

Habitats Regulations Assessment for the West London Waste Plan Regulation 18 Consultation

West London Waste Planning Authorities

Final report
Prepared by LUC
October 2025



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Habitats Regulations Assessment for the West London Waste Plan

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Chapter 1

Introduction

1.1 LUC was commissioned to carry out a Habitats Regulations Assessment (HRA) of the emerging West London Waste Plan (WLWP).

1.2 The purpose of the HRA is to determine whether the WLWP policies and development arising from them are likely to have significant effects on, or adverse effects on the integrity of, any sites designated as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), or Ramsar sites.

Context for the new West London Waste Plan

1.3 The WLWP area is consistent with the geography for the West London Waste Authority [See reference 1] formed by London Boroughs of Brent, Ealing, Harrow, Hillingdon, Hounslow, and Richmond upon Thames. The WLWP also includes the area covered by the Old Oak and Park Royal Development Corporation (OPDC) within Brent and Ealing. The OPDC is a Mayoral Development Corporation, established by the Mayor of London to secure the regeneration of the Old Oak and Park Royal Opportunity area, spanning land in three London boroughs: Ealing, Brent, and Hammersmith and Fulham.

1.4 The current version of the WLWP was adopted in 2015 [See reference 2] and was prepared with the objective of ensuring consistency with national Government policy and general conformity with the London Plan (2011), to plan effectively for waste across the WLWP area and London's wider needs as set out in the apportionments in the London Plan, as amended by the Further Alterations to the London Plan (2015). There have been two iterations of the London Plan since adoption of the West London Waste Plan: the London Plan (2016), and the current adopted London Plan (2021). The London Plan is currently under review and this has been taken into account where possible during the development of the emerging WLWP.

1.5 The WLWP is now being updated, and once adopted, will supersede the 2015 WLWP and become part of the development plan against which planning applications for waste management facilities across the plan area will be determined. The emerging evidence base being prepared for the updated WLWP does not indicate that additional capacity is needed, which would justify

the allocation of additional land for the development of new waste facilities in the plan.

1.6 This HRA assesses the Draft WLWP, which has been prepared for 'Regulation 18' consultation.

Previous HRA work

1.7 The 2015 WLWP was subject to HRA, but since then there are likely to have been significant changes to the environmental baseline (for example numbers of vehicles on roads, or changing condition of Habitats Sites), and there have been changes to how HRA is undertaken (see 'case law' section of Chapter 3). The 2025 HRA of the emerging WLWP, therefore, does not rely on the previous HRA assumptions or findings.

The requirement to undertake Habitats Regulations Assessment of development plans

1.8 The requirement to undertake HRA of development plans was confirmed by the amendments to the Habitats Regulations published for England and Wales in 2007 [**See reference 3**]; which is now known as the Habitats Regulations 2017 (as amended) [**See reference 4**]. When preparing the WLWP, the joint authorities are therefore required by law to carry out an HRA. The joint authorities can commission consultants to undertake HRA work on its behalf, and this (the work documented in this report) is then reported to and considered by the joint authorities as the 'competent authority'. They will consider this work and would usually only progress the WLWP if they consider that the emerging WLWP will not adversely affect the integrity [**See reference 5**] of any of the 'Habitats Sites', as defined below (the exception to this would be where 'imperative reasons of overriding public interest' can be demonstrated). The requirement for authorities to comply with the Habitats Regulations when preparing a development plan is also noted in the Government's online Planning Practice Guidance (PPG) [**See reference 6**].

1.9 The HRA refers to the assessment of the potential effects of a development plan on one or more sites that are afforded the highest level of protection in the UK: Special Protected Areas (SPAs) and Special Areas of Conservation (SACs). These were classified under European Union (EU) legislation, but since 1 January 2021, are protected in the UK by the Habitats Regulations 2017 (as amended) [**See reference 7**]. Although the EU Directives from which the UK's

Habitats Regulations originally derived are no longer binding, the Regulations still make reference to the lists of habitats and species that the sites were designated for, which are listed in annexes to the EU Directives:

- SACs are designated for particular habitat types (specified in Annex 1 of the EU Habitats Directive [See reference 8]) and species (Annex II). The listed habitat types and species (excluding birds) are those considered to be most in need of conservation at a European level. Designation of SACs also has regard to the threats of degradation or destruction to which the sites are exposed and, before EU exit day, to the coherence of the 'Natura 2000' network of 'European sites'. After EU exit day, regard is had to the importance of such sites for the coherence of the UK's 'National Site Network'.
- SPAs are classified for rare and vulnerable birds (Annex I of the EU Birds Directive [See reference 9]), and for regularly occurring migratory species not listed in Annex I.

1.10 The term 'European Sites' was previously commonly used in HRA to refer to 'Natura 2000' sites [See reference 10] and Ramsar sites (international designated under the Ramsar Convention). However, a Government Policy Paper [See reference 11] on changes to the Habitats Regulations 2017 post-Brexit states that:

- Any references to Natura 2000 in the 2017 Regulations and in guidance now refer to the new 'National Site Network';
- The National Site Network includes existing SACs and SPAs; and new SACs and SPAs designated under these Regulations; and
- Designated Wetlands of International Importance (known as Ramsar sites) do not form part of the national site network. Many Ramsar sites overlap with SACs and SPAs and may be designated for the same or different species and habitats.

1.11 Although Ramsar sites do not form part of the new National Site Network, Government guidance [See reference 12] states that:

Any proposals affecting the following sites would also require an HRA because these are protected by government policy:

- Proposed SACs
- Potential SPAs

- Ramsar sites – wetlands of international importance (both listed and proposed)
- Areas secured as sites compensating for damage to a European site.”

