6.1.1 Introduction

Construction activities have the potential to cause disturbance to qualifying animal species (those species named within the Habitats Site's citation). In addition, maintenance works during the operational phase also have the potential to cause disturbance where they take place sufficiently close to qualifying species. Disturbance can be caused visually (for example by the presence of personnel and plant, or as a result of artificial illumination of habitats) and/or by the noise and vibration generated by works. This could impact qualifying species when inside the boundary of a Habitats site, or outside of a Habitats site when using functionally-linked habitat.

During the operational phase, the noise generated by aircraft could be sufficient to cause disturbance of qualifying bird species (gadwall and shoveler) of South West London Waterbodies SPA/Ramsar site, either within the SPA/Ramsar site or in functionally-linked habitat.

The potential for disturbance to be caused will depend on the location and nature of activities, the distribution of the qualifying species, and the sensitivity of the species to noise and visual disturbance from human activities. Where disturbance is caused, it can have multiple adverse effects on species including increased energy expenditure, reduced feeding time, behavioural changes, and displacement.

The Waterbird Disturbance Mitigation Toolkit provides species-specific information on the sensitivity of several bird species which are qualifying features of SPAs.

However, it suggests that, in general, disturbance of non-breeding waterbirds can occur up to distances of around 300 m from construction works¹³.

Many scientific studies into disturbance of non-breeding waterbirds have related to the flights of aircraft, particularly low-flying light aircraft, military jets and helicopters. For example, Hoang (2013)¹⁴ conducted a literature review of aircraft disturbance on shorebirds and seabirds. Of seven studies presented in the literature review which investigated effects on shorebirds, the minimum distance at which disturbance was found to be caused by fixed-wing aircraft was 300 m above ground level. Komenda-Zehnder *et al* (2003)¹⁵ performed 326 experimental flights over lakes in Switzerland to observe for behavioural responses by non-breeding waterbirds. They found that birds returned to a 'relaxed' behaviour (including preening, resting and feeding) within five minutes of the over-flights. Similar to the review of studies carried out by Hoang (2013), Komenda-Zehnder *et al* (2003) also found that planes flying at heights of 300 m above ground level did not result in any significant change in the behaviour of birds. In a study carried out in the Dutch Wadden Sea, the numbers and behaviours of knot were found to be affected by over-flights of military jets, with fewer birds present on days with flights and the birds that were present being more restless and less approachable by humans (Koolhaas *et al*, 1993)¹⁶. They also observed that 'light tourist airplanes' caused a more severe response in the birds than the military jets.

A study of nesting herring gulls beside an airport (Burger, 1981)¹⁷ found that normal colony noise was 77 dB(A), and (in this case, where birds were habituated to normal jet aircraft) behavioural reactions (taking flight) only occurred when Concorde passed by, generating noise exceeding 101 dB(A). This is rather an extreme example, however, involving birds that were habituated to noise from nearby passenger jets at levels which were liable to have caused hearing damage, but is useful as a further demonstration that birds may tolerate high levels of constant or frequently-occurring noise. It should be noted that the A-weightings given relate to the response of the human ear.

An Australian study of nesting terns (Brown, 1990)¹⁸ simulated aircraft noise using speakers placed beside a colony which was not accustomed to aircraft, thus visual disturbance stimuli were eliminated and there was no prior habituation. It found that playback of aircraft noise at 65 dB(A) had a minimal reaction, causing the majority of terns to 'scan' (cocking the head or turning it horizontally). At 70 dB(A), about half the terns engaged in 'alert' behaviour (extending the neck, making minor whole-body movements or wing tensing). 'Startle' (preparation to fly) and 'escape' (flying off) behaviours only affected a small proportion of the terns and were largely restricted to sound levels above 85 dB(A). An observation study of harlequin ducks *Histrionicus*

¹³ Cutts, N., Hemingway, K. and Spencer, J. (2013). Waterbird Disturbance Mitigation Toolkit. Institute of Estuarine and Coastal Studies, University of Hull.

¹⁴ Hoang, T. (2013). A literature review of the effects of aircraft disturbances on seabirds, shorebirds and marine mammals. Presented to NOAA, Greater Farallones National Marine Sanctuary and the Seabird Protection Network.

¹⁵ Komenda-Zehnda, S., Cevallos, M. and Bruderer, B. (2003). Effects of disturbance by aircraft overflight on waterbirds – an experimental approach. International Bird Strike Committee. IBSC26/WP-LE2, Warsaw 5-9 May 2009.

¹⁶ Koolhaas, A., Dekinga, A. and Piersma, T. (1993). Disturbance of foraging knots by aircraft in the Dutch Wadden Sea in August-October 1992. Water Study Group Bulletin 68, pp 20-22.

¹⁷ Burger, J. (1981). Behavioural responses of herring gulls *Larus argentatus* to aircraft noise. Environmental Pollution (Series A) 24, pp 177-184.

¹⁸ Brown, A.L. (1990). Measuring the effect of aircraft noise on sea birds. Environment International 16, pp 587-592.

histrionicus (Goudie and Jones, 2004)¹⁹ similarly found that behavioural changes increased substantially when sound from passing aircraft exceeded 80 dB(A). However, this and other studies (e.g. Buxton *et al*, 2017²⁰) noted that whilst disturbance may not cause birds to take flight, less obvious stress-related behavioural changes can occur such as reduced courtship behaviour and increased time engaged in agonistic, disturbance or predator evasion behaviour, which may adversely affect survival if, for example, young are more exposed to predators or receive less food.

The study by Buxton *et al* (2017) is one of the few studies that investigated noise alone. The Brandt's cormorants *Phalacrocorax penicillatus* observed in this study were found to engage in stress-related behaviour (wing fluttering) approximately 35% of the time when human visitor noise exceeded 62 dB(A), but no flights were caused at this level of noise. Note that the visitors were inside buildings and not visible to the birds in this study, hence noise was the only factor.

On multiple recent projects Natural England has agreed to a precautionary potential disturbance threshold of 60 dB L_{Amax} at the bird. This was on the basis that:

- birds generally give no reaction to noise levels of 55 dB or below (Cutts & Allan, 1999); and
- a change above 3 dB²¹ is required for the difference to be perceptible and therefore a 3 dB change should be used for the purposes of HRA screening.

However, it was also agreed that there is a difference between an increase in sound being perceptible as a change and it being disturbing. Therefore, while a 3 dB change is a suitable threshold for HRA screening (for example) a greater change would likely be needed to actually cause disturbance.

If the threshold for no reaction is 55 dBA, and any noise would need to be at least 58 dBA to be perceptibly louder (i.e. 3 dB greater than 55 dBA), then a reasonable precautionary threshold for significant disturbance would be 60 dBA (i.e. 5 dB above 55 dBA). The Royal Society for the Protection of Birds confirmed in a meeting regarding this project that they would agree with the use of a 60 dB threshold. Note that this threshold does not take account of baseline noise levels. If the baseline levels already exceed 60dB L_{Amax} at the bird, then the bird populations are likely to already be habituated. Changing L_{Aeq} noise levels may also result in behavioral change, irrespective of L_{Amax} levels.

6.1.2 Relevant Habitats Sites

The Habitats sites identified as sensitive to disturbance and the potential impact pathways resulting from LHR-NWR are provided in Table 3.

¹⁹ Goudie, R.I. and Jones, I.L. (2004). Dose-response relationships of harlequin duck behaviour to noise from low-level military jet over-flights in central Labrador. *Environmental Conservation* 31, pp 289–298.

²⁰ Buxton, R.T., Galvan, R., McKenna, M.F., White, C.L. and Seher, V. (2017). Visitor noise at a nesting colony alters the behaviour of a coastal seabird. *Marine Ecology Progress Series* 570, pp 233-246.

²¹ Design Manual for Roads and Bridges Volume HD 213/11

Table 3. Habitats sites sensitive to disturbance

Habitats Site	Impact Pathway
South West London Waterbodies SPA/Ramsar	The site (Staines Reservoirs) is located approximately 150m from the likely expansion area, and approximately 1.5km south of the proposed new runway (Wraysbury Reservoir). Queen Mother Reservoir is outside the SPA boundary but lies 1.2km west of the end of the proposed new runway. Whilst the birds within the SPA are likely to have become habituated to the existing level of disturbance, it cannot be assumed that additional levels of disturbance associated with increased capacity at Heathrow Airport would not result in an effect either alone or cumulatively with existing airport operations. Most of the component sites of the South West London Waterbodies SPA/Ramsar have some level of formal or informal public access, including walking and water-based activities such as sailing. These activities may increase due to the presence of additional construction workers during the construction phase or in-combination through increased numbers of residents in the area due to housing allocations identified in Local Plans.

6.1.3 Current Baseline

The South West London Waterbodies SPA designation comprises a number of waterbodies, many of which are reservoirs or former gravel pits. Seven of these were designated in 2000 as the South West London Waterbodies SPA.

The closest SPA/Ramsar waterbodies to the airport expansion proposals are Staines Reservoir 150m to the southwest and King George VI Reservoir 250m to the southwest. The closest part of the SPA to the proposed new runway is Wraysbury Reservoir approximately 1.5km south of the proposed new runway. Queen Mother Reservoir is outside the SPA boundary but lies 1.2km west of the end of the proposed new runway. The location of all the SPA component waterbodies is shown in Table 4 below.

Table 4. Components of South West London Waterbodies SPA in the context of the proposed airport expansion area

SPA Component	SPA Sub-site	Distance from Expansion area
Staines Moor	Staines Reservoir	150m southwest
Staines Moor	King George V1 Reservoir	250m southwest
Wraysbury Reservoir	Wraysbury Reservoir	1000m west
Wraysbury and Hythe End Gravel Pits	Wraysbury Gravel Pit-North	3400m southwest
Wraysbury and Hythe End Gravel Pits	Wraysbury Gravel Pit - South	3000m southwest
Kempton Park Reservoirs	Redhouse	4700m southeast
Kempton Park Reservoirs	Kempton Reservoir East	5100m southeast

Source: Distances taken from Defra MagicMap

The SPA designation implies that the component sites are biologically integrated. However, there are also a large number of additional sites, including five water supply reservoirs, active gravel workings, three water treatment works, one natural lake and around 45 former gravel pits within the area that are not included in the SPA/Ramsar. These sites, although not designated, are also likely to provide suitable habitat for the SPA populations of shoveler and gadwall. within the SPA. The location of these additional waterbodies is shown in Table 5 below.

Table 5. Non-SPA/Ramsar Waterbodies

Waterbody	Distance from Heathrow Airport
Queen Mother Reservoir	1200 west of proposed new runway
Longside Lake	1300m southwest
Egham Hythe Lake	5500m southwest
Thorpe Park Gravel Pit (Pit 1)	6500m southwest
Halliford Mere	7300m south

Waterbody	Distance from Heathrow Airport
Bessbrough Reservoir	7400m south east
Queen Elizabeth II Reservoir	7700m south east

The most recent five years of Wetland Bird Survey (WeBS) data for gadwall and shoveler and non-SPA waterbodies is summarised in Tables 6 and 7 below.

Table 6 Shoveler Peak Counts 2019/20 to 2023/24 at the South West London Waterbodies Complex and Surrounding Sites

Waterbody	2019/20	2020/21	2021/22	2022/23	2023/24	5 year average
Staines Reservoir	310	448	117	106	103	217
King George VI Reservoir	0	5	5	4	21	7
Wraysbury Gravel Pits	0	9				5
Thorpe Water Park	40	11	49	49	33	36
Queen Mary Gravel Pit	1	3	0	4	2	3
Wraysbury Reservoir	15	11	12	12	9	12
Longside Lake	7	10	1	0	0	5
Island Barn Reservoir	2	4	9	14	6	7
Queen Elizabeth II Reservoir	0	0	4	0	4	2

Source: BTO WeBS data

Table 7. Gadwall Peak Counts 2019/20 to 2023/24 at the South West London Waterbodies Complex and Surrounding Sites

Waterbody	2019/20	2020/21	2021/22	2022/23	2023/24	5 year average
Staines Reservoir	96	22	108	88	93	82
King George VI Reservoir	14	18	28	45	9	23
Wraysbury Gravel Pits	0	38				19
Thorpe Water Park	113	195	108	75	83	119
Queen Mary Gravel Pit	2	2	2	2	2	2
Wraysbury Reservoir	9	9	5	37	3	13
Longside Lake	13	40	1	34	0	18
Island Barn Reservoir	48	30	51	46	31	41
Queen Elizabeth II Reservoir	19	11	12	4	13	12

Source: BTO WeBS data

According to WeBS data gadwall and shoveler numbers on Queen Mother Reservoir are particularly low with typical five-year mean peak monthly counts in September to March for the most recent five-year period of 2-5 gadwall and no shoveler. The primary reason for the low usage of both Queen Mother Reservoir and Wraysbury Reservoir is low food availability (they are both concrete lined open water bodies with no marginal vegetation). Queen Mother Reservoir is also heavily used for sailing and windsurfing.

A comprehensive study of the SW London Waterbodies by Briggs was published in 2007²². This study was commissioned in response to the considerable direct pressure that SW London waterbodies were exposed to from mineral extraction, recreation, decommissioning and redevelopment. At the time, infrastructure development including airport expansion and widening of the M25 were identified as having potential for further indirect impacts. The aims of Briggs' study were:

- To investigate the use made by Gadwall and Shoveler of waterbodies within and around the SW London Waterbodies SPA;
- To provide information on the state of the SPA and trends in the populations of the citation species;
- To establish a strategic basis for the long-term management of the sites for nature conservation; and
- To document new findings on wildfowl behaviour, habitat choice, and population ecology.

The research provided increased understanding of waterbird use of the designated waterbodies and other waterbodies within the area. The key findings from Briggs' study are set out below.

- Wintering gadwall numbers generally peak mid-winter, whereas shoveller numbers peak earlier in autumn when large numbers of migratory individuals pass through the area.
- The South West London area appears to hold a self-contained population of shoveler each winter. The shoveler move between waterbodies to avoid those vulnerable to freezing, with the smaller waterbodies in the Wraysbury and Walton-on Thames areas particularly important.
- The gadwall population did not appear to be self-containing, with significant exchange of gadwall between sites outside of the study area.
- The SW London Waterbodies SPA, when considered independently of the non-designated sites, did not appear to be used as a complex by either species.

The Briggs' study identified significant variability in the waterbodies, both temporally and physically, with annual changes in site usage.

Shoveler was considered more vulnerable to the effects of human disturbance than gadwall. Maintenance of continued internationally important numbers of shoveler was thought to depend upon the management of complexes of sites. Large fluctuations in gadwall numbers were attributed to ecological changes resulting from carp fishing and to recreational changes. Gadwall were considered dependent on

²² Briggs, B., 2007. The use of waterbodies in South-West London by Gadwall and Shoveler; implications for nature conservation. University of Oxford Department of Zoology: Oxford.

undisturbed macrophyte-rich sites. The potential value of the SW London Waterbodies for wildfowl was deemed to be underexploited.

A number of the current Site Improvement Plan²³ measures relate to the Briggs' recommendations.

Disturbance can result in changes to bird feeding, roosting or breeding behaviour. The South West London Waterbody SPA/Ramsar is designated for migratory and overwintering shoveler and gadwall, therefore the potential for disturbance during breeding is not relevant and will not be considered further within this HRA.