1.12 Furthermore, the NPPF [See reference 13] and practice guidance [See reference 14] currently state that competent authorities responsible for carrying out HRA should treat Ramsar sites in the same way as SACs and SPAs. The legislative requirement for HRA does not apply to other nationally designated wildlife sites such as Sites of Special Scientific Interest or National Nature Reserves.

1.13 For simplicity, and in line with common usage, this report uses the term ‘Habitats Site’ to refer to all types of designated site within the ‘National Site Network’ for which Government guidance [See reference 15] requires an HRA.

1.14 The overall purpose of an HRA is to conclude whether or not a proposal or policy, or a whole development plan, would adversely affect the integrity of the Habitats Site in question. This is judged in terms of the implications of the plan for a site’s ‘qualifying features’ (i.e. those Annex I habitats, Annex II species, and Annex I bird populations for which it has been designated). Significantly, HRA is based on the precautionary principle. Where uncertainty or doubt remains, an adverse effect should be assumed.

Structure of this report

1.15 This chapter (**Chapter 1**) has introduced the requirement to undertake HRA of the WLWP. The remainder of the report is structured as follows:

- **Chapter 2** summarises the content of the emerging WLWP, which is the subject of this report, as relevant to the HRA.
- **Chapter 3** describes the HRA methodology, which took into account the requirements of the Habitats Regulations and relevant case law.
- **Chapter 4** describes the findings of the Screening stage of the HRA.
- **Chapter 5** describes the findings of the Appropriate Assessment stage of the HRA.
- **Chapter 6** summarises the HRA conclusions and describes the next steps to be undertaken.

1.16 The information in the main body of the report is supported by the following appendices:

- **Appendix A** presents the attributes of Habitats Sites considered in the HRA.
- **Appendix B** presents the HRA Screening of the policies of the emerging WLWP.

Chapter 2

West London Waste Plan

2.1 The emerging WLWP sets out how and where waste will be managed, and it will be used to determine planning applications affecting the management of waste in the planning authorities that are the joint authorities preparing the plan (London Boroughs of Brent, Ealing, Harrow, Hillingdon, Hounslow and Richmond upon Thames; and the OPDC).

2.2 The emerging WLWP will form part of the Development Plan for each of the planning authorities, sitting alongside separate Local Plans that are concerned with other forms of development, such as housing and employment.

2.3 The emerging WLWP sets out a Vision and five strategic objectives:

- Strategic Objective 1: Make best use of existing waste infrastructure to manage waste efficiently.
- Strategic Objective 2: Encourage facilities that contribute to the achievement of a circular economy to come forward.
- Strategic Objective 3: Decarbonise waste transport and processing.
- Strategic Objective 4: Deliver high quality waste facilities (protect and enhance the environment and communities).
- Strategic Objective 5: Ensure sufficient capacity of the right type in the right place so that unavoidable residual waste produced is managed safely and effectively.

2.4 There are six policies set out in the emerging WLWP. In some cases, there may be overlap between the policies of the Borough's Local Plans and the policies in this Plan. Where this occurs, the latest policy to have been adopted will take precedence.

2.5 The policies within the emerging WLWP are:

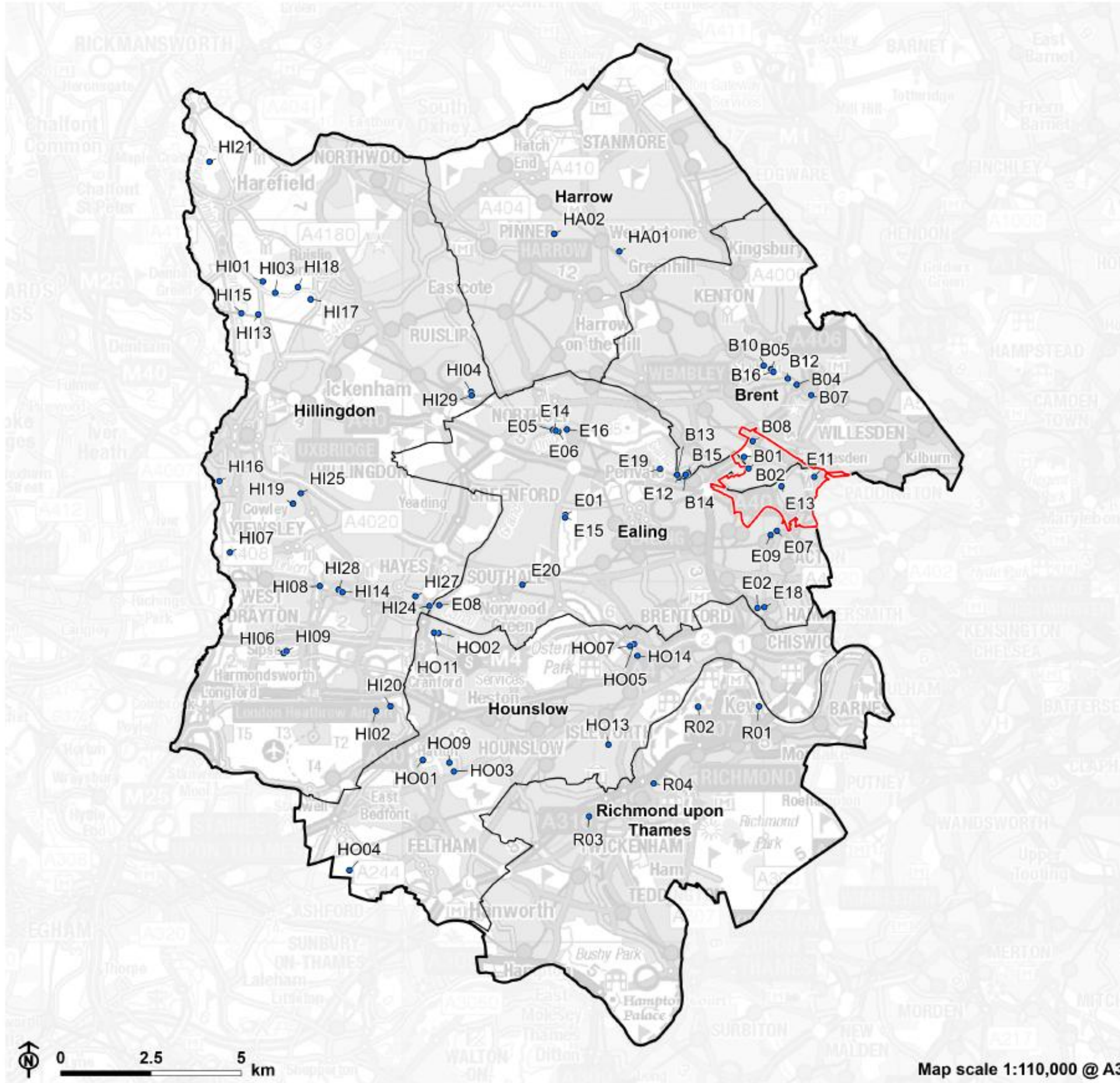
- Policy WLWP 1 – Safeguarding and optimising waste site network.
- Policy WLWP 2 – Provision of additional waste management capacity.
- Policy WLWP 3 – Residual waste management & energy recovery.
- Policy WLWP 4 – Ensuring high quality and resilient waste facilities.
- Policy WLWP 5 – Recovery and disposal of waste to land.