6.1.4 Disturbance due to Noise

6.1.4.1 Disturbance during Construction

Disturbance during construction has the potential to disturb feeding or roosting shoveler or gadwall. This can result in harm to the birds due to reduced energy intake, or their relocation to sites with less suitable feeding or roosting habitat. Long-term impacts of disturbance may include lower weight, inability to migrate, reduced ability to breed in the future or overall survival.^{24,25}

However, research indicates that birds can habituate to continual or predictable noise or visual disturbance events and that irregular or unknown noise or visual stimuli elicit the largest behavioural response. Noise from construction and regular vehicle or vessel movements are often tolerated more by birds than sporadic visits to a feeding or roosting area. Overall, responses to construction noise appear to initiate similar or less disturbance than that of recreational activities²⁶.

6.1.4.2 Disturbance during operation from Airport Activities

Similarly to the potential for disturbance due to construction activities, noise from operational use of Heathrow Airport has the potential to disturb migratory and overwintering shoveler and gadwall.

A study²⁷ involving flying over waterbirds in Swiss lowlands found the disturbance effects of helicopters to be greater than those for aeroplanes. The study concluded that the minimum flight level that did not disturb birds was 450m for helicopters and 300m for aeroplanes. Although Komenda-Zehnder et al. found no evidence of habituation of waterbirds, a report by Brisbane Airport Corporation²⁸ found no observable response from roosting seabirds to overhead air traffic.

J.R Barber et al²⁹ suggested that animal responses to anthropogenic noise are likely to depend upon the intensity of perceived threats rather than the intensity or level of the noise. They stated that responses may begin at exposure levels of 55-60 dB LAMax, which also fits with the precautionary 60 dB LAMax threshold disturbance to birds discussed above.

²³ Natural England, 2016. Site Improvement Plans. Accessed 03/04/2024

²⁴ Kaiser, M. J., 2002. Predicting the displacement of the common scoter *Melanitta nigra* from benthic feeding areas due to offshore windfarms, p. 77. Centre for Applied Marine Sciences (COWRIE): Bangor.

²⁵ Stillman, R. A., West, A. D., Clarke, R. T. and Liley, D., 2012. Solent Disturbance and Mitigation Project Phase II: Predicting the impact of human disturbance on overwintering birds in the Solent. Solent Forum: Winchester.

²⁶ IECS. 2009. Construction and Waterfowl: Defining, Sensitivity, Response, Impacts and Guidance. Institute of Estuarine and Coastal Studies Report to Humber INCA.

²⁷ Komenda-Zehnder, S., Cevallos, M. and Bruderer, B. 2003. Effects of Disturbance by Aircraft Overflight on Waterbirds – An Experimental Approach. International Bird Strike Committee. IBSC26/WP-LE2

²⁸ Brisbane Airport Corporation. 2007. New Parallel Runway Environmental Impact Statement. Volume D: Airspace. Hazards and Risks of Airport Operations.

²⁹ Barber, J. R., Crooks, K. R., Fristrup, K. M. (2009) The costs of chronic noise exposure for terrestrial organisms. Trends in Ecology and Evolution 25:180-189.

The Civil Aviation Authority, on behalf of the DfT, has carried out local noise analysis for Heathrow Expansion using its UK Aircraft Noise Contour Model (ANCON).

Using a nighttime threshold of 60 dB LA_{eq,8hr}, modelling based upon a third runway at Heathrow has indicated that an area of 5.6km² would experience levels above this threshold in 2035, 5.3 km² in 2045, and 6.2km² in 2055, compared to a disturbance area for the existing two runways of 6.1km² in 2035, 5.1km² in 2045 and 4.5km² in 2055. The nighttime threshold was used due to the assumed lower background levels from non-aviation sources during these hours. The modelled LA_{eq} is above the LAMax agreed as a threshold for disturbance to birds. Some of the increase in areas impacted is due to the increased number of air traffic movements over this time period. Note that this includes areas well beyond the closest parts of South West London Waterbodies SPA/Ramsar which are likely to already be subject to elevated noise. The modelled zone does not encompass any other SPAs. As identified above, the Hoang study identified that the minimum distance at which disturbance was found to be caused by fixed-wing aircraft was 300m above ground level, with higher level flights having relatively limited or no disturbance effects. It should be noted that all aircraft considered by this study were small planes or military jets which are more likely to fly at lower altitudes and be noisier and more disturbing than larger fixed wing aircraft. The aircraft included helicopters, fixed wing planes including jet fighters, ultralight low flying aircraft and light tourist aircraft.

Currently, aircraft taking off from the runways at Heathrow have achieved approximately 1,000 feet (305m) in altitude by the time the airport boundary is reached and are at an altitude of approximately 3000 feet (900m) when Wraysbury Reservoir, Queen Mother Reservoir and Wraysbury Gravel Pits are overflowed. Based on the current runway proposals aircraft using the third runway will be taking off and landing at a greater distance from the SPA/Ramsar site than aircraft using the two existing runways, both of which involve direct overflights of the SPA/Ramsar site. An altitude exceeding 300m is likely to be too high to result in noise-related disturbance of waterfowl at ground-level³⁰.

Aircraft movements may be more associated with changes in noise levels than increased ground traffic movements. Increased road traffic can be accompanied by increased noise impacts, but large changes are required. For example, a 25% increase in traffic on an existing road will result in only a 1dB(A) increase in noise even at the roadside³¹, with a 100% increase needed to result in a 3dB(A) increase at the roadside – the lowest increase in noise that is thought to be even perceivable by humans and birds. As such changes in traffic flow or speeds are unlikely to result in increased disturbance of sensitive wildlife unless they are very large: a doubling in total flows is unlikely to materially increase noise exposure even close to the road.

6.1.4.3 Visual and Recreational Disturbance

Visual disturbance can result in similar impacts to noise disturbance identified above. The magnitude of the impacts is linked to the frequency and number of disturbance events.³²

³⁰ Komenda-Zehnder S, Cevallos M & Bruderer B. 2003. Effects of Disturbance by Aircraft Overflights on Waterbirds – An Experimental Approach. Proceedings of the 2003 International Birdstrike Committee. This paper established that aeroplane overflights of waterbodies with large numbers of waterfowl did not result in significant disturbance if the aeroplanes remained at a height of more than 300m. Moreover, this was in relation to waterbodies that were not already close to airports, whereas the waterbodies west of Heathrow airport are already subject to extensive overflights.

³¹ Design Manual for Roads and Bridges Volume HD 213/11

³² Ruddock, M. and Whitfield, D. P. 2007. A Review of Disturbance Distances in Selected Bird Species. A report from Natural Research (Projects) Ltd to Scottish Natural Heritage.

Research looking at disturbance to waterbirds strongly indicates that one of the more significant sources of disturbance is caused by the human activity, including undertaking recreational activities (e.g. people walking, fishing, kayaking). It is assumed that waterbirds see the human form as a predatory threat.

Construction has the potential for an increase in recreational use of the reservoirs closest to Heathrow Airport. The closest SPA/Ramsar waterbody to the airport is Staines Reservoir 650m southwest of the Airport is mainly used for more passive recreational such as walking or birdwatching. Recreational use is managed and restricted to specific areas. Parking is limited, and there are more extensive recreational facilities at the nearby Staines Moor and Lamma Recreation Ground. The King George V1 Reservoir is 850m southwest of the Airport. This is an operational drinking water site, with limited recreational opportunities. There is a walking route around the perimeter of the reservoir and opportunities for birdwatching.

Waterbodies that are not included within the SPA/Ramsar, but which are likely to be functionally linked, such as Longside Lake 1300m to the southwest of the airport provides facilities for waterskiing, paddleboarding and open water swimming.

Visual and recreational disturbance during construction will be temporary and short term. An increase in passenger numbers may increase recreational use of some of the South West London Waterbodies but is unlikely to be significant.

These sites are already subject to varying degrees of disturbance, and the birds are habituated to this. A study of the Forth Estuary found that Redshank, Curlew, Oystercatcher and Shelduck in areas subject to higher levels of disturbance allowed a closer approach by humans than individuals of the same species in less disturbed areas, before becoming alert and moving away³³.

6.1.5 Summary of Potential Effects on Integrity

There is no evidence from bird population data to demonstrate that the current operations at Heathrow result in harmful disturbance effects to gadwall or shoveler using any of the South West London Waterbodies SPA/Ramsar or any other site functionally linked to those sites. The reservoir closest to the proposed third runway is Queen Mother Reservoir (not actually within the SPA) and already supports few gadwall and shoveler due to being heavily used for recreation. Staines Reservoir (the closest part of the SPA to the expansion proposals) is also the closest area to the existing SPA yet also supports the highest numbers of gadwall and shoveler. The Interest features at the South West London Waterbodies and functionally linked waterbody sites are habituated to frequent and regular disturbance. In addition, recreational activities are managed by site ranger services or restricted at many of the waterbodies.

However, there is uncertainty surrounding flight paths and flight. The future development of modernised airspace designs needed for a new Northwest Runway at Heathrow will be the responsibility of the UK Airspace Design Service (UKADS). The precautionary principal has been adopted, and it cannot be ruled out that there would not be harm to the integrity of the SPA/Ramsar. In addition, there is the potential for a cumulative effect when considered in combination with other

³³ Dwyer, R.G. 2010. Ecological and anthropogenic constraints on waterbirds of the Forth Estuary: population and behavioural responses to disturbance. Thesis submitted as candidature for the degree of Doctor of Philosophy Centre for Ecology and Conservation.

development in the Heathrow region. As such, adverse effects on site integrity cannot be ruled out.

Table 8. Conclusion of appropriate assessment

Site	Interest Feature	Potential Effect of Disturbance	Potential Adverse Effect on Conservation Objectives
<p>South West London Waterbodies SPA/Ramsar</p>	<p>Shoveler Gadwall</p>	<p>The effects of disturbance could result in species displacement within the SPA/Ramsar and functionally linked land. Such displacement could result in increased use of other suitable sites, with increased competition for foraging and roosting resources at those sites, and the potential for degradation of habitat. It could affect foraging and roosting behaviour, leading to increased mortality.</p>	<p>Potential to compromise; The extent and distribution of the habitats of the qualifying features; The structure and function of the habitats of qualifying features; The supporting processes on which the habitats of the qualifying species rely; The population of each of the qualifying features; The distribution of the qualifying features within the site</p>

6.1.6 Avoidance and Mitigation Measures

Mitigation at DCO stage should consider the timing of flights, flight paths, and flight heights over the waterbodies. Modification of flight paths may remove operational disturbance.

Briggs identified a number of measures that would result in benefits to the SPA. This included the development of a 'London Basin Waterfowl Strategy'. Heathrow Airport have undertaken four years of disturbance monitoring, which has helped to understand the effects of aircraft overflight on waterfowl and to identify opportunities for delivering appropriate mitigation which could be incorporated within such a strategy or within the Heathrow Site itself through the Blue and Green Infrastructure Strategy. This will be further developed for any DCO and considered by the Examining Authority in undertaking the formal HRA process.

At this stage it is not possible to go into details regarding mitigation as this is a matter for the applicant at detailed design stage and will be considered at DCO stage. However, there are opportunities to provide enhanced resources for SPA/Ramsar gadwall and shoveler around the SPA and within the HAL boundary, as these birds currently use man-made features and any new or enhanced features would not necessarily need to be deep to be of value for these species. The optimal water depth for gadwall is between 6 and 18 inches while shoveler also makes extensive use of relatively shallow water.

6.1.7 Effects in Combination with Other Plans and Projects

Since adverse effects on integrity from the draft HENPS alone cannot be dismissed, 'in combination' assessment is not strictly required. The law requires consideration of adverse effects 'alone or in combination' with other plans or projects. Since adverse effects alone cannot be dismissed then adverse effects 'in combination' cannot be dismissed either.

6.1.8 Conclusion

At this stage it is not possible to go into details regarding mitigation as this is a matter for the applicant at detailed design stage and will be considered at DCO stage. Therefore, for the draft HENPS the derogations are required. These are set out in Section 7.

6.2 Air Quality

6.2.1 Background to Air Quality Impacts

Changes in air quality can occur as a result of:

- Airport related road transport (surface access, including passengers and freight)
- Airport operational activities such as Air Traffic Movement (ATM), power generation
- Non-airport related road transport, on realigned road networks
- Other emissions, such as those related to developments relocated in close proximity to the airport

6.2.1.1 Dust

Operating machinery and techniques employed during the construction and demolition works have the potential to increase local dust levels with knock-on effects on ecological receptors. Dust deposition is of particular concern for plants, due to its direct interference with gaseous exchange by blocking stomata. In addition, any dust suspended in the water column of aquatic habitats may also affect the turbidity, temperature and other water quality parameters. This can trigger changes in aquatic community composition and also affect the ability of bird species to feed, many of which are visual foragers.

IAQM guidance³⁴ identifies that significant dust soiling can arise on ecological receptors located within 50m of construction sites. Natural England has previously suggested a more precautionary zone of 200m should be used for HRA purposes. That larger 200m zone has therefore been used in the HRA.

6.2.1.2 Atmospheric Pollution Associated with Vehicular Movements

The main exhaust pollutants of concern for Habitats Sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂), and dust. These are summarised in Table 9. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges³⁵. NO_x can also be toxic at very high concentrations (far above the annual average Critical Level). High levels of NO_x and NH₃ are likely to increase the total nitrogen (N) deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication. This often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats³⁶.

Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping³⁷. As such these will not be associated with the Project. Ammonia emissions mainly originate from agricultural practices³⁸, with some chemical processes also making notable contributions and traffic also possibly contributing materially at a local scale. Ammonia may also be emitted by older petrol vehicles (pre-2007) and light- and heavy-duty diesel vans. NO_x emissions are dominated by the output of vehicle exhausts (more than half of all emissions).

6.2.1.3 Atmospheric Pollution Associated with Aircraft and Airside Activity

NO_x from aircraft engines can be deposited. The majority of aircraft NO_x is emitted at high altitude and can travel a significant distance from source before being deposited on the ground due to prevailing wind conditions and rainfall. Generally, deposition of Nitrogen from aircraft accounts for a small percentage of the total amount deposited, approximately 1.13% in Europe³⁹. However, NO_x emitted from aircraft during taxiing, departure and landing, and by airside equipment, including auxiliary power units, can be deposited much closer to the airport. Written evidence from the EA to the Transport Committee estimated that major airports in

³⁴ Institute of Air Quality Management. (2024). Guidance on the Assessment of Dust from Demolition and Construction. Version 2.2 Available at <https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf>

³⁵ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

³⁶ Dijk, N. (2011). Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation. *Global Change Biology* 17: 3589-3607.

³⁷ http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.

³⁸ Pain, B.F.; Weerden, T.J.; Chambers, B.J.; Phillips, V.R.; Jarvis, S.C. (1998). A new inventory for ammonia emissions from U.K. agriculture. *Atmospheric Environment* 32: 309-313.

³⁹ Quadros FDA et al (2023) Nitrogen deposition from aviation depositions. *Science of the Total Environment* 2023 Feb 1,;853 Part 3

England may contribute between 0.2—2.9 kgN/ha/yr to local nitrogen deposition. This level of deposition could impact on the species richness of local habitats.” (the written evidence was prepared on 31st May 2013 .⁴⁰

⁴⁰ - https://publications.parliament.uk/pa/cm201314/cmselect/cmtran/78/78we60.htm#footnote_2)

Table 9. Main sources and effects of air pollutants on habitats and species⁴¹

Pollutant	Source	Effect on Habitats and Species
Sulphur Dioxide (SO ₂)	<p>The main sources of SO₂ are electricity generation, and industrial and domestic fuel combustion. However, total SO₂ emissions in the UK have decreased substantially since the 1980's.</p> <p>Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO₂ have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO₂ emissions in the UK.</p>	<p>Wet and dry deposition of SO₂ acidifies soils and freshwater and may alter the composition of plant and animal communities.</p> <p>The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species.</p> <p>However, SO₂ background levels have fallen considerably since the 1980's and are now not regarded as a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.</p>
Acid deposition	<p>Leads to acidification of soils and freshwater via atmospheric deposition of SO₂, Nox, ammonia, and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels.</p>	<p>Gaseous precursors (e.g. SO₂) can cause direct damage to sensitive vegetation, such as lichen, upon deposition.</p> <p>Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants.</p> <p>Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.</p>

⁴¹ Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk>).

Pollutant	Source	Effect on Habitats and Species
Ammonia (NH ₃)	<p>Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock and also emits from some industrial processes and some vehicle exhausts.</p> <p>Ammonia reacts with acid pollutants such as the products of SO₂ and NO_x emissions to produce fine ammonium (NH₄⁺) – containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue).</p> <p>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.</p>	<p>The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via nitrogen accumulation.</p> <p>Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen.</p> <p>As emissions mostly occur at ground level in the rural environment and NH₃ is rapidly deposited, some of the most acute problems of NH₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.</p>
Nitrogen oxides (NO _x)	<p>Nitrogen oxides are mostly produced in combustion processes. Half of NO_x emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes. NO_x concentrations have been falling for decades due to improvements in vehicle emissions technology, and this will accelerate after 2035 as electric vehicles (or other non-combustion engine vehicles) spread through the vehicle fleet following the Government’s ban on the sale of new petrol and diesel cars and vans in 2035.</p>	<p>Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of Nox for all vegetation types has been set to 30 ug/m³.</p> <p>Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.</p> <p>In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.</p>

Pollutant	Source	Effect on Habitats and Species
Nitrogen (N) deposition	<p>The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_x) or reduced (e.g. NH₃) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices.</p> <p>The nitrogen pollutants together are a large contributor to acidification (see above).</p>	<p>All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.</p> <p>Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from nitrogen eutrophication. This is because many semi-natural plants cannot assimilate the surplus nitrogen as well as many graminoid (grass) species.</p> <p>Nitrogen deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.</p>
Ozone (O ₃)	<p>A secondary pollutant generated by photochemical reactions involving No_x, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).</p> <p>Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.</p>	<p>Concentrations of O₃ above 40 ppb can be toxic to both humans and wildlife and can affect buildings.</p> <p>High O₃ concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.</p>

The Convention on Long-range Transboundary Air Pollution has the following critical thresholds for plant communities: The critical NO_x concentration (critical level) for the protection of vegetation is 30µg_m⁻³ and the critical level for ammonia 1-3µg_m⁻³ (depending on whether normal vegetation or lichens and bryophytes are involved). Additionally, ecological studies have determined 'Critical Loads'⁴² of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃).

According to the Department of Transport's Transport Analysis Guidance, beyond 200m, the contribution of vehicle emissions from the roads to local pollution levels is insignificant (**Figure 1 below** and reference⁴³). Therefore, this distance has been used throughout this HRA to determine whether Likely Significant Effects (LSEs) on sensitive Habitats Sites may arise.

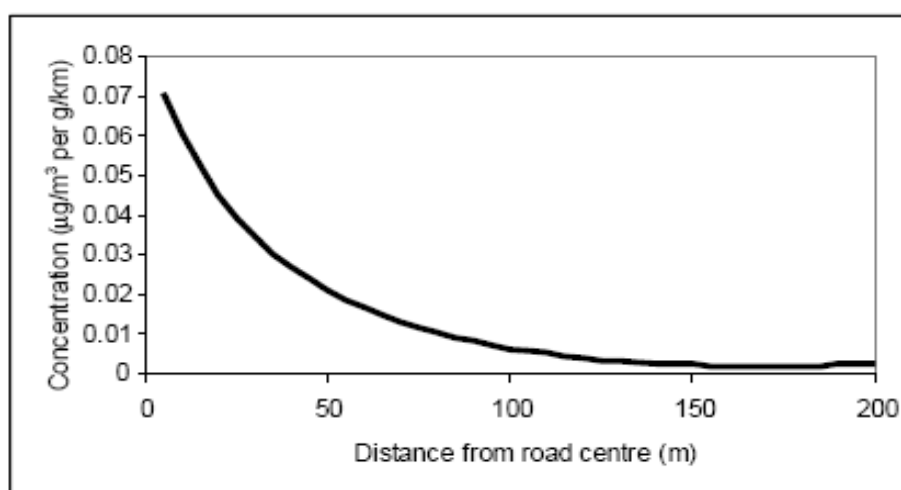


Figure 1: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT⁴⁴)

According to the Airport Air Quality Manual⁴⁵, local deposition of air-borne pollutants on the ground (i.e. that which may form a linking impact pathway to a specific Habitats Site) typically occurs from overflying aircraft at up to 1,000ft (305m) above ground-level. This altitude has therefore been used in this HRA.

6.2.2 Relevant Habitats Sites

The Habitats Sites identified as vulnerable to changes in air quality are provided in the Table below.

⁴² The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.

⁴³ Available at: <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013> [Accessed 25/02/2025]

⁴⁴ Available at: <http://www.dft.gov.uk/ha/standards/dmr/vol11/section3/ha20707.pdf> [Accessed 25/02/2025]

⁴⁵ International Civil Aviation Organization (2011). Doc 9889, Airport Air Quality Manual. ICAO, Montreal.

Table 10. Relevant Habitats Sites and Potential Air Quality Impact Pathway

Habitats Site	Location	Vulnerability/Impact Pathway
South West London Waterbodies SPA/Ramsar	Adjacent to Site boundary	Due to the proximity of the SPA/Ramsar to the Heathrow Expansion site boundary and wider road network, including the M25 and M4, air quality impacts of the scheme are likely.
Windsor Forest and Great Park SAC	4.3km west	Sections of the SAC are located within approximately 200 m of the A332 and A329, which may experience greater traffic flows as a result of the scheme. The SAC is identified as vulnerable to nitrogen deposition with levels currently exceeding the site-relevant critical load.
Richmond Park SAC	6.7km east at its closest point	Sections of the SAC are located within approximately 200 m of the A3, which may experience greater traffic flows as a result of the scheme. The SAC is not currently identified as vulnerable to nitrogen deposition in the SIP; however, it is currently in exceedance of the site-relevant critical load.
Burnham Beeches SAC	8km northwest at its closest point	Sections of the SAC are located within approximately 200 m of the A355, which may experience greater traffic flows as a result of the scheme. The SAC is identified as vulnerable to nitrogen deposition with levels currently exceeding the site-relevant critical load.
Thursley, Ash, Pirbright & Chobham SAC	9.3km south-west at its closest point	Sections of the SAC are located within approximately 200 m of the M3 and A320, and M25 (in the case of the SPA) which may experience greater traffic flows as a result of the scheme. The SAC is identified as vulnerable to nitrogen deposition with levels currently exceeding the site-relevant critical load.
Thames Basin Heaths SPA	9.3km south-west at its closest point	Sections of the SPA are located within approximately 200 m of the M3 and A320, and M25 (in the case of the SPA) which may experience greater traffic flows as a result of the scheme. The SAC is identified as vulnerable to nitrogen deposition with levels currently exceeding the site-relevant critical load.
Wimbledon Common SAC	10.3km east at its closest point	Sections of the SAC are located within approximately 200 m of the A3, which may experience greater traffic flows as a result of the scheme. The SAC is identified as vulnerable to nitrogen deposition with levels currently exceeding the site-relevant critical load.

The type and degree of effect on each of these Habitats sites will be dependent on the pollutant emitted; the nature of the receiving environment; and the distance from the source, as discussed in further detail below.

In the below tables critical NO_x levels are set nationally for all vegetation at 30 µg NO_x/m³ (annual mean) and 75 µg NO_x/m³ (24-hour mean). The tables in this section provide the critical nitrogen deposition loads for each habitat supporting interest features of the relevant protected site and details where exceedance occurs under the current baseline (current baseline taken to be as reported on the Air Pollution Information System (APIS)⁴⁶.

6.2.2.1 South West London Waterbodies SPA/Ramsar

The habitats supporting the site's qualifying features are considered particularly vulnerable to changes in water quality, which may result through increased nitrogen deposition. The waterbodies closest to the motorway network and Heathrow Airport have nitrogen deposition rates above or close to the critical load.

⁴⁶ 0 Air Pollution Information Systems (APIS), 2016. 'Site Relevant Critical Loads' Tool.

Table 11. Critical Loads and Baseline Nitrogen Deposition for the South West Waterbodies SPA/Ramsar Interest Features

Interest feature	Empirical Critical Load (Kg N/Ha/Yr)	Nitrogen Deposition (2020-2022)	Empirical Critical Load for Ammonia	Ammonia concentration ug/m ³
Shoveler breeding habitat	30	Minimum 18.1– Maximum 40.2	1-3µgm ⁻³ (depending on whether normal vegetation or lichens and bryophytes are involved).	Minimum 0.9 Maximum 1
Shoveler wintering habitat	There is no comparable habitat with an established critical load estimate available. Decisions with regard to potential vulnerability are to be taken at a site specific level since habitat sensitivity depends on whether nitrogen or phosphorus is the primary nutrient influencing plant growth.	Minimum 18.1– Maximum 40.2	1-3µgm ⁻³ (depending on whether normal vegetation or lichens and bryophytes are involved).	Minimum 0.9 Maximum 1
Gadwall breeding habitat				
Gadwall wintering habitat				

Source: APIS

It can be seen that no critical loads are provided for the habitat - open standing water – on which the bird species forming the reason for the international designation rely. This is reflected in the APIS Site Relevant Critical Load tool for the SAC which states ‘Decision to be taken at a site specific level since habitat sensitivity depends on N or P limitation.’ The APIS website states that ‘No Critical Load has been assigned to the EUNIS classes for meso/eutrophic systems. These systems are often phosphorus limited; therefore, decisions should be taken at a site-specific level’. It is therefore likely that the South West London Waterbodies SPA/Ramsar, like most freshwater environments, is essentially phosphate limited, rather than nitrogen limited, meaning that it is phosphate availability that controls the growth of macrophytes and algae. The London Plan will not affect phosphate availability within South West London Waterbodies SPA/Ramsar. The main sources of phosphorus are agriculture and treated wastewater.

In addition, Wraysbury Reservoir, the part of the SPA and Ramsar site close to the M25, is behind a 50m wide embankment the crest of which sits approximately 12m above the highway. There is then an approximately 4m drop to the surface of the reservoir on the other side of the embankment. This tall and wide structure will provide a barrier reducing any impact of vehicle exhaust emissions on vegetation within the reservoir.

Moreover, as noted above, local deposition of air-borne pollutants on the ground (i.e. that which may form a linking impact pathway to a specific Habitats Site) typically occurs from overflying aircraft at up to 1,000ft (305m) above ground-level. This is relevant because aircraft taking off from the existing runways at Heathrow have achieved approximately 1,000 feet (305m) in altitude by the time the airport boundary is reached and are at an altitude of approximately 3000 feet (900m) when Wraysbury Reservoir, Queen Mother Reservoir and Wraysbury Gravel Pits are overflowed. Based on the current runway proposals aircraft using the third runway will be taking off and landing at a greater distance from the SPA/Ramsar site than aircraft using the two existing runways, both of which involve direct overflights of the SPA/Ramsar site.

6.2.2.2 Windsor Forest and Great Park SAC, Richmond Park SAC, Wimbledon Common SAC, Burnham Beeches SAC, Thursley, Ash, Pirbright & Chobham SAC, Thames Basin Heaths SPA

Routes of access and egress of construction traffic to the Heathrow area are not currently known. However, it may be assumed that the motorway network and various local roads will be used. These may include roads that run within 200m of these Habitats Sites. Richmond Park SAC is designated for its stag beetle population only. The Air Pollution Information System⁴⁷ concludes that whilst the woodland habitats which stag beetle inhabit are vulnerable to nitrogen deposition, stag beetles themselves are not vulnerable to nitrogen deposition. The main reason cited is that ‘*nitrogen deposition is not believed to have a direct, major effect on tree growth in the UK*’⁴⁸ and thus the cycle of tree growth and death should continue, as should a continued supply of dead wood. Most of the effects of nitrogen deposition on woodlands are on features other than tree growth, such as ground flora diversity/structure, fungi and lichen populations.

⁴⁷ <http://www.apis.ac.uk/> [accessed 26/03/2026]

⁴⁸ <http://www.apis.ac.uk/node/965> [accessed 26/03/2026]

All of the other sites are vulnerable to nitrogen deposition with levels currently above the site-relevant critical load. Exceedance of critical load does not necessarily infer ecosystem damage and conversely, changes in ecosystem function can occur below the thresholds set. The critical load is a quantitative estimate of exposure to pollutants below which significant harmful effects on sensitive elements of the environment are not considered likely to occur based on present knowledge. But exceedance of the critical load is not a quantitative estimate of damage to the environment; it represents only the potential for damage. It is recognised that further research is required; however, the existing data across a variety of habitats suggests that adverse effects are likely to occur as a result of excess nitrogen deposition⁴⁹. It is probable that by the time these Habitats sites are overflowed aircraft will be at too high an altitude to materially impact air quality at ground level. However, traffic related air quality impacts could arise.

6.2.3 Current Air Quality Baseline

The main exhaust pollutants of concern for Habitats Sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂), and dust. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges⁵⁰. NO_x can also be toxic at very high concentrations (far above the annual average Critical Level). High levels of NO_x and NH₃ are likely to increase the total nitrogen (N) deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication. This often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats⁵¹.

Nitrogen oxides are mostly produced in combustion processes. Half of NO_x emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes. NO_x concentrations have been falling for decades due to improvements in vehicle emissions technology, and this will accelerate after 2035 as electric vehicles (or other non-combustion engine vehicles) spread through the vehicle fleet.

Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO_x for all vegetation types has been set to 30 ug/m³. Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification. In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.

Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock and also emits from some industrial processes and some vehicle exhausts. Ammonia reacts with acid pollutants such as the products of SO₂ and NO_x emissions to produce fine ammonium (NH₄⁺) – containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue). While ammonia deposition may be estimated from its atmospheric

⁴⁹ Natural England, 2016 The ecological effects of air pollution from road transport: an updated review (NECR199).

⁵⁰ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

⁵¹ Dijk, N. (2011). Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation. *Global Change Biology* 17: 3589-3607.

concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.

The negative effect of NH_4^+ may occur via direct toxicity, when uptake exceeds detoxification capacity and via nitrogen accumulation. Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen.

The following Habitats sites have been assessed as largely in 'Favourable Condition' despite an exceedance of critical load:

- Windsor Forest and Great Park SAC;
- Richmond Park SAC; and
- Thames Basin Heaths SPA qualifying features.