- Policy WLWP 6 – Circular Economy and Resource Efficiency

2.6 The emerging WLWP does not include site allocations that specify the locations for development of additional waste management facilities, as the WLWP evidence demonstrates there is sufficient capacity at existing waste sites. However, some replacement or additional development is permitted by the plan (for example to move waste management up the waste hierarchy). The locational criteria within the policies mean that if proposals come forward, this waste development would take place within:

- Existing waste sites (see Figure 2.1) ('development of safeguarded waste sites for waste management uses' referred to in Policy 1 and additional waste management capacity referred to in Policies 2, 3 & 5);
- Major development sites ('temporary material exchanges' and construction, demolition and excavation waste referred to in Policy 2);
- Industrial areas or previously developed land (additional waste management capacity referred to in Policies 2, 3 & 5); and
- Other sites suitable for the proposed use that are consistent with the relevant development plan and its spatial strategy (additional waste management capacity referred to in Policies 2, 3 & 5).

Figure 2.1: Safeguarded waste sites

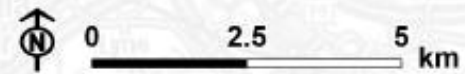


West London Waste Plan (Regulation 18)



Figure 2.1 Safeguarded waste sites

- WLWP area
- West London Borough
- Old Oak and Park Royal Development Corporation (OPDC) boundary within WLWP area
- Safeguarded waste site



Map scale 1:110,000 @ A3

Chapter 3

Approach to HRA

3.1 This chapter describes the approach that has been taken to the HRA of the WLWP throughout its development.

Stages of HRA

3.2 The HRA of development plans is undertaken in stages (as described below) and should conclude whether or not a proposal would adversely affect the integrity of the Habitats Site(s) in question.

3.3 The outputs will be reported to and considered by the joint authorities, as the competent authority, before adopting the Plan.

3.4 The HRA also requires close working with Natural England as the statutory nature conservation body [See reference 16] in order to obtain the necessary information, agree the process, outcomes and mitigation proposals. Non-statutory consultees may also be in a strong position to provide advice and information throughout the process, for example, the Environment Agency, which is required to undertake HRA for its existing licences and future licensing of activities. Chapter 6 provides further information on anticipated consultation and next steps.

Requirements of the Habitats Regulations

3.5 In assessing the effects of a development plan in accordance with Regulation 105 of the Conservation of Habitats and Species Regulations 2017 (as amended) (the 'Habitats Regulations'), there are potentially two tests to be applied by the competent authority: a 'Significance Test' followed, if necessary, by an Appropriate Assessment which would inform the 'Integrity Test'. The relevant sequence of questions is as follows:

- Step 1: Under Reg. 105(1)(b), consider whether the plan is directly connected with or necessary to the management of the sites. If not, proceed to Step 2.
- Step 2: Under Reg. 105(1)(a), consider whether the plan is likely to have a significant effect on a Habitats Site, either alone or in combination with other plans or projects (the 'Significance Test'). If yes, proceed to Step 3.

3.6 [Steps 1 and 2 are undertaken as part of Stage 1: HRA Screening.]

- Step 3: Under Reg. 105(1), make an Appropriate Assessment of the implications for the Habitats Site in view of its current conservation objectives (the 'Integrity Test'). In so doing, it is mandatory under Reg. 105(2) to consult Natural England, and optional under Reg. 105(3) to take the opinion of the general public.

3.7 [This step is undertaken during Stage 2: Appropriate Assessment.]