The following sites are not assessed as in 'Favourable Condition' and are in, or close to, exceedance of critical load:

- Burnham Beeches SAC;
- Thursley Ash, Pirbright and Chobham SAC; and
- Wimbledon Common SAC.

For the draft HENPS AECOM prepared a report to review emissions assessments conducted to inform the previous Airport National Policy Statement (ANPS) (DfT, 2018) and to compare these with the latest emissions information to provide up-to-date information for the draft HENPS.

In assessing the relevance of Favourable Condition status, it is noted that, to date, it has been difficult to attribute nitrogen deposition as a cause of unfavourable condition. Furthermore, as described above, an exceedance does not necessarily infer damage, and the response of both individual species and communities to vehicle emissions is complex and not fully understood⁵².

NO_x , particulate matter with an aerodynamic diameter of 10 micrometres or less (PM_{10}), and ammonia (NH_3) emissions were calculated for the years 2025–2050 for all relevant London road types (London Central, London Inner, London Outer, London Motorway) to reflect the location of the proposed Heathrow Airport expansion in a review of emissions source data and trends for road activity, published alongside this report⁵³. This took account of the fact that since the introduction of central London Ultra Low Emissions Zone in 2019 and its expansion to inner London in 2021 and Londonwide in 2023, there has been a substantial and accelerated turnover of the vehicle fleet. (GLA, 2025). Older, more polluting vehicles, especially preEuro 4 petrol cars and preEuro 6 diesel cars and vans, have been removed from the network far quicker than was assumed in earlier assessments. The updated assumptions also reflect the rapid uptake of low emission and alternative fuel vehicles. Electric vehicle adoption has occurred faster than previously forecast, particularly for cars, taxis, buses, and light goods vehicles operating in urban areas. London's policies have played a key role here, including requirements for zero

⁵² Natural England, 2016. The Ecological Effects of Air Pollution from Road Transport: an Updated Review.

⁵³ <https://www.gov.uk/government/publications/draft-heathrow-expansion-national-policy-statement-appraisal-of-sustainability>

emission capable taxis, largescale electrification of the bus fleet, and procurement strategies within commercial fleets that favour electric or plugin hybrid vehicles.

The results of this analysis showed that for Central, Inner and Outer London Road types, NO_x and NH₃ levels are predicted to fall significantly between 2035 and 2050 to close to 0 g/km/s. The London Motorway assessment predicts a significant drop in NO_x, but only a slight reduction in NH₃ although this is from low baseline levels). PM₁₀ projections show a similar pattern of reduction.

6.2.4 Summary of Potential Effects on Integrity

Eight Habitats sites are located in immediate proximity (< 200 m) to major roads potentially leading to Heathrow. All sites are assessed as potentially vulnerable to nitrogen deposition and are currently in or close to exceedance. Further investigations are required with regard to the effects of nitrogen deposition on the qualifying features of the sites in order to quantify any changes resulting from Heathrow expansion. In summary, for reasons set out above, South West London Waterbodies SPA/Ramsar and Richmond Park SAC are at low risk of adverse effects on integrity due to nitrogen deposition, but this cannot be dismissed absolutely until further work is undertaken for the DCO. The other Habitats sites are likely too distant for aircraft overflights to materially affect ground level air quality given the altitude of the planes as they overfly. However, this cannot be definitively dismissed with confidence until further air quality work is undertaken for the DCO. Moreover, increased traffic associated with airport expansion could affect local air quality at these Habitats sites.

Indicative traffic modelling undertaken on selected non-local roads within 200m of Habitats sites suggests the expansion of Heathrow isn't expected to materially affect traffic flows on those links. The data was assessed for two scenarios; DS1 the expansion without Surface Access Targets, and DS2 the expansion with current 2040 Surface Access Targets but shifting the target year to 2050, such as a reduction of passenger public transport share to 55% and a 50% reduction in staff car trips. These are illustrative surface access targets and the modelling does not include a corridor-specific assessment of any public transport improvements which may be needed to achieve this. Traffic increases on selected non-local roads average around a 1% increase in DS1 and negligible changes in DS2. It should be noted that there is significant inherent uncertainty in the traffic modelling used for this analysis, as the National Transport Model v5 which was used is not an airport-specific behavioural model and Heathrow's unique travel patterns, especially for passengers and shift-based employees, which are only approximated through adjustment.

APIS data for 2020-2023 (the most recent available) for the sites indicates that they are just below, at, or slightly above the critical level for ammonia for the most sensitive habitat features (lichen and bryophytes) where these form a key part of ecosystem integrity, but significantly below the critical threshold for all other habitats. Deposition is highest within 10-20m of the road. There are no ammonia sensitive habitats within these areas. Accordingly, ammonia will not be discussed further in the HRA.

Most of the atmospheric pollution emitted by the aircraft will occur whilst on the ground or during take-off and landing. This will be deposited within the boundaries of Heathrow Airport. Based on the current runway proposals aircraft using the third runway will be taking off and landing at a greater distance from the SPA/Ramsar site

than aircraft using the two existing runways, both of which involve direct overflights of the SPA/Ramsar site. There is a low potential for the increase in flight numbers, and increased use of wide-bodied aircraft to have a local impact on the closest South West London Waterbody sites (Staines Reservoir and King George V1 Reservoir) due to nitrogen deposition. This cannot be dismissed absolutely until further work is undertaken for the DCO.

Table 12. Assessment of impacts on Habitats sites

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
South West London Waterbodies SPA/Ramsar	Shoveler Gadwall	Construction Phase: Deposition of dust- The volume of water present in the waterbodies (including those that are functionally linked) ensure that the dilution of any dust deposited is likely to negate an effect. However, further information on dust creation and mitigation measures are required to rule out an effect.	Potential to compromise the supporting processes on which the habitats of the qualifying features rely and the population and distribution of qualifying features within the site.
South West London Waterbodies SPA/Ramsar	Shoveler Gadwall	Construction Phase: Deposition from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Eutrophication, Changes in the species composition of macrophyte communities, increased algal productivity and a shift in nutrient limitation of phytoplankton from N to P.	Potential to compromise the supporting processes on which the habitats of the qualifying features rely and the population and distribution of qualifying features within the site.
South West London Waterbodies SPA/Ramsar	Shoveler Gadwall	Operational Phase: Deposition of oxides of nitrogen from engine emissions associated with vehicles used within the airport resulting in enrichment and/or acidification of the environment leading to an alteration	Potential to compromise the supporting processes on which the habitats of the qualifying features rely and the population and distribution of qualifying features within the site.

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
		<p>of the plant community through changes in baseline conditions resulting in direct or indirect effects on designated features. Eutrophication, Changes in the species composition of macrophyte communities, increased algal productivity and a shift in nutrient limitation of phytoplankton from N to P.</p>	<p>Although noting that evidence suggests the interest features of this SPA are not highly vulnerable to increased nitrogen deposition.</p>
<p>South West London Waterbodies SPA/Ramsar</p>	<p>Shoveler Gadwall</p>	<p>Operational Phase: Deposition of oxides of nitrogen from aircraft emissions resulting in enrichment and/or acidification of the environment leading to alteration of baseline conditions resulting in direct or indirect effects on the designated features. Eutrophication, Changes in the species composition of macrophyte communities, increased algal productivity and a shift in nutrient limitation of phytoplankton from N to P.</p>	<p>Potential to compromise the supporting processes on which the habitats of the qualifying features rely and the population and distribution of qualifying features within the site. Although noting that evidence suggests the interest features of this SPA are not highly vulnerable to increased nitrogen deposition.</p>
<p>Windsor Forest and Great Park SAC</p>	<p>Old acidophilous oak woods with Quercus robur on sandy soils Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrub layer (Quercion robori petraeae or Ilici Fagenion) A population of violet click beetle</p>	<p>Construction Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features.</p>	<p>Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.</p>

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
		Eutrophication, Changes in the species composition of macrophyte communities, increased algal productivity and a shift in nutrient limitation of phytoplankton from N to P.	
Windsor Forest and Great Park SAC	Old acidophilous oak woods with <i>Quercus robur</i> on sandy soils Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrub layer (<i>Quercion roburi petraeae</i> or <i>Ilici Fagenion</i>) A population of violet click beetle	Operational Phase: Deposition of oxides of nitrogen from vehicle emissions associated with trips to/from the airport resulting in enrichment and/or acidification of the environment leading to an alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Decrease in mycorrhiza, loss of epiphytic lichens and bryophytes, changes in ground vegetation. Changes in ground vegetation and mycorrhiza, nutrient imbalance, changes soil fauna.	Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.
Richmond Park SAC	Stag beetle	Construction Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features.	Qualifying feature (stag beetle) unlikely to be affected by nitrogen deposition.

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
Richmond Park SAC	Stag beetle	Operational Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features.	Potential to compromise the extent, distribution, structure and function of natural habitats that support stag beetle. Qualifying feature (stag beetle) unlikely to be affected by nitrogen deposition.
Burnham Beeches SAC	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrub layer (Quercion robori petraeae or Ilici Fagenion)	Construction Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Changes in ground vegetation and mycorrhiza, nutrient imbalance, changes soil fauna.	Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.
Burnham Beeches SAC	Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrub layer	Operational Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site	Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
	(Quercion robori petraeae or Ilici Fagenion)	resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Changes in ground vegetation and mycorrhiza, nutrient imbalance, changes soil fauna.	
Wimbledon Common SAC	Northern Atlantic wet heaths with Erica tetralix European dry heaths A population of stag beetle	Construction Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Transition heather to grass. Ericaceous species susceptible to frost and drought.	Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.
Wimbledon Common SAC	Northern Atlantic wet heaths with Erica tetralix European dry heaths A population of stag beetle	Operational Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in	Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
		<p>baseline conditions resulting in direct or indirect effects on the designated features. Transition heather to grass. Ericaceous species susceptible to frost and drought.</p>	
<p>Thursley, Ash, Pirbright & Chobham SAC</p>	<p>Northern Atlantic wet heaths with <i>Erica tetralix</i> European dry heaths Depressions on peat substrates of the Rhynchosporion</p>	<p>Construction Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Increase in sedges and vascular plants, negative effects on bryophytes. Transition heather to grass. Ericaceous species susceptible to frost and drought. Transition from heather to grass dominance, decline in lichens, changes in plant biochemistry, increased sensitivity to abiotic stress.</p>	<p>Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.</p>
<p>Thursley, Ash, Pirbright & Chobham SAC</p>	<p>Northern Atlantic wet heaths with <i>Erica tetralix</i> European dry heaths Depressions on peat substrates of the Rhynchosporion</p>	<p>Operational Phase: Deposition of oxides of nitrogen from engine emissions associated with construction traffic egressing/accessing the construction site resulting in enrichment and/or acidification of the environment leading to alteration of the plant community through changes in</p>	<p>Potential to compromise the extent, distribution, structure and function of qualifying natural habitats and their supporting processes.</p>

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
		<p>baseline conditions resulting in direct or indirect effects on the designated features. Increase in sedges and vascular plants, negative effects on bryophytes. Transition heather to grass. Ericaceous species susceptible to frost and drought. Transition from heather to grass dominance, decline in lichens, changes in plant biochemistry, increased sensitivity to abiotic stress.</p>	
Thames Basin Heaths SPA	Populations of breeding woodlark, nightjar and Dartford warbler	<p>Construction Phase: Deposition of oxides of nitrogen from vehicle emissions associated with trips to/from the airport resulting in enrichment and/or acidification of the environment leading to an alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Loss of suitable habitat with Transition from heather to grass dominance, decline in lichens, changes in plant biochemistry, increased sensitivity to abiotic stress.</p>	Potential to compromise the supporting processes on which the habitats of qualifying species rely and the populations and distribution of qualifying species.
Thames Basin Heaths SPA	Populations of breeding woodlark, nightjar and Dartford warbler	Operational Phase: Deposition of oxides of nitrogen from vehicle emissions associated with trips to/from the airport resulting in enrichment and/or acidification of the	Potential to compromise the supporting processes on which the habitats of qualifying species rely and

Habitats Site	Interest feature	Potential Air Quality Impact	Potential Adverse Effect on Conservation Objectives
		<p>environment leading to an alteration of the plant community through changes in baseline conditions resulting in direct or indirect effects on the designated features. Loss of suitable habitat with Transition from heather to grass dominance, decline in lichens, changes in plant biochemistry, increased sensitivity to abiotic stress.</p>	<p>the populations and distribution of qualifying species.</p>

6.2.5 Avoidance and Mitigation Measures

Many of the measures set out below have been identified in the draft HENPS. They are included within this report as part of the HRA assessment and are intended to separate from those in the draft HENPS as they are specific to the identified impacts on Habitats Sites.

It is considered likely that with the implementation of a satisfactory and approved Construction Environmental Management Plan (CEMP) as part of the DCO, temporary dust impacts during the construction-phase will be minimised. In addition, mitigation can be incorporated into the detailed design including the type, use and timing of vehicles and equipment to reduce emissions.

Traffic emissions generated are determined as a result of the number and type (including performance technology) of vehicles; the speed driven; and congestion levels. Mitigation options require focus on these factors, for example by:

- Reducing traffic flows in numbers and vehicle type (through traffic restrictions, road relocation, behaviour change, improved public transport links);
- Improving traffic flow and efficiency (traffic control systems to reduce emissions at sensitive sites, road space design and management, driver education); and
- Promotion of low-emission vehicles (for example the implementation of low emission zones in proximity to sensitive sites).

It will be necessary to demonstrate the ability of sustainable transport plans, in particular the use of carbon-efficient and non-road transport to negate or reduce impacts on Habitats sites during operation and furthermore, measures/incentives to facilitate their implementation should be provided.

In parallel with the approvals process, a major shift in mode-share should be implemented for those working at the airport. A focus on employee behaviour change, rail investment and congestion charges for motor vehicles are AC suggested measures to achieve this. Congestion charges and improved infrastructure for Ultra Low Emission Vehicles for passengers may also be considered.

Aircraft emissions, and emissions by airside ground equipment could be mitigated by measures including:

- Design taxiways and the terminal apron to maximise the distance from them to sensitive habitats
- Design taxiways to facilitate reduced engine taxiing – enabling airlines to reduce emissions, especially once an aircraft has landed
- Include on-stand air conditioning and electrical power for aircraft to reduce the need to use auxiliary power units (APUs)
- Include sufficient electrical charging capacity for airside ground equipment to be battery powered

In addition, the development and application of appropriate air quality management plans and independently certified offsetting options (including for example, renewable energy and fuel-switching) should also be considered within the further development of the DCO.

At this stage it is not possible to go into details regarding mitigation as this is a matter for the applicant at detailed design stage and will be considered at DCO stage. However, there are numerous mitigation options available for addressing traffic impacts and, from a Habitats site impact point of view, traffic exhaust emissions are an improving situation due to national initiatives, as the UK progresses towards wider electrification of the vehicle fleet.

6.2.6 Effects in Combination with Other Plans and Projects

The main other plans or projects of relevance to air quality impacts on these designated sites are Local Plans for surrounding local authorities including the London boroughs of Wandsworth, Merton, Richmond upon Thames, Kingston upon Thames, Sutton, and Croydon, and local authorities outside London such as Windsor & Maidenhead, Spelthorne and Runneymede. Between them these Local Plans aim to deliver more than 80,000 dwellings to 2035, in addition to employment development and this will result in a net increase in traffic on the road network, although it should be noted that traffic NO_x and ammonia exhaust emissions constitute an improving baseline as the UK heads towards greater electrification of the fleet. Since adverse effects on integrity from the draft HENPS alone cannot be dismissed, adverse effects ‘in combination’ with other plans or projects cannot be dismissed either.

6.2.7 Conclusion

The indicative analysis suggests that, based on current evidence, the Government’s conclusions for NO₂ and PM₁₀ impacts for the 2018 ANPS can be applied to the position as at 2026 (subject to the uncertainties identified in the analysis).

At this stage it is not possible to go into details regarding mitigation as this is a matter for the applicant at detailed design stage and will be considered at DCO stage. Therefore, for the draft HENPS the derogations are required. These are set out in Section 7.

6.3 Operational Management

The main potential impact of operational management would be through the risk of birdstrike. Birdstrike has been responsible for the loss of at least 108 aircraft and 276 lives in civil aviation⁵⁴. As well as being a threat to life, less severe birdstrike incidents result in significant operational costs to the industry, either directly, in terms of the costs of damage to aircraft, or as a result of delays and cancellations arising from the need for precautionary checks or emergency return to an airport after a strike has occurred.

6.3.1 Relevant Habitats Sites

Table 13. Habitats sites of relevance

Habitats Sites	Location	Vulnerability/Impact Pathway
South West London Waterbodies SPA/Ramsar	The Heathrow Expansion Site is adjacent to the SPA/Ramsar, with the runway 650m from the Habitats Site at its closest	Increased levels of bird scaring/control as part of birdstrike risk management measures could result in significant effects to other

⁵⁴ J. Thorpe, 2010 Update On Fatalities & Destroyed Civil Aircraft due to Bird Strikes with Appendix for 2008 & 2009

Habitats Sites	Location	Vulnerability/Impact Pathway
	point.650m to the southwest at the closest point	non-target waterbird species including the SPA interest features.

6.3.2 Current Baseline

As part of work for the 2018 ANPS a Birdstrike Report was produced entitled ‘The Birdstrike Risk, Needs for Management, and Associated Biodiversity Impacts for Proposed Additional Runways at London Heathrow and London Gatwick Airports’. This report was discussed with Heathrow Airport who confirmed that the bird management measures identified in this report are still broadly valid. The key elements of the report which are of particular relevance to this section of the assessment are presented below.

To control the birdstrike risk, the International Civil Aviation Organisation (ICAO) has implemented a series of standards and recommended practices that require airports under their control manage birdstrike risk effectively. In the UK, the CAA implements these measures by requiring airport license holders to manage the birdstrike risk as part of their licensing procedures. The CAA provides guidance on how this should be carried out in their publication CAP 772 Bird Control on Aerodromes.

The actions needed to control the birdstrike risk at UK aerodromes are well understood and these can be extrapolated to airport expansions, providing sufficient information about the numbers of hazardous birds, existing birdstrike rate, current birds control practices etc.

The movements of birds from place to place are most significant because it is when birds cross the active airspace that they pose the greatest risk to aircraft. It is also obviously the case that most birdstrikes are caused by common species that are most abundant around the airfield. These are often species which may not typically be included in ecological baseline surveys due to commonality (e.g. flocks of gulls and pigeons).

All licensed civil airports in the UK are required to have an effective plan in place to monitor and manage the birdstrike risk at the airport. This plan is periodically audited by the CAA as part of their routine safety audit procedures. It is important to note however that risks arising from outside the airport property may be impossible for the airport to control. Nearby landowners are not obliged to allow the airport access to their property to disperse hazardous birds, nor are they required to manage their property to deter hazardous birds from frequenting the area. This means that once features that attract hazardous birds are developed near an airport it can be very difficult to have them removed or otherwise managed in order to control the risk.

It is therefore important that any airport development does not introduce features that will either attract more hazardous birds or include features that will change the behaviour of the existing hazardous birds in a way that increases the risk (e.g. by making it more likely that they will fly across the active airspace). It is also important that the airport development does not change the behaviour of aircraft in a way that makes it more likely that they will encounter birds (e.g. by moving a runway closer to known bird concentrations).

The Civil Aviation Authority data on reported birdstrikes⁵⁵ was reviewed. Data for 2023/24 (the most recent year available) identified that out of 3,621 birdstrike incidents reported nationally, 1,716 occurred at an altitude of less than 200ft on landing, or under 500ft on take-off. Sixty six were at an altitude of above 1,500ft. Over 95% of birdstrike incidents did not result in any damage to the aircraft.

The data indicates that birdstrike is most common between June and October, months when the interest features of shoveler and gadwall are unlikely to be present in significant numbers. The most common bird species involved in birdstrikes are gulls (unidentified species), pigeons, herring gull, swallow and common wood pigeon. No birdstrikes involving shoveler or gadwall were reported between 2017 and 2023/24. A small number of birdstrike incidents involving swans, ducks and geese (which may have included gadwall or shoveler) were reported between 2012 and 2016, although it was not identified whether any of these occurred at Heathrow.

6.3.3 Potential Impacts

The western approach to the existing northern runway at Heathrow passes over the River Thames, Queen Mother Reservoir and the River Colne, whilst the western approach to the southern runway crosses the Thames, the complex of flooded gravel pits between Horton and Wraysbury, Wraysbury Reservoir itself and the Colne. The normal composition of bird species that would be expected at a UK airport is therefore augmented by very large numbers of gulls that roost on the open waterbodies and waterbirds that occupy the waterbodies year round.

The large numbers of wetland bird species in the area means that any development that influences the number or behaviour of these birds, or brings the aircraft into closer proximity to them, has the potential to increase the birdstrike risk, unless appropriate mitigating action is taken.

The footprint of the NWR will remove a number of agricultural fields that attract significant numbers of pigeons and particularly Canada geese following the harvesting period and that also attract gulls following ploughing and seed sowing activities. This reduction in potential birdstrike risk is likely to be offset by the fact that the western boundary of the new runway will be significantly closer to Queen Mother Reservoir, which supports a very large gull roost numbering up to 20,000 birds during the winter months as well as a significant number of other waterfowl. At present aircraft departing to or arriving from the west are sufficiently high when passing over the reservoir that they rarely encounter roosting gulls or waterbirds.

6.3.4 Summary of Potential Effects on Integrity

Whilst the Qualifying Interests of shoveler and gadwall are unlikely to be directly impacted through birdstrike, measures involving large scale bird dispersal to avoid the risk of birdstrike may impact shoveler and gadwall through direct displacement or competition of foraging and roosting resources.

⁵⁵ [Birdstrike data | UK Civil Aviation Authority](#)

Table 14. Potential Effects of Operational Management on Habitat Sites Integrity

Site	Qualifying Feature	Potential Effect	Potential Effect on Conservation Objectives
South West London Waterbodies SPA/Ramsar	Shoveler Gadwall	Species displacement Increased competition Increased pressure on habitats Increased energy use resulting in loss of condition or mortality	Potential to compromise: The extent and distribution of the habitats of qualifying features; The structure and function of the habitats of the qualifying features; The supporting processes on which the habitats of the qualifying features rely; The population of each of the qualifying features; and The distribution of the qualifying features within the site.

6.3.5 Avoidance and Mitigation Measures

All licensed civil airports in the UK are required to have an effective plan in place to monitor and manage the birdstrike risk at the airport. This plan is audited by the CAA as part of their routine safety audit procedures. It is important to note however that risks arising from outside the airport property may be impossible for the airport to control.

To control the birdstrike risk, the International Civil Aviation Organisation (ICAO) has implemented a series of standards and recommended practices that require airports under their control manage birdstrike risk effectively. In the UK, the CAA implements these measures by requiring airport license holders to manage the birdstrike risk as part of their licensing procedures. The CAA provides guidance on how this should be carried out in their publication CAP 772 Bird Control on Aerodromes.

6.3.6 Effects in Combination with Other Plans and Projects

No projects or plans having the same impact as the draft HENPS have been identified but housing growth in local authorities surrounding South West London Water bodies SPA/Ramsar site could result in increased recreational activity in the SPA/Ramsar. However, that must be balanced against the fact that many waterbodies within the SPA/Ramsar are not freely accessible to the public and most of those that are accessible have access management controls or zoning of activities. The HRAs for adopted Local Plans for relevant local authorities (Houslow, Runnymede, Windsor & Maidenhead, Elmbridge and Spelthorne) do not identify an adverse effect on the SPA/Ramsar from increased recreational activity. However, since adverse effects from the draft HENPS alone cannot be dismissed then adverse effects 'in combination' cannot be dismissed either.

6.3.7 Conclusion

At this stage it is not possible to go into details regarding mitigation as this is a matter for the applicant at detailed design stage and will be considered at DCO stage.

6.4 Direct and Indirect Loss and Fragmentation of Habitat (including Functionally Linked Habitat)

An Appropriate Assessment requires an assessment of whether or not a project or plan will result in an adverse effect on the integrity of a Habitats Site. This includes land that may be outside of the boundary of the designated site, but which is fundamental to the integrity of the site. Any such land is referred to as being 'functionally linked habitat.'

Given the likely Zone of Influence of the scheme, including alterations to access roads, there is the potential for a likely significant effect due to loss of fragmentation of habitat.

An area may be considered functionally linked if:

- It is of a type likely to be used by a receptor (for example, a bird species) such as grazing salt marsh;

- The area is within the usual foraging range of the bird species in question (as measured from the habitats site);
- There is sufficient habitat that the area is of value (the further a species travels to an area, the more energy is expended and therefore the land must provide the possibility of recovering the energy spent to be considered useful; and
- The area conforms to other characteristics required by the receptor species, for example, clear line of site to avoid predation;

Functionally linked land does not have to be physically lost to have an impact, it may be considered lost to the Habitats Site if becomes unusable as a result of disturbance or other changes.

6.4.1 Relevant Habitats Sites

The following Habitats Site is vulnerable to direct and indirect loss of habitat and habitat fragmentation.

Table 15. Habitats Sites vulnerable to Habitat Loss and Fragmentation

Habitats Site	Vulnerability/Impact Pathway
South West London Waterbodies SPA/Ramsar	The proposals for a Heathrow Northwest Runway may involve land take and disturbance in the southern area of the proposal, primarily along the existing M25 motorway corridor. There is potential for surface access routes to overlap with the boundaries of sites that include SSSI components of the SPA and/or other areas of functionally linked habitat,

6.4.2 Potential Impacts

A series of waterbodies have been created in the South West London area as a result of historic gravel extraction and the establishment of reservoirs to supply water to London and the surrounding area. Hundreds of migratory wintering Gadwall and Shoveler birds spend the winter on and around these waterbodies and their numbers are significant at an International level.

Some sites are favoured by one species over another, other sites may be used by both, either or neither of the species depending upon the availability of suitable habitat and other resources at that site.

As described by Briggs the SPA classification implies that component sites are biologically connected. However, there are more than 50 other waterbodies within the area that contribute to the region’s waterfowl interest. Twenty of these were originally included in the pre-selection stage but were subsequently omitted from the classification.

Surface access proposals for a Heathrow Northwest Runway may involve landtake and near to Staines Reservoir and Wraysbury Reservoir although it is unlikely that there will be any habitat loss from these waterbodies.

Potential impacts could include loss of habitat at or in close proximity to these waterbodies which could result in loss of displacement of the birds and increased pressure on other waterbodies with suitable habitat. This impact could be cumulative with disturbance and air quality changes, both during construction and operational phases, changes in water availability or water quality, or increased recreational use.

6.4.3 Summary of Potential Effects on Integrity

Table 16. Potential Effects of habitat loss

Site	Qualifying Feature	Potential Effect of Habitat Loss	Potential Adverse Effect on Conservation Objectives
Southwest London Waterbodies SPA/Ramsar	Shoveler Gadwall	There is potential for surface access routes to overlap with the boundaries of sites that include SSSI components and other potential functionally linked habitats of the SPA.	Potential to compromise; The extent and distribution of the habitats of the qualifying features; The structure and function of the habitats of the qualifying features; The supporting processes on which the habitats of the qualifying features rely; The population of each of the qualifying features; and The distribution of the qualifying features within the site.

6.4.4 Avoidance and Mitigation Measures

It is considered reasonably likely that at the detailed design stage, impacts as a result of LHR-NWR could reasonably be avoided through a review of the detailed alignment that avoids encroachment into the designated sites or functionally linked habitats. This, together with the construction methods to be used could be planned in order to avoid land take adjacent to or within the SPA. These measures are considered to be viable and robust to prevent adverse effects to integrity of the sites.

However, at this plan stage it is not possible to exclude the likelihood of adverse effects given that more detailed project design information, and detailed proposals for mitigation, is not presently available. Such project detail would need to be reviewed against a baseline assessment at the SPA/Ramsar.

6.4.5 Effects in Combination with other Plans and Projects

No other plans or projects have been identified that would result in habitat loss impacts on South West London Waterbodies SPA/Ramsar.

6.4.6 Conclusion

At this stage, it is not possible to rule out adverse effects of a Heathrow Northwest Runway scheme, given that more detailed project design information, and detailed proposals for mitigation, are not presently available.

6.5 Water Quality and Quantity

The habitats and species assemblages at a site can be affected by changes in water quality or quantity (including flow). Inputs of toxic compounds and pesticides may result in negative effects on the health of aquatic life. Increased nutrient levels (for example through effluent discharge) can result in eutrophication. In addition, physical changes from scour may materialise in receiving ecosystems through changes to the flow and quantity of water. All these may reduce foraging resources and roosting habitat.

Construction and operation of a Heathrow Expansion scheme may result in:

- Diversion or culverting of watercourses
- Increase in the risk of contaminants (run-off, de-icing fluid)
- Changes due to increased risk of flooding as agricultural land is lost to hard surfacing
- Impacts on flow resulting from increased water demand.

6.5.1 Relevant Habitats Sites

Table 17. Relevant Habitats sites

Habitats Sites	Location	Vulnerability/Impact Pathway
South West London Waterbodies SPA/Ramsar	The SPA/Ramsar is adjacent to works such as changes to the road network. The SPA/Ramsar is 650m from a northwest runway at its closest point.	Potential to result in impacts to hydrological systems such as the River Colne and wetland environments adjacent to the SPA that support interest features (potential functionally linked habitat).

The Water Quantity and Quality Assessment has identified that the majority of the water bodies in the Zol of the LHR–NWR are classified as Artificial/Heavily Modified Water Bodies (A/HMWB) currently not achieving Good Ecological Status in accordance with the objectives of the Water framework Directive.

Further investigations are required as to water quality and quantity status of the Habitats Sites (and functionally linked habitats) and specifically how this currently influences the functioning of the habitat and the population and distribution of qualifying features. This is necessary in order to quantify the effects of any changes as a result of any Heathrow Expansion scheme.

6.5.2 Potential Impacts

Construction and operation of a northwest runway would likely require the diversion of several rivers and streams. The reservoirs are filled by water abstracted from the Thames. None of the potentially impacted watercourses connect to any of the Habitats Sites and the component parts of South West London Waterbodies SPA/Ramsar are either sealed reservoirs that are filled by active pumping, or are gravel pits in direct continuity with groundwater rather than being dependent on surface watercourses. Notwithstanding this, changes to water quality in SPA/Ramsar sites or functionally linked sites could occur as a result of construction or operational

activities. Further investigations are required in order to assess the likely impacts on water quality at the DCO stage.