- Step 4: In accordance with Reg. 105(4), but subject to Reg. 107, give effect to the land use plan only after having ascertained that the plan would not adversely affect the integrity of a Habitats Site.

3.8 [This step follows Stage 2 where a finding of 'no adverse effect' is concluded. If it cannot be, it proceeds to Step 5 as part of Stage 3 of the HRA process].

- Step 5: Under Reg. 107, if Step 4 is unable to rule out adverse effects on the integrity of a Habitats Site and no alternative solutions exist then the competent authority may nevertheless agree to the plan or project if it must be carried out for 'imperative reasons of overriding public interest' (IROPI).

3.9 [This step is undertaken during Stage 3: Assessment where no alternatives exist, and adverse impacts remain taking into account mitigation].

Typical stages

3.10 The following sections summarise the stages and associated tasks and outcomes typically involved in carrying out a full HRA of a development plan, based on various guidance documents [\[See reference 17\]](#) [\[See reference 18\]](#) [\[See reference 19\]](#). This report presents the outputs of the tasks outlined below under Stage 1: HRA Screening and Stage 2: Appropriate Assessment.

Stage 1: HRA Screening

3.11 Task:

- Description of the development plan and confirmation that it is not directly connected with or necessary to the management of Habitats Sites.
- Identification of potentially affected Habitats Sites and their conservation objectives [\[See reference 20\]](#).

- Assessment of likely significant effects of the development plan alone or in combination with other plans and projects (without consideration of avoidance or reduction ('mitigation') measures) **[See reference 21]**.

3.12 Outcome:

- Where effects are unlikely, prepare a 'finding of no significant effect report'.
- Where effects judged likely, or lack of information to prove otherwise, proceed to Stage 2.

Stage 2: Appropriate Assessment (where Stage 1 does not rule out likely significant effects)

3.13 Task:

- Information gathering (development plan and Habitats Sites) **[See reference 22]**.
- Impact prediction.
- Evaluation of development plan impacts in view of conservation objectives of Habitats Sites.
- Where impacts are considered to directly or indirectly affect qualifying features of Habitats Sites, identify how these effects will be avoided or reduced ('mitigation').

3.14 Outcome:

- Appropriate assessment report describing the plan, Habitats Site baseline conditions, the adverse effects of the plan on the Habitats Site, how these effects will be avoided or reduced, including the mechanisms and timescale for these mitigation measures.
- If effects remain after all alternatives and mitigation measures have been considered proceed to Stage 3.

Stage 3: Assessment where no alternatives exist and adverse impacts remain taking into account mitigation

3.15 Task:

- Identify 'imperative reasons of overriding public interest' (IROPI).

- Demonstrate no alternatives exist.
- Identify potential compensatory measures.

3.16 Outcome:

- This stage should be avoided if at all possible. The test of IROPI and the requirements for compensation are extremely onerous.

3.17 It is normally anticipated that an emphasis on Stages 1 and 2 of this process will, through a series of iterations, help ensure that potential adverse effects are identified and eliminated through the inclusion of mitigation measures designed to avoid or reduce effects. The need to consider alternatives could imply more onerous changes to a plan document. It is generally understood that so called ‘imperative reasons of overriding public interest’ (IROPI) are likely to be justified only very occasionally and would involve engagement with the Government.

Case law

3.18 This HRA has been prepared in accordance with relevant case law, including most notably the ‘*People over Wind*’ and ‘*Holohan*’ rulings from the Court of Justice for the European Union (CJEU).

3.19 The *People over Wind, Peter Sweetman v Coillte Teoranta* (April 2018) judgment ruled that Article 6(3) of the Habitats Directive should be interpreted as meaning that mitigation measures should be assessed as part of an Appropriate Assessment and should not be taken into account at the Screening stage. The precise wording of the ruling is as follows:

“Article 6(3)must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of measures intended to avoid or reduce the harmful effects of the plan or project on that site.”

3.20 In light of the above, the HRA Screening stage does not rely upon avoidance or mitigation measures to draw conclusions as to whether the emerging WLWP could result in likely significant effects on Habitats Sites, with any such measures being considered at the Appropriate Assessment stage as relevant.

3.21 This HRA is also be undertaken in line with the *Holohan v An Bord Pleanala* (November 2018) judgment which stated that:

“Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that an ‘appropriate assessment’ must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.”

3.22 In undertaking HRA, LUC considers the potential for effects on species and habitats, including those not listed as qualifying features, to result in secondary effects upon the qualifying features of Habitats Sites, including the potential for complex interactions and dependencies. In addition, the potential for offsite impacts, such as through impacts to functionally linked land, and or species and habitats located beyond the boundaries of Habitats Sites, but which may be important in supporting the ecological processes of the qualifying features, is considered.

3.23 Similarly, effects on both qualifying and supporting habitats and species on functionally linked land (FLL) or habitat are considered, in line with the High Court judgment in *RSPB and others v Secretary of State and London Ashford Airport Ltd* [2014 EWHC 1523 Admin] (paragraph 27), which stated that:

“There is no authority on the significance of the non-statutory status of the FLL. However, the fact that the FLL was not within a protected site does not mean that the effect which a deterioration in its quality or function could have on a protected site is to be ignored. The indirect effect was still protected. Although the question of its legal status was mooted, I am satisfied ... that while no particular legal status attaches to FLL, the fact that land is functionally linked to protected land means that the indirectly adverse effects on a protected site, produced by effects on FLL, are scrutinised in the same legal framework just as are the direct effects of acts carried out on the protected site itself. That is the only sensible and purposive approach where a species or effect is not confined by a line on a map or boundary fence. This is particularly important where the boundaries of designated sites are drawn tightly as may be the UK practice”.