6.5.3 Potential Effects of Operational Management on Habitat Sites Integrity

Site	Qualifying Feature	Potential Effect	Potential Effect on Conservation Objectives
South West London Waterbodies SPA/Ramsar	Shoveler Gadwall	Eutrophication, Changes in the species composition of macrophyte communities, increased algal productivity This habitat degradation could lead to species displacement both within the site and areas beyond the site, fragmentation, increased competition within the site and areas beyond the site, increased pressure on habitats within the site and areas beyond the site, increased energetic use leading to reduced breeding success and potentially mortality.	Potential to compromise: The extent and distribution of the habitats of qualifying features; The structure and function of the habitats of the qualifying features; The supporting processes on which the habitats of the qualifying features rely; The population of each of the qualifying features; and The distribution of the qualifying features within the site.

6.5.4 Avoidance and Mitigation

A number of mitigation measures are usually integrated into designs as standard to minimise the impact on water quality and quantity, as described below. This is reflective of the well-understood baseline regarding the mitigation techniques available to address water quality and flow impacts. This baseline is not so readily available for other impacts identified in this strategic-level HRA. Where demonstrated that there is hydrological connectivity to habitats used by interest features (under the current baseline), these measures in turn would minimise the impact on SW London Waterbodies SPA and Ramsar.

Channel creation (including culverts)

- Design should incorporate variations in flow, depth and width to provide a variety of habitats;
- Materials used should be environmentally appropriate and include timber and local rock rather than concrete or sheet piling;
- Realigned channels should be similar in length, width, depth and gradient to the old (original) channel (if appropriate to the flow and sediment regimes);
- Design should incorporate naturalised bed material (which could be characteristic of natural reaches of the same watercourse or neighbouring watercourses);
- Banks should be vegetated with native species (to promote stability);
- Channel design (including culverts) should be such to naturally convey the full range of flows from high to low;
- Possible storage and transfer of original/natural substrate from a redundant channel to a realigned channel should be considered;
- New river lengths, widths, depths and gradients should not compromise flow conveyance in adjoining downstream or upstream reaches; and
- Design should consider location of areas of contaminated land. Mitigation could include lining of the channel.

River realignment

- Design should incorporate variations in flow, depth and width to provide a variety of habitats;
- Materials used should be environmentally appropriate and include timber and local rock rather than concrete or sheet piling;
- Realigned channels should be similar in length, width, depth and gradient to the old (original) channel (if appropriate to the flow and sediment regimes);
- Design should incorporate naturalised bed material (which could be characteristic of natural reaches of the same watercourse or neighbouring watercourses);
- Banks should be vegetated with native species (to promote stability);
- Channel design should be such to naturally convey the full range of flows from high to low;

- Possible storage and transfer of original/natural substrate from a redundant channel to a realigned channel should be considered;
- New river lengths, widths, depths and gradients should not compromise flow conveyance in adjoining upstream or downstream reaches; and
- Design should consider location of areas of contaminated land. Mitigation could include lining of the channel.

Water quality

- Development and implementation of a CEMP including: Procedures to respond to any environmental incidents, Pollution prevention and material storage handling measures to be implemented;
- Details about location specific risks to groundwater and surface water quality and specific mitigation measures required at each location. Groundwater and surface water monitoring requirements to be carried out before and during construction and during operation;
- Storage of potentially polluting substances including fuel, oils, de-icer and other chemicals to be located away from surface watercourses and areas with permeable soils;
- Storage of excavated materials would be minimised and any temporary storage would be located away from surface watercourses and areas with permeable soils; and
- Any contaminated water from excavation or dewatering activities would be passed to attenuation features such as treatment wetlands, ponds or storage tanks. There would be no direct discharge of contaminated water to surface watercourses.
- Runoff from operational areas where activities such as de-icing, aircraft cleaning and aircraft servicing takes place should be passed to attenuation and treatment features. There should be no direct discharge of contaminated water to surface watercourses. The capacity and treatment levels to be achieved by the drainage system should be agreed with the Environment Agency and/or sewerage undertaker as appropriate, during the design phase; and
- Storage of potentially polluting substances including fuel, oils, de-icer and other chemicals to be located away from surface watercourses and areas with permeable soils.

It is considered likely that a number of potential adverse effects described above will be able to be mitigated through detailed design. However, at this plan stage it is not possible to exclude the likelihood of adverse effects given that more detailed project design information, and detailed proposals for mitigation, is not presently available. Such project detail would need to be reviewed against a baseline assessment at the SPA/Ramsar. Given the information currently available, there is uncertainty that all of the potential adverse effects identified could be avoided via mitigation.

6.5.5 Effects in Combination with other Plans and Projects

The projects or plans most likely to have a water quality or quantity effect on the South West London Waterbodies would be housing and employment growth in local authorities surrounding South West London Water bodies SPA /Ramsar site and Thames Water's Water Resource Management Plan (WRMP), as some parts of the

SPA/Ramsar are active public water supply waterbodies. However, the HRAs for the adopted Local Plans for relevant local authorities (Hounslow, Runnymede, Windsor & Maidenhead, Elmbridge and Spelthorne) do not identify an adverse effect on the SPA/Ramsar from water quality or resource issues, and neither does the HRA of the Thames Water WRMP. However, since adverse effects of the draft HENPS alone cannot be dismissed then adverse effects ‘in combination’ cannot be dismissed either.

6.5.6 Conclusion

At this stage, it is not possible to rule out adverse effects of a Heathrow Northwest Runway scheme, given that more detailed project design information, and detailed proposals for mitigation, are not presently available.

7. Derogations

7.1 No Feasible alternatives

7.1.1 Context for alternatives considered

To allow a derogation the plan making authority must decide that there is no alternative solution that would be less damaging to the site while still meeting the objective of the plan. The plan making authority should consider whether the proposal could:

- be delivered at a different location
- use different routes across a site
- change its scale, size, design, method or timing

To constitute a genuine alternative solution, the alternative must:

- achieve the same overall objective as the original proposal
- be financially, legally and technically feasible
- be less damaging to the relevant Habitats site and not have an adverse effect on the integrity of any other Habitats site

If there are, or appear to be, one or more alternative solutions that will achieve the objectives of the plan and be less damaging to Habitats sites, then the plan making authority cannot include the original proposal within the plan. Consideration of alternative solutions is required at both the strategic planning (draft HENPS stage) and, if following further studies adverse effects on integrity still cannot be dismissed, at the project (DCO stage) level.

It is therefore important to identify the objective of the draft HENPS. This can be expressed simply as **to achieve additional capacity at Heathrow Airport or enable the airport to maintain its status within Europe as an aviation hub**. The feasible alternatives are therefore being considered in the context of Heathrow Airport being the UK’s only hub airport, giving it a unique national role as an international competitor. These were conclusions from the Airports Commission work, which analysis has built on, including through an updated assessment of the capacity constraints facing the sector and the potential for Heathrow expansion to

help increase capacity. In addition, the feasible alternatives are being considered within the framework of the agreed overall programme objective to enable the delivery of a third runway at Heathrow, with the aim for it to be operational by 2035. Therefore, any feasible alternative to the HAL proposal must be able to achieve this objective while also causing less harm to Habitats sites.

Firstly, it is necessary to consider whether there are any feasible alternative schemes to the HAL proposal will meet this objective. The 2018 ANPS identified Heathrow as the key focus for growth. In January 2025 the Government stated that it would support proposals for a third runway at Heathrow Airport, with a view to delivering airport expansion in line with the UK's legal, environmental and climate obligations. In response, DfT invited proposals for a Heathrow third runway. Seven proposals were received, and following an assessment process undertaken in summer 2025, a scheme promoted by the Arora Group / Heathrow West Limited (HWL) and a scheme promoted by Heathrow Airport Limited (HAL) were the only proposals that were assessed to have met the Transport Secretary's [published criteria](#).

In October 2025, alongside the launch of the ANPS review, the Transport Secretary [announced](#) that both schemes remained under active consideration and that the Department would be seeking further information on the two proposed schemes. The Transport Secretary then [announced](#) in November 2025 that, following receipt of further information and a comparative assessment of the two schemes, the Government's view is that the north-west runway scheme brought forward by HAL offers the most credible and deliverable option and, as such, this scheme would inform the ongoing review of the ANPS.

7.1.2 What Feasible Alternatives Exist?

As highlighted above, in early 2025 the Chancellor invited proposals for a third runway at Heathrow Airport, which led to seven proposals being received in July 2025. These were assessed against published criteria by DfT, the Treasury and associated technical and financial advisers. Five proposals were assessed as not suitable to inform the ANPS review, leaving the schemes promoted by the Arora Group / HWL and HAL as the only proposals that remained under active consideration. Given that the five proposals assessed as not suitable did not meet the criteria, and therefore cannot meet the programme objective, they can therefore be discounted as feasible alternatives for the purposes of the HRA.

Adopting a 'Do Nothing' approach would also not meet the objectives to achieve additional capacity at Heathrow Airport or enable the airport to maintain its status within Europe as an aviation hub. It is therefore not a feasible alternative to meeting the objectives of the draft HENPS.

While the HAL proposal has been selected to inform the draft HENPS, the HWL proposal could also be capable of meeting the objectives of the ANPS by providing additional capacity at Heathrow Airport. The HWL proposal is therefore considered to be the only feasible alternative for delivering the objectives of the draft HENPS.

7.1.3 Assessment of the ARORA/HWL Scheme

The only other scheme identified by the Secretary of State in 2025 as meeting the published criteria was the Arora/HWL Scheme. This scheme has a more consolidated footprint than the HAL Scheme and does not involve the need to construct a runway over the M25. Specific elements of HWL's Proposed

Development as set out in the document Heathrow West Proposal for Expansion Final Report (July 2025) include:

- a new 2,800m Northwest Runway, together with supporting taxiways and aircraft parking aprons
- a new Terminal 6 (T6) passenger terminal, featuring a pedestrian bridge connecting its main terminal T6A to its satellite pier T6B, an Inter-Terminal Plaza (ITP) shared with existing Terminal 5 (T5), two new hotels and a Public Transport Hub
- surface access improvements, including re-aligned public roads for access to T5 and T6 and for maintenance of local connectivity, new multi-storey car parks and additional active travel routes
- river diversions, to clear the project site and for ecological and flood prevention enhancements
- green infrastructure, including landscape, recreational and ecological improvements
- new airport and airline operations facilities, to support increased flight activities related to a new Northwest Runway and replacements for displaced facilities
- ancillary facilities, including utility systems and airside roads
- aviation fuel system facilities
- site clearance and grading, including demolition of displaced facilities and infrastructure
- temporary works relating to construction, including a new railhead, temporary access
- roads, highway works, temporary works and works compounds.

Table 9 of the HWL report acknowledges that for all Habitats sites other than South West London Waterbodies SPA/Ramsar site, air quality impacts of the HAL and HWL proposals are likely to be similar. The HWL report also acknowledges on page 23 regarding air quality that *'For the relative impact of HWL's Proposed Development for South West London Waterbodies, it can be assumed that the impact of airport related activities is likely to be similar to the impact of the HAL 2019 Preferred Masterplan, as well as for comparable road network upgrade elements such as works for the Stanwell Moor junction included for both proposals'*.

However, it also argues that during operation, reduced potential effects at South West London Waterbodies SPA and Ramsar site may occur since realignment of M25 south of Junction 14 and associated traffic congestion is not required for HWL's Proposed Development. The new undercrossing of the M4 spur proposed in the HWL scheme is likely to have reduced impacts compared to the M25 diversion within the HAL proposal.

It also identifies that during construction, there would be reduced construction land extent for HWL's Proposed Development and elimination of M25 works associated with HAL 2019 Preferred Masterplan, with potential air quality benefits to South West London Waterbodies SPA and Ramsar site. It states that *'For potential ecological impacts [of the HAL proposal], Figure 63 [Land considered for construction works for the HAL 2019 Preferred Masterplan] also highlights works required in the vicinity of South West London Waterbodies, specifically Wraysbury Reservoir adjacent to the*

M25. These areas are likely to be associated with network changes to the M25 for the HAL 2019 Preferred Masterplan; these are not required for HWL's Proposed Development and therefore represent a potential air quality benefit for direct construction impacts'.

However, the report does not provide detailed analysis of the magnitude of any difference to support either of these construction or operational arguments and notes on page 23 that any reduction in air quality impact is a 'potential benefit' rather than a confirmed positive difference. Moreover, as identified in the section of this HRA report on air quality, the qualifying interest features of South West London Waterbodies SPA/Ramsar site does not have high sensitivity to traffic related air quality impacts (exhaust emissions leading to nitrogen deposition). In addition, Wraysbury Reservoir, the part of the SPA and Ramsar site close to the M25, is behind a 50m wide embankment the crest of which sits approximately 12m above the highway. There is then an approximately 4m drop to the surface of the reservoir on the other side of the embankment. This tall and wide structure will provide a barrier reducing any impact of vehicle exhaust emissions on vegetation within the reservoir.

It is ultimately concluded, based on evidence available at this plan level, that insufficient evidence exists that the Arora/HWL Scheme would have significantly lesser air quality impacts on South West London Waterbodies SPA/Ramsar than the HAL scheme and otherwise would result in similar impacts to Habitats Sites to a Northwest Runway proposal. As such, it would be no less damaging, and therefore not an alternative solution to delivering the objectives of the ANPS that would have less impact on Habitats site.

7.2 Imperative Reasons of Overriding Public Interest

7.2.1 Background

The draft HENPS is a plan for the purposes of the Habitats Regulations and has been subject to a HRA including AA. The strategic level AA has concluded that the potential for adverse effects on the integrity of Habitats Sites, either from the plan alone, or in combination with other plans, could not be ruled out. The assessment has proposed outline avoidance and mitigation measures but, in the absence of project level detail it has not been possible to conclude beyond reasonable scientific doubt that the identified potential adverse effects on the integrity of Habitats Sites will be effectively avoided or mitigated.

In line with the objectives of the Habitats Directive, the assessment has considered whether there are alternative solutions to delivering the requirements of the plan that would better respect the integrity of the Habitats Sites considered in the HRA process. It is not considered that there are any such solutions.

In accordance with Article 6(4) of the Habitats Directive, where no alternative solutions exist and where adverse effects on Habitats Sites remain, or cannot be ruled out, it is necessary to establish IROPI for why the plan should proceed. The Competent Authority will consider whether:

- The plan is 'imperative', one that is required or indispensable, or it is essential that it proceeds;

- There is adequate public benefit; any private interests cannot be taken into account in the justification; and
- Overriding long-term benefits that demonstrably outweigh harm to the Habitats site

The IROPI test is undertaken on the assumption that compensatory measures are available; however, consideration of IROPI precedes any consideration of compensation measures. In the case that a Habitats Site hosts a priority natural habitat/ species, i) human health or public safety considerations or ii) benefits which are of primary importance to the environment may only be considered. If IROPI cannot be demonstrated the Secretary of State must determine whether other reasons, such as wider socio-economic reasons, can be considered. Compensatory measures that maintain the coherence of the Habitats site network must also be identified and established.

7.2.2 IROPI Assessment

For the draft HENPS, adverse effects on the integrity of sites hosting either a “priority natural habitat type” or a “priority species” have been ruled out. As such, any IROPI can also include social and economic considerations. The plan making authority must be able to show that there are imperative reasons of overriding public interest (IROPI) ,as set out above to demonstrate, why the proposal must go ahead.

According to government guidance⁵⁶, plans or projects that only provide short-term or very localised benefits are less likely to be able to show imperative reasons of overriding public interest than more strategic plans or projects.

In the draft HENPS and in this report, in reaching a conclusion that there are imperative reasons of public interest why the proposal in the draft HENPS should proceed, this report has considered:

- The importance of aviation to the UK economy
- The conclusions from the Airports Commission on the need for airport capacity and how it can be met
- Assessment of the capacity constraints facing the sector and the need for new airport capacity at Heathrow; and
- Government designation of Heathrow expansion as Critical National Growth Infrastructure

7.2.2.1 The importance of aviation to the UK economy

International connectivity, underpinned by strong airports and airlines, is important to the success of the UK economy. It is essential to allow domestic and foreign companies to access existing and new markets, and to help deliver trade and investment, linking us to valuable international markets and ensuring that the UK is open for business. It facilitates trade in goods and services, enables the movement of workers and tourists, and drives business innovation and investment, being particularly important for many of the fastest growing sectors of the economy.

International connectivity attracts businesses to cluster round airports and helps to improve the productivity of the wider UK economy. Large and small UK businesses rely on air travel, while our airports are the primary gateway for vital time-sensitive freight services. Air travel also allows us ever greater freedom to travel and visit

⁵⁶ <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site#derogation>

family and friends across the globe and brings millions of people to the UK to do business or enjoy the best the country has to offer.

The UK benefits from a strong and substantially privatised airport sector, with a regulatory system that supports growth while ensuring the interests of passengers are at its heart. The Government believes that this is the right approach for the airport sector, but that Government has an important role to play in strategic decisions like planning future airport capacity.

London serves more airport destinations with regular passenger services than any other city in Europe. The UK's airports handled 299 million terminal passengers in 2025, the highest number ever, and a 2% increase on 2024 levels. The sector benefits the UK economy through its direct contribution to GDP and employment, and by facilitating trade and investment, manufacturing supply chains, skills development, and tourism.

In 2023, the air transport and aerospace sectors directly contributed around £23 billion to UK GDP⁵⁷ and directly provided around 240,000 jobs across the UK⁵⁸. The UK has a substantial aircraft manufacturing industry and will benefit economically from growth in employment and exports from future aviation growth. Air Passenger Duty (APD) remains an important contributor to Government revenue, in 2026-27 the Office for Budget Responsibility forecast that APD will raise £5.2 billion in tax revenue⁵⁹. Heathrow Airport directly supports around 80,000 jobs on site⁶⁰.

Businesses from across the UK utilise our aviation network to access markets worldwide. The UK's strong services sector, which provides significant export earnings for the country, is particularly reliant on aviation. The sector includes, among others, financial services, insurance, creative industries, education, and health – all of which rely on face-to-face engagement with customers for success.

Air freight is also important to the UK economy. Although only 1% of UK trade by weight is carried by air, it is typically used for high-value and time-sensitive goods and accounted for a much larger proportion – around 33% - of the value of UK imports and exports in 2024. This is especially important for industries which require a time critical supply-chain such as the advanced manufacturing sector, as medicinal and pharmaceutical products represented over 10% of UK good exports by value in 2025.

Aviation also brings many wider benefits to society and individuals, including travel for leisure and visiting family and friends. This drives further economic activity. Tourism directly contributed around £60 billion to UK gross added value in 2023⁶¹ and overseas residents visiting Great Britain by air spent around £28 billion in 2024,⁶² with the wider UK tourism industry forecast to grow significantly over the coming years.

The importance of aviation and international connectivity to the UK economy, and in particular the UK's hub status, has only increased following UK's withdrawal from the European Union. As the UK continues to develop its new trading relationships with the rest of the world, it will be essential that increased airport capacity is delivered, in

⁵⁷ DfT analysis of Office for National Statistics (ONS) low-level aggregates of UK output GDP

⁵⁸ DfT analysis of Office for National Statistics (ONS) Business Register and Employment Survey data

⁵⁹ <https://obr.uk/efo/economic-and-fiscal-outlook-march-2026/>

⁶⁰ <https://www.heathrow.com/company/about-heathrow/gateway-to-growth>

⁶¹ <https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/datasets/uktourismsatelliteaccountsatables>

⁶² <https://www.ons.gov.uk/peoplepopulationandcommunity/leisureandtourism/datasets/overseasresidentsvisitsstotheuk>

particular to support the continued development of long-haul routes to and from the UK, especially to and from emerging and developing economies.

7.2.2.2 The conclusions from the Airports Commission on the need for airport capacity and how it can be met

The Airports Commission's assessment of the global aviation context and its case for change provided the foundation to its work on recommending the best way to maintain the UK's position as Europe's most important aviation hub. In its Final Report it set out that there have been two main paths of development in the aviation sector over recent decades - one of consolidation, partnership and network integration; and one of new entrants and expanding point-to-point travel. It also recognised a shift in economic power from the west to the east, establishing new aviation powerhouses.

The Airports Commission concluded that the consolidation of the airline industry and alliances resulted in the expansion of 'hub-and-spoke' networks run by major carriers at the world's largest airports. It considered that for passengers, the hub-and-spoke model maximises the choice of direct destinations at a hub airport and offers potential to travel to a very wide variety of destinations. It established that this airline consolidation and liberalisation have strengthened Heathrow's role as the UK's major hub airport and its dominance in the long-haul market.

The Airports Commission did recognise that the low-cost sector is continuing to evolve and establishing services and bases at major hub airports. It recognised that some low-cost carriers are innovating with long-haul services, and new emerging market carriers are establishing routes to the UK, but it considered these aircraft are unlikely to increase substantially the UK's route network. It also considered that there is much more existing scope to compete strongly for routes and establish connections in the short-haul market.

The Airports Commission explained that some long-haul services are available from other London airports, mainly at Gatwick, but these have tended to focus on leisure destinations or routes already served from Heathrow. Its research concluded that the London airport network as a whole has not been able to develop links to new long-haul destinations, and expansion at Heathrow would tackle that deficiency directly.

It also considered that with expansion, airlines operating from Heathrow could compete more effectively with other European and international hubs for transfer passengers, which can be a decisive factor in determining the viability of a new route. It concluded that Heathrow is best placed for expansion with this combination, as the UK's major hub airport and its ability to compete internationally.

Before concluding that additional runway infrastructure was needed to address the capacity constraints in the London airports system, the Airports Commission considered a broad range of alternative measures including changes to taxation, investment in high-speed rail or improved surface access options and novel concepts such as remote central terminals to maximise the use of existing runway capacity. It also took into account the development of new technologies that could potentially diminish aviation demand in the future, such as videoconferencing. It concluded that none of these options were able to deliver a sufficient increase in capacity, and many required investment that was far in excess of the cost of runway expansion.

7.2.2.3 Assessment of the capacity constraints facing the sector and the need for new airport capacity at Heathrow

The decision in 2018 to designate the Airports NPS and support growth of existing runway infrastructure marked a significant step in government policy on airport expansion. Since then, Stansted, Luton, Gatwick, Bristol and London City airports have applied for and received planning consent to increase capacity. While this airport growth will provide additional airport capacity for passengers, overall capacity constraints still exist in the UK's aviation sector, and it would not replace the ability of Heathrow expansion to maintain and strengthen the UK's hub status.

These capacity constraints are affecting our ability to travel conveniently and to a broader range of destinations than in the past. They create negative impacts on the UK through increased risk of flight delays and unreliability, restricted scope for competition and lower fares, declining domestic connectivity, erosion of the UK's hub status⁶³ relative to foreign competitors and constraining the scope of the aviation sector to deliver wider economic benefits.

Aviation demand is likely to increase significantly between now and 2050. Despite planned expansions at some airports, the whole London airports system is forecast to be full by the mid to late 2040s.

These capacity constraints have been most acutely felt at Heathrow Airport, as the busiest two-runway airport in the world, it has been at or near full capacity for over 20 years. In 2025 annual passenger numbers surpassed 84 million for the first time, and it had its busiest day on record on 1 August 2025. Heathrow Airport is forecast to [insert updated data]. The forecasts demonstrate that there is continued demand from passengers to fly from Heathrow Airport despite capacity increases at other airports.

Heathrow is the UK's only airport with hub status, stemming from the convenience and variety of its direct connections across the world, but this status is already challenged by restricted connectivity. Comparable hub airports in Europe are operating without the same capacity constraints as Heathrow. Paris Charles de Gaulle and Frankfurt have four runways, and with spare capacity these hub airports are able to attract new flights to growth markets. These competitors have benefited from the capacity constraints at Heathrow Airport and have seen faster growth over the past few years. The UK's airports also face growing competition from hubs in the Middle East like Dubai, Abu Dhabi, Doha and Istanbul. Heathrow Airport was overtaken by Dubai in 2014 as the world's busiest international passenger airport.⁶⁴ Expansion at Heathrow Airport will allow the UK to compete more effectively against other international competitors.

The consequences of not increasing capacity at Heathrow Airport are detrimental to the UK economy and the UK's hub status. International connectivity will be restricted as capacity restrictions mean airlines prioritise their routes, seeking to maximise their profits. Capacity constraints therefore lead to trade-offs in destinations, and while there is scope to respond to changing demand patterns, this necessarily comes at the expense of other connections. Domestic connectivity into the largest London airports will also decline as competition for slots encourages airlines to prioritise more profitable routes.

63 Defined as the frequency of flights and the density of a route network

65 *Airports Commission: Final Report*, p81; present value over 60 years ⁴⁶ *Airports Commission: Final Report*, p81

Operating existing capacity at its limits means there will be little resilience to unforeseen disruptions, leading to delays, and the lack of available slots makes it more difficult for new competitors to enter the market.

The Government believes that not increasing capacity will impose costs on passengers and on the wider economy. The Airports Commission estimated that direct negative impacts to passengers, such as fare increases and delays, would range from £21 billion to £23 billion over 60 years.⁶⁵ Without expansion, capacity constraints would impose increasing costs on the rest of the economy over time, lowering economic output by making aviation more expensive and less convenient to use, with knock-on effects in lost trade, tourism and foreign direct investment.

It is very challenging to put a precise figure on these impacts, but using alternative approaches the Airports Commission estimated these costs to be between £30 billion and £45 billion over 60 years.⁶⁶ The Airports Commission urged caution interpreting these figures, which overlap with the direct passenger costs reported above and so are not wholly additional. But they do illustrate that not increasing airport capacity carries real economic costs to the whole economy beyond aviation passengers. Having reviewed this further, the Government accepts this analysis.

7.2.2.4 Connectivity and strategic benefits

Heathrow Airport is one of the world's major hub airports, serving over 200 destinations worldwide with a regular service, including a diverse network of onward flights across the UK and Europe.⁶⁶ Building on this base, expansion at Heathrow Airport will mean it will continue to attract a growing number of transfer passengers, providing the added demand to make more routes viable. In particular, this is expected to lead to more long-haul flights and connections to fast-growing economies, helping to secure the UK's status as a global aviation hub, and enabling it to play a crucial role in the global economy. Compared to no expansion, the Government estimate that a Northwest Runway at Heathrow Airport by 2055 would result in 217,000 additional flights a year across the UK as a whole (including 38,000 long haul), and 45 million additional passengers a year.

The ease with which businesses can move staff around the globe is an important facilitator of trade and for businesses locating and remaining in the UK. The broader range and greater frequency of long-haul flights at Heathrow Airport best meets this need. It would deliver benefits for UK passengers (both business and leisure) by allowing them to travel to more destinations flexibly. These benefits include the additional frequency of flights, for example connecting the UK to long haul destinations daily instead of weekly, or several times a day instead of daily. Businesses from across the UK currently take advantage of Heathrow Airport's international connections and will continue to benefit from these following the expansion. In particular, the additional capacity delivered at Heathrow Airport will support growth in important sectors of the UK economy, including tourism, financial services, and the creative industries.

The Government recognises the importance that the nations and regions of the UK attach to domestic connectivity, particularly connections into Heathrow Airport. Airports across the UK provide a vital contribution to the economic wellbeing of the

⁶⁵ *Airports Commission: Final Report*, p81; present value over 60 years ⁶⁶ *Airports Commission: Final Report*, p81

⁶⁶ DfT Analysis of CAA Airport Statistics, 2025. A "regular" service is defined as at least 51 departing passenger flights on an airport-to-airport route across the calendar year. This is an average of just under a return service per week (to account for occasional cancellations), though some services will be seasonal and only operating at certain times of the year.

whole of the UK. Without expansion, there is a risk that, as airlines react to limited capacity, they could prioritise routes away from domestic connections. The Government therefore sees expansion at Heathrow Airport as an opportunity to not only protect and strengthen the frequency of existing domestic routes, but to secure new domestic routes to the benefit of passengers and businesses across the UK.

Passengers from across the UK are likely to benefit from the improved international connectivity provided by expansion. In 2055, 10.5 million additional passengers from outside of London and the South East are forecast to make one-way international journeys⁶⁷ from Heathrow Airport. While expansion will also see some displacement of passengers from regional airports to the London system, overall regional airports are expected to continue displaying strong growth in passenger numbers by 2055.⁶⁸

7.2.2.5 Freight benefits

The aviation sector can also boost the wider economy by providing more opportunities for trade through air freight. The time-sensitive air freight industry, and those industries that use air freight, benefit from greater quantity and frequency of services, especially long haul. By providing more space for cargo, lowering costs, and by the greater frequency of services, this should in turn provide a boost to trade and GDP benefits. Expansion at Heathrow Airport will deliver a significant boost in long haul flights, and therefore a considerable benefit to air freight. This is further facilitated by the existing and proposed airport development of freight facilities as part of a Northwest Runway scheme. Heathrow Airport currently has a substantial freight handling operation. In 2024, Heathrow handled 1.6 million tonnes of cargo, representing 60% of all freight handled at UK airports in terms of tonnage, and four times more than any other UK airport. Around £216 billion worth of imports and exports passed through Heathrow in 2024, representing 72% of the value of goods passing through UK airports and 23% of the value of all UK imported and exported goods across transport modes. Expansion at Heathrow Airport will further strengthen the connections of firms from across the UK to international markets.

The vast majority (95%) of freight handled at Heathrow is carried in the bellyhold of passenger services. This contrasts with the UK's other large air freight hubs (Stansted and East Midlands), where most freight is carried on cargo-only services. Heathrow uniquely benefits from its extensive range of passenger routes, and was the only airport carrying freight to a number of long-haul destinations in 2025, including Vietnam, Malaysia and Taiwan.⁶⁹

While the majority of UK air freight is carried in the bellyhold of passenger aircraft, dedicated all-cargo services also play an important role in supporting the UK economy, particularly for goods that are oversized, time-critical, subject to specific handling requirements, or where reliability and scheduling flexibility are essential.