3.24 In addition to this, the HRA takes into consideration the ‘*Wealden*’ judgment from the CJEU.

3.25 *Wealden District Council v Secretary of State for Communities and Local Government, Lewes District Council and South Downs National Park Authority* (2017) ruled that it was not appropriate to scope out the need for a detailed assessment for an individual plan or project based on the annual average daily traffic (AADT) figures detailed in the Design Manual for Roads and Bridges or the critical loads used by Defra or Environmental Agency without considering the in-combination impacts with other plans and projects.

3.26 In light of this judgment, HRA therefore considers traffic growth based on the effects of development from a development plan in combination with other drivers of growth such as development proposed in neighbouring boroughs and demographic change.

3.27 The HRA also takes into account the *Grace and Sweetman* (July 2018) judgment from the CJEU which stated that:

“there is a distinction to be drawn between protective measures forming part of a project and intended to avoid or reduce any direct adverse effects that may be caused by the project in order to ensure that the project does not adversely affect the integrity of the area, which are covered by Article 6(3), and measures which, in accordance with Article 6(4), are aimed at compensating for the negative effects of the project on a protected area and cannot be taken into account in the assessment of the implications of the project.”

“As a general rule, any positive effects of the future creation of a new habitat, which is aimed at compensating for the loss of area and quality of that habitat type in a protected area, are highly difficult to forecast with any degree of certainty or will be visible only in the future.”

“A mitigation strategy may only be taken into account at AA (a.6(3)) where the competent authority is “sufficiently certain that a measure will make an effective contribution to avoiding harm, guaranteeing beyond all reasonable doubt that the project will not adversely affect the integrity of the area.”

“Otherwise it falls to be considered to be a compensatory measure to be considered under a.6(4) only where there are: ‘imperative reasons of overriding public interest’”

3.28 The Appropriate Assessment of the emerging WLWP therefore only considers the existence of measures to avoid or reduce its direct adverse effects (mitigation) if the expected benefits of those measures are beyond reasonable doubt at the time of the assessment.

Screening methodology

3.29 HRA Screening of the emerging WLWP has been undertaken in line with current available guidance and seek to meet the requirements of the Habitats Regulations.

3.30 The purpose of the Screening stage is to:

- Identify all aspects of the plan which would have no effect on a Habitats Site, so that that they can be eliminated from further consideration in respect of this and other plans;
- Identify all aspects of the plan which would not be likely to have a significant effect on a Habitats Site (i.e. would have some effect, because of links/connectivity, but which are not significant), either alone or in combination with other aspects of the same plan or other plans or projects, which therefore do not require Appropriate Assessment; and
- Identify those aspects of the plan where it is not possible to rule out the risk of significant effects on a Habitats Site, either alone or in combination with other plans or projects. This provides a clear scope for the parts of the plan that will require appropriate assessment.

3.31 Each policy in the emerging WLWP has been considered, alone and in-combination (e.g. with plans or projects from neighbouring authorities).

3.32 A risk-based approach, involving the application of the precautionary principle, has been adopted in the assessment, such that a conclusion of 'no significant effect' has only been reached where it is considered unlikely, based on current knowledge and the information available, that a WLWP policy would have a significant effect on a Habitats Site.

3.33 The Screening assessment (**Chapter 4**) considers the potential for likely significant effects resulting from each policy in the emerging WLWP, without taking mitigation (e.g. embedded in policy) into account, in accordance with the 'People over Wind' judgment.

3.34 For some types of impacts, the potential for likely significant effects can be determined on a proximity basis, using GIS data to determine the

proximity of potential development locations to the Habitats Sites that are the subject of the assessment. However, there are many uncertainties associated with using set distances as there are very few standards available as a guide to how far impacts will travel. Therefore, where assumptions have been made or where additional information has been utilised to determine whether the WLWP is likely to have a significant effect, these are set out in **Chapter 4**.

3.35 Chapter 4 and Appendix B provide the findings of the HRA Screening of the emerging WLWP.

3.36 The Appropriate Assessment within **Chapter 5** focuses on those policies that have been screened in.

Potential impacts of the emerging WLWP on Habitats Sites

3.37 In our experience of HRA of waste plans, and based on previous statutory consultee comments on HRAs undertaken elsewhere, the types of development (and related activities) that are permitted by waste plans have the potential to result in a range of impacts that could affect Habitats Sites, for example air pollution from changes in traffic movements and non-physical disturbance (noise, vibration or light) from new development or changes in waste management activity. These impacts could occur directly at the Habitats Sites or indirectly, for example at habitats relied on by qualifying species from the Habitats Sites – known as ‘functionally linked habitat’.

3.1 For each of the emerging WLWP policies, consideration is given to the type of development or activity that the policy could result in, impacts that could arise from that type of development or activity, and then whether there is an impact pathway to any Habitats Sites sensitive to that impact.

3.2 Further consideration of the types of impact that could be relevant to the WLWP and possible impact pathways to Habitats Sites is provided in **Chapter 4**.

Identification of Habitats Sites which may be affected by the emerging WLWP

3.3 To begin the search of Habitats Sites that could potentially be affected by the emerging WLWP, it is established practice in HRAs to consider Habitats Sites within the local planning authority area covered by a plan, and also within a buffer distance from the boundary of the plan area.