Expansion is expected to deliver a significant increase in air freight capacity, with an additional 38,000 long haul flights at the UK level by 2055. Since 2010 Heathrow has consistently handled more than 1.5 million tonnes of cargo annually, aside from years where the Covid-19 pandemic had a significant economic impact. While it has maintained this level, it has struggled to grow its cargo volumes despite robust demand for cargo in the South East of the UK. The overarching constraint to the growth of freight volumes at Heathrow relates to significant challenges at ground

⁶⁷ Defined as any passenger who travels to (or from) an international destination from a region outside of London and the South East, and uses the expanded airport as part of this journey. A one-way journey is counted as either an outbound or an inbound journey. Return passengers are therefore counted twice.

⁶⁸ [Draft Heathrow Expansion National Policy Statement appraisal report - GOV.UK](#)

⁶⁹ DfT Analysis of CAA Airport Statistics

level, associated with a lack of ancillary warehousing capacity leading to long queues for trucks. In order for the benefits to the UK's freight sector from Heathrow expansion to be realised, it is essential that the airport's freight capacity is significantly increased and the processes for road freight at the airport are enhanced.

Addressing capacity constraints at ground level will allow the extra freight associated with additional flights as a result of expansion to be handled in an efficient manner. Therefore, the applicant must demonstrate a plan to increase the airport's cargo capacity that addresses the limitations in cargo handling that exist at the existing site. This should set out the location and size of new cargo handling and processing facilities, the access routes to the road network.

The applicant must also set out mitigations to any impacts associated with additional freight activity including, but not limited to, increased road traffic and increased greenhouse gas emissions and air quality impacts associated with road transport.

7.2.2.6 Passenger and wider economic benefits

Without expansion, passengers and other users of airports are likely to suffer from higher fares and more delays. High demand for air travel at airports with limited or no scope for increased capacity could weaken competition, allowing airlines to charge higher fares. As airports fill up and operate at full capacity, there is little resilience to deal with any disruption, leading to delays.

Heathrow Airport is currently the busiest two runway airport in the world, already operating at full capacity, with substantial pent-up demand from passengers and airlines. Expansion at Heathrow Airport would increase the availability of services and increase competition between airlines. This would lower fares that passengers can expect to face relative to no expansion, leading to significant benefits to business and leisure passengers and the wider economy. A Northwest Runway scheme is expected to provide £0.6-£2.1bn of benefits to the wider economy. The Government also recognises the role airports can play in supporting wider economic growth in the local community. Expansion at Heathrow Airport is expected to result in £0.6bn - £2.1bn benefits to the wider economy. These additional benefits come from workers moving to more productive jobs around the expanded airport as well as the productivity benefits from firms who will enjoy lower aviation transport costs.

Expansion via a Heathrow Northwest Runway scheme should deliver additional jobs at the airport, through its supply chain and in the local community. A Heathrow Northwest Runway scheme is expected to generate up to 61,000 additional jobs in the local area by 2055.⁷⁰

7.2.2.7 Designating Heathrow expansion as Critical National Growth Infrastructure

The Government has concluded that development covered by the draft HENPS is critical national growth infrastructure⁷¹ (CNGI) because of the clear need for expansion at Heathrow, and the economic and other strategic benefits it would provide. The Government strongly supports the delivery of CNGI, and it should be progressed as quickly as possible.

⁷⁰ Updated Appraisal Report, p29

⁷¹ A policy designation set out in section 4.16-4.34 of the draft HENPS which applies a policy presumption that, subject to any legal requirements (including under section 104 of the Planning Act 2008), it is likely that the urgent need for CNGI to achieving our growth objectives, together with the economic and strategic benefits, will outweigh any other residual impacts not capable of being addressed by application of the mitigation hierarchy, in all but the most exceptional circumstances and excluding the Government's four tests. CNGI is defined as infrastructure covered by the Heathrow Expansion NPS in paragraph 1.9.

7.2.2.8 Conclusion

The Government therefore considers that the proposals in the draft HENPS are essential to the national interest and beneficial to the public. Further, the length of time required to deliver significant new airport infrastructure means that whilst there is not a capacity crisis in the UK's airport system today, the timely delivery of new infrastructure to provide future airport capacity is imperative. Therefore, it is concluded that there are imperative reasons of public interest as to why the draft HENPS should proceed notwithstanding the potential for harm to Habitats sites.

Regarding whether these proposals 'override' the harm caused, at the plan level it has been concluded in this report that adverse effects on integrity cannot be dismissed largely because the draft HENPS is a very high level plan (which can be considered to be the top tier in the planning process) and there is considerable further work to be undertaken for any Development Consent Order to explore the issues to their fullest. The decision is therefore deliberately precautionary. In practice, the appropriate assessment presented earlier in this report has identified that the qualifying interest features of South West London Waterbodies SPA/Ramsar site are not at high risk of adverse effects on integrity due to air quality, noise, operational bird management, loss of functionally-linked habitat and water quality/flow impacts. Moreover, detailed traffic and air quality modelling which can only be undertaken for the DCO once proposals are fully developed, may indicate that traffic changes on roads within 200m of other European sites will not in fact result in an adverse effect on integrity of those sites, while this report has identified that the altitude at which aircraft are likely to overfly those sites should not materially affect air quality at ground level.

It is therefore possible that at the DCO stage, following development of mitigation measures, detailed design, and further investigation/modelling, a conclusion of no adverse effects on integrity could be drawn. This would entirely remove the need for reliance on derogations. Given the conclusion of adverse effects on integrity is highly precautionary and following detailed design and modelling may be reversed, it is considered that the imperative reasons of public interest for proceeding with the HAL Scheme would override the potential harm caused to Habitats sites.

7.3 Compensation

Regulation 105 of the Habitats Regulations requires that where, in spite of a negative assessment on Habitats site integrity, the competent authority proceeds with the plan on the basis of IROPI, all necessary compensatory measures are taken to ensure that the overall coherence of the National Site Network is protected.

Given the strategic nature of the HRA process for this NPS, the inherent uncertainties of the AA conclusions, and the potential changes that may occur as the plan is implemented, it is not possible at this stage to specify the precise nature or location of any compensation measures that might be required.

The role of the plan is, therefore, to provide a robust framework that sets out the broad parameters for compensation measures, should they be required following the more detailed site level assessments undertaken for plan implementation.

All project level HRAs must firstly take account of the potential adverse effects and the proposed avoidance and mitigation measures identified through the strategic level assessment(s).

The proposed compensation measures must be:

- Appropriate for the area and the loss caused by the project;
- Capable of protecting the overall coherence of the Habitats site network;
- Capable of implementation;
- Ensure that, the Habitats site is not irreversibly affected by the project before the compensation is in place;
- Directed in measurable proportions to the habitats and species negatively affected;
- Related to the same biogeographical region (within the UK) and should be as close as possible to the habitat that has been negatively affected;
- Serving functions that are comparable to those that motivated the original area's submission for designation;
- Clearly defined, with implementation goals and managed so that the compensatory measures can achieve the goal of maintaining the overall coherence of the National Site Network. The measures will need to be well managed over the necessary timescales, over the long-term, potentially in perpetuity; and
- Guaranteed to be delivered, legally compliant and enforceable and capable of being effectively monitored.

Actual compensation measures can only be effectively determined at a project level stage through the findings of detailed, site-specific AA's focused on the requirements of the Habitats Regulations to ensure the ecological functionality of individual Habitats sites. However, initial consideration to appropriate compensation measures has been provided below.

There needs to be confidence that any newly created habitats are created prior to the loss/damage of the Habitats site and can fully provide the intended compensatory function. The compensation should be effective at the time the damage occurs to the Habitats site in question.

There is considerable precedent for undertaking plan-level derogations such as through the 2018 ANPS, and for other National Policy Statements. In these the focus at the plan-making stage is to ensure that there is scope for suitable compensatory provision. This includes regarding its scale, its technical feasibility, and the likelihood that adequate areas for compensation can be identified. The precise details of the specific compensation parcels to be secured, and technical matters such as landowners' agreements, are deferred to the individual scheme (planning application) level. This report therefore seeks to explore whether a sufficient framework exists to ensure that suitable compensation is capable of being delivered when and where it is needed, and that there is a high degree of confidence that sufficient land in appropriate places will be available for the compensation to be delivered.

7.3.1 Consideration of Compensatory Measures

Compensatory measures cannot be identified in detail at the draft HENPS level because the nature and scale of the compensation required is directly associated with the precise extent and scale of the adverse effect on integrity identified as this

will not be clarified until detailed studies for any DCO are undertaken. Therefore, the compensatory measures identified in this section would be delivered by the developer (if required following the HRA for the DCO process) rather than as part of the draft HENPS.

The draft HENPS provides a framework for this where it states that *‘Compensation, by definition, does not reduce an adverse effect resulting from a development. However, the applicant should set out how residual impacts will be compensated for as far as practicable. The applicant should also set out how any mitigation or compensation measures will be monitored and reporting agreed to ensure success and that action is taken. Changes to measures may be needed e.g. adaptive management. The cumulative impacts of multiple developments with residual impacts should also be considered. Where residual impacts relate to HRA sites then the applicant must provide a derogation case, if required, in the normal way in compliance with the relevant legislation and guidance.*

Compensatory measures in this case may include interventions such as:

- Purchase and management of land adjacent to a Habitats Site, such that it provides new or enhanced habitat for qualifying interest features and can be incorporated into the site. For South West London Waterbodies SPA/Ramsar site this could involve the creation of areas of undisturbed open water with marginal grassland strips in the vicinity of the existing SPA/Ramsar site, effectively mimicking the disused flooded gravel pits that represent a large part of the SPA/Ramsar.
- Removal or reduction of other pressures on Habitats Sites which are demonstrably negatively affecting the achievement of their conservation objectives. For example, with regard to the most potentially affected Habitats site, the South West London Waterbodies SPA/Ramsar this could involve working with the owners/ managers of those waterbodies open to the public to reduce disturbance from recreational sources and thus increase the area of undisturbed habitat available across the complex of waterbodies; and
- Provision of enhanced habitats, habitat connectivity, and/or translocation of qualifying interest animal species, such that the favourable conservation status of their populations is maintained or increased. For example, this could be undertaken to address any traffic-related air quality impacts in sites such as Thames Basin Heaths SPA and its associated SAC. This site has extensive areas of bracken encroached heathland and woodland vegetation. Removing this habitat and restoring it to managed heathland and/or introducing rotational forestry management would increase the overall area of nesting and foraging habitat available for SPA nightjar and woodlark and offset any reduction in habitat quality at the roadside that might arise from increased traffic movements.

One of the principal compensation measures that may be required would be for habitat enhancement and/or creation for gadwall and shoveler associated with the London Waterbodies. The specific habitats required are replicable where appropriate hydrology exists and where there is comparable functionality to the initial selection criteria of the original site. Further due to the high level of mobility of the interest features the spatial location of such compensation is less constrained than it might be for other species. This could be significant in terms of siting compensation sufficiently beyond the Zol of disturbance and operational (bird strike mitigation) effects. Compensatory habitat should be provided in accordance with the European Commission’s guidance.

To fully inform these measures at the detailed design stage, updated survey data on patterns of usage or potential usage of the SPA and supporting waterbodies will be needed over a period of time. In addition, information will be required on existing levels of baseline disturbance across both the SPA waterbodies and those in the wider area that support the integrity of the site.

Further, the enhancement of functionally linked 100 waterbodies (identified by Briggs22) would offer additional habitat to the interest features that could reduce energetic expenditure and increase the potential carrying capacity of the site for both the citation features and other water birds as well.

Greater understanding of bird response to airport operations will also need to be established via targeted studies at the SW London Waterbodies. This will need to consider flight paths, heights and the timing of flights. Targeted studies of other disturbance factors from recreation, reservoir operation and gravel extraction at SW London Waterbodies will also be required.

A full assessment of the heights at which gulls and other species that may present a bird strike risk fly over the reservoirs and a modelling exercise to determine likely collision rates would be required as part of the detailed assessment process. This will be necessary to inform the specific needs of any birdstrike management plan and the spatial extent of such birdstrike management measures and how this would impact on the SPA species. This information will be necessary to inform the spatial locations for compensation measures so that they are not compromised by bird strike mitigation.

At South West London Waterbodies the requirements of alternative or compensatory habitats to address potential adverse effects can be extrapolated from the current research on the site's interest features. Compensatory measures have not been proposed for other European sites that may be adversely affected by LHR-NWR as the same baseline and understanding of requirements is not available. There is significant uncertainty surrounding what compensation measures might entail. This uncertainty cannot reasonably be refined further until a more detailed assessment regarding impacts and potential effects is provided within the project level HRA. The exclusion of such detail in this strategic-level HRA does not preclude the need for such measures in the event compensation is concluded to be a requirement.

It is not possible to provide further information on potential compensation options without detailed design, which will only be undertaken at the planning application level. However, it is possible to state with confidence that there are sufficient options available to a developer that effective compensation for adverse effects on integrity should be possible.

Appendix A Habitats Sites Information

South West London Waterbodies SPA

This SPA qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

Gadwall *Anas strepera* – 710 individuals representing at least 2.4% of the biogeographic population (five year peak mean for 1993/94 to 1997/98)

Shoveler *Anas clypeata* – 853 individuals representing at least 2.1% of the biogeographic population (five year peak mean for 1993/94 to 1997/98).

South West London Ramsar Site

This Ramsar site qualifies under criterion 6 for shoveler with peak counts in spring/autumn. 397 individuals representing an average of 2.6% of the GB population (5 year peak mean 1998/9 – 2002/3).

This Ramsar site qualifies under criterion 6 for gadwall with peak counts in winter. 487 individuals representing an average of 2.8% of the GB population (5 year peak mean 1998/9 – 2002/3).

Windsor Forest and Great Park SAC

Annex I habitats that are a primary reason for site selection:

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:

Atlantic acidophilous beech forests with *Ilex* and sometimes *Taxus* in the shrub layer (*Quercion roburi petraeae* or *Ilici-Fagenion*).

Annex II species that are a primary reason for selection of this site: Violet click beetle *Limoniscus violaceus*.

Richmond Park SAC

Annex II species that are a primary reason for selection of this site:

Stag beetle *Lucanus cervus*.

Wimbledon Common SAC

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

Northern Atlantic wet heaths with *Erica tetralix*. European dry heaths.

Annex II species that are a primary reason for selection of this site:

Stag beetle *Lucanus cervus*.

Burnham Beeches SAC

Annex I habitats that are a primary reason for selection of this site:

Atlantic acidophilous beech forests with Ilex and sometimes Taxus in the shrub layer (Quercion robori petraeae or Ilici-Fagenion).

Thursley, Ash, Pirbright and Chobham SAC

Annex I habitats that are a primary reason for selection of this site:

Northern Atlantic wet heaths with Erica tetralix. European dry heaths. Depressions on peat substrates of the Rhynchosporion.

Thames Basin Heaths SPA

This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive during the breeding season:

Dartford Warbler *Sylvia undata*, 445 pairs representing at least 27.8% of the breeding population in Great Britain (Count as at 1999)

Nightjar *Caprimulgus europaeus*, 264 pairs representing at least 7.8% of the breeding population in Great Britain (Count mean (1998-99))

Woodlark *Lullula arborea*, 149 pairs representing at least 9.9% of the breeding population in Great Britain (Count as at 1997)