3.4 A distance of 15km from the WLWP area boundary has been used as a starting point to identify Habitats Sites that could be affected by impacts relating to the emerging WLWP. The use of this distance presents a precautionary approach to the Screening assessment; however, consideration is also given to Habitats Sites beyond this distance that may be functionally connected to the plan area, for example through hydrological pathways.

3.5 As shown in Figure 3.1, two Habitats Sites are within the WLWP area:

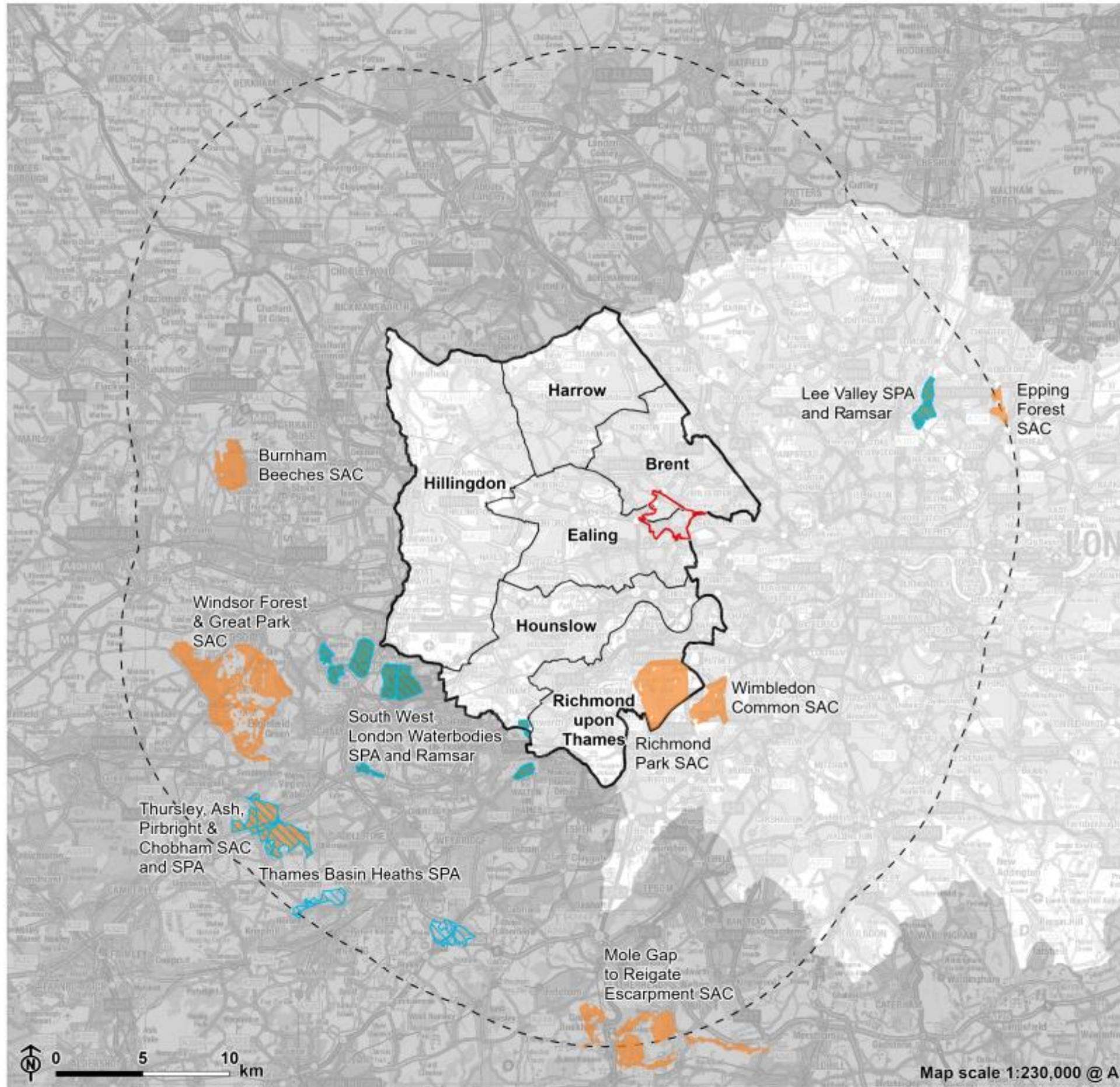
- Richmond Park SAC (partly within London Borough of Richmond upon Thames); and
- South West London Waterbodies SPA/Ramsar (partly within London Borough of Hounslow)

3.6 Habitats Sites that lie outside of the WLWP area but wholly or partly within 15km are:

- Epping Forest SAC, 14.3km from the plan area;
- Mole Gap to Reigate Escarpment SAC, 12.5km from the plan area;
- Thursley, Ash, Pirbright and Chobham SAC, 11.0km from the plan area;
- Thames Basin Heaths SPA, 10.7km from the plan area;
- Lee Valley SPA and Ramsar, 10.1km from the plan area;
- Burnham Beeches SAC, 8.7km from the plan area;
- Windsor Forest & Great Park SAC, 5.7km from the plan area; and
- Wimbledon Common SAC, 0.1km from the plan area.

3.7 There are no other Habitats Sites beyond 15km that need to be scoped in. There is hydrological connectivity to Habitats Sites in the Thames Estuary, including Outer Thames Estuary SPA and intertidal areas such as Thames Estuary & Marshes SPA/Ramsar, via the River Thames and via wastewater treatment that discharges into the River Thames. However, these sites are at least 40km away from the plan area and are highly dynamic environments; therefore, changes arising from the WLWP are unlikely to result in significant effects.

Figure 3.1: Habitats Sites within 15km of the plan area



Emerging Updated West London Waste Plan IIA
West London Waste Planning Authorities



Figure 3.1: Habitat sites within 15km of the plan area

- WLWP area
- West London Borough
- Old Oak and Park Royal Development Corporation (OPDC) boundary within WLWP area
- Outside of Greater London Authority
- Plan area 15km buffer
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar site

Functionally linked habitats

3.8 The assessment also takes into account areas that may be functionally linked to the Habitats Sites. The term ‘functional linkage’ can be used to refer to the role or ‘function’ that land or other habitats beyond the boundary of a Habitats Site might fulfil in supporting the species populations for which the site was designated or classified. Such an area is therefore ‘linked’ to the site in question because it provides a (potentially important) role in maintaining or restoring a protected population at favourable conservation status.

3.9 While the boundary of a Habitats Site will usually be drawn to include key supporting habitat for a qualifying species, this cannot always be the case where the population for which a site is designated or classified is particularly mobile. Individuals of the population will not necessarily remain in the site all the time. Sometimes, the mobility of qualifying species is considerable and may extend so far from the key habitat that forms the Habitats Site that it would be entirely impractical to attempt to designate or classify all of the land or sea that may conceivably be used by the species. The HRA therefore considers whether any qualifying species of nearby (or linked) Habitats Sites make use of functionally linked habitats, and the impacts that could affect those habitats.

3.10 The following Habitats Sites have mobile species within their qualifying features, which may use habitats outside the designated Habitats Sites:

- Lee Valley SPA/Ramsar and South West London Waterbodies SPA/Ramsar, designated for bird species: great bittern (Lee Valley only), northern shoveler, and gadwall. These species predominantly use open water and wetland habitats, although Northern Shoveler and Gadwall occasionally breed away from the water if there is no suitable habitat nearby. Functionally linked habitats are most likely where there are large waterbodies, for example along the River Colne (western boundary of the London Borough of Hillingdon) and River Lee/Lea (outside the plan area). Functionally linked habitats within the plan area are more likely to be linked to the South West London Waterbodies SPA/Ramsar (partly within the plan area) than Lee Valley SPA/Ramsar (c.10km east of the plan area).
- Wimbledon Common SAC, Richmond Park SAC and Epping Forest SAC designated for stag beetles. This species is mobile and as such has the potential to disperse outside of the Special Area of Conservation boundaries. Research [\[See reference 23\]](#) indicates that male stag beetles

typically fly up to 2km during the breeding over the summer months to travel to females whilst the female stag beetles rarely fly [See reference 24]. As such, and in line with a precautionary approach, a 2km buffer has been applied in this assessment. Epping Forest SAC is more than 2km from the plan area; therefore, impacts on functionally linked habitats do not need to be considered in relation to this SAC. Richmond Park SAC and Wimbledon Common SAC are within the plan area and within 2km of it, respectively, and therefore impacts on functionally linked habitats do need to be considered in relation to these SACs.

- Windsor Forest and Great Park SAC, designated for violet click beetle. The violet click beetle is very rare and therefore very little is known about the species. Violet click beetles tend to be found in decaying ash or beech trees and are likely to remain in the same trees all of their lives [See reference 25]. FLL is therefore only likely if woodland within the Habitats Sites extends beyond the boundary of the site. For stag beetles, a precautionary distance of 2km is used to identify potential FLL [See reference 26]. Stag beetles are likely to travel further than violet click beetles, which are likely to remain in the same tree all their lives [See reference 27]; therefore applying the same distance to violet click beetle would be unnecessarily precautionary; for violet click beetle, a distance of 500m is considered sufficient. Windsor Forest and Great Park SAC is more than 500m from the plan area, therefore impacts on functionally linked habitats do not need to be considered in relation to this SAC.
- Mole Gap to Reigate Escarpment SAC, designated for great crested newts and Bechstein's bats. Great crested newts will travel away from their breeding ponds, during the terrestrial phase of their lifecycle, but not large distances. 500m [See reference 28] is considered an appropriate buffer distance inside which great crested newts might be found, from their breeding location; and this SAC is more than 500m from the plan area. Bechstein's bat forage near their roost sites, in habitats within 1.5km [See reference 29]; however the SAC is more than 1.5km from the plan area. Impacts on functionally linked habitats therefore do not need to be considered in relation to this SAC.

3.11 In summary, functionally linked habitats only need to be considered in relation to South West London Waterbodies SPA/Ramsar birds (waterbodies along the River Colne); and Richmond Park SAC and Wimbledon Common SAC stag beetles (habitats supporting dead wood within 2km of the SACs).

3.12 Detailed information about each Habitats Site screened into the HRA is provided in **Appendix A**, described with reference to Standard Data Forms, for

the SPAs and SACs, Information Sheets for the Ramsar sites [See reference 30], and Natural England's Site Improvement Plans [See reference 31]. Natural England's conservation objectives [See reference 32] and any supplementary advice on conserving and restoring site features for the SPAs and SACs have also been reviewed. All of the conservation objectives state that site integrity must be maintained or restored by maintaining or restoring the habitats of qualifying features, the supporting processes on which they rely, and populations of qualifying species.

Assessment of 'likely significant effect'

3.13 As required under Regulation 105 of The Conservation of Habitats and Species Regulations 2017 (SI 2017/1012), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (SI 2019/579), an assessment has been undertaken of the 'likely significant effects' of the policy approaches set out within the emerging WLWP. The assessment has been undertaken to identify which policies would be likely to have a significant effect on Habitats Sites in WLWP area (+15km). This assessment will need to be repeated with each HRA iteration of the emerging WLWP.

3.14 A risk-based approach involving the application of the precautionary principle has been adopted in the assessment, such that a conclusion of 'no significant effect' will only be reached where it is considered very unlikely, based on current knowledge and the information available, that a proposal in the WLWP would have a significant effect on the integrity of a Habitats Site.

Interpretation of 'likely significant effect'

3.15 Relevant case law helps to interpret when effects should be considered as a Likely Significant Effect (LSE), when carrying out HRA of a development plan.

3.16 In the Waddenzee case [See reference 33], the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive (translated into Reg. 102 in the Habitats Regulations), 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).

3.17 An opinion delivered to the Court of Justice of the European Union [**See reference 34**] commented that:

“The requirement that an effect in question be ‘significant’ exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on the site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.”

3.18 This opinion (the ‘Sweetman’ case) therefore allows for the authorisation of plans and projects whose possible effects, alone or in combination, can be considered ‘trivial’ or de minimis; referring to such cases as those “which have no appreciable effect on the site”. In practice such effects could be screened out as having no likely significant effect; they would be ‘insignificant’.

3.19 The HRA Screening assessment therefore considers whether the emerging WLWP policies could have likely significant effects either alone or in combination.

In-combination effects

3.20 Regulation 105 of the Habitats Regulations 2017 requires an Appropriate Assessment where “a land use plan is likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and is not directly connected with or necessary to the management of the site”. Therefore, the Screening assessment must consider whether any impacts identified from the emerging WLWP may combine with other plans or projects to give rise to significant effects in-combination.

3.21 If the HRA Screening determines that the emerging WLWP will have a particular type of effect (e.g. due to water pollution) on its own but it is not likely to be significant, the in-combination assessment at Screening stage will need to determine whether there may also be the same type of effect from other plans or projects that could combine with the emerging WLWP to produce a significant effect. If so, this likely significant effect arising from the emerging WLWP in combination with other plans or projects would then need to be

considered through the Appropriate Assessment stage to determine if it would have an adverse effect on integrity of the relevant Habitats Site. However, if the Screening assessment concludes that there is no impact pathway by which development proposed in the emerging WLWP could affect the conditions necessary to maintain qualifying features of a Habitats Site, then there will be no in-combination effects to assess at the Screening or Appropriate Assessment stage. This approach accords with recent guidance on HRA [[See reference 35](#)].

3.22 If impact pathways are found to exist for a particular type of effect but it is not likely to be significant from the emerging WLWP alone, the in-combination assessment will identify which other plans and programmes could result in the same impact on the same Habitats Site. This will focus on planned growth (including housing, employment, transport, minerals and waste) around the affected site, or along the impact corridor, for example, if impacts could arise as a result of changes to a waterway, then planned growth in local authorities along that waterway will be considered.

3.23 Where required, the potential for in-combination impacts therefore focusses on plans prepared by local authorities that overlap with the Habitats Sites that are within the scope of the HRA. The findings of any associated HRA work for those plans would then be reviewed where available. Where relevant, any strategic projects in the area that could have in-combination effects with the emerging WLWP are also identified and reviewed.

3.24 The online HRA Handbook suggests the following plans and projects may be relevant to consider as part of the in-combination assessment:

- Applications lodged but not yet determined, including refusals subject to an outstanding appeal or legal challenge;
- Projects subject to periodic review e.g. annual licences, during the time that their renewal is under consideration;
- Projects authorised but not yet started;
- Projects started but not yet completed;
- Known projects that do not require external authorisation;
- Proposals in adopted plans; and
- Proposals in draft plans formally published or submitted for final consultation, examination or adoption.

3.25 The need for in-combination assessment also arises at the Appropriate Assessment stage, as discussed in the Appropriate Assessment section below.

Appropriate Assessment methodology

3.26 Following the Screening stage, if likely significant effects on the Habitats Site are unable to be ruled out, the plan-making authority is required under Regulation 105 of the Habitats Regulations 2017 to make an 'Appropriate Assessment' of the implications of the plan for the Habitats Site, in view of their conservation objectives. European Commission Guidance states that the Appropriate Assessment should consider the impacts of the plan (either alone or in combination with other projects or plans) on the integrity of the Habitats Site with respect to their conservation objectives and to their structure and function.

Assessing the effects on site integrity

3.27 A site's integrity depends on it being able to sustain its 'qualifying features' (i.e. those Annex 1 habitats, Annex II species, and Annex 1 bird populations for which it has been designated) and to ensure their continued viability. The 'Holohan' judgement also clarifies that effects on species and habitats not listed as qualifying features, but which could result in secondary effects upon the qualifying features of Habitats Sites also need to be considered. The Appropriate Assessment, where required, then builds upon the information set out in Appendix A of this report, to consider the characteristics of supporting habitats and species that could be affected by impacts identified at the Screening stage.

3.28 A high degree of integrity is considered to exist where the potential to meet a site's conservation objectives is realised and where the site is capable of self-repair and renewal with a minimum of external management support.

3.29 A conclusion needs to be reached as to whether or not the emerging WLWP would adversely affect the integrity of the Habitats Site. As stated in the European Commission Guidance, assessing the effects on the site(s) integrity involves considering whether the predicted impacts of the emerging WLWP policies (either alone or in combination) have the potential to:

- Cause delays to the achievement of conservation objectives for the site;
- Interrupt progress towards the achievement of conservation objectives for the site;

- Disrupt those factors that help to maintain the favourable conditions of the site;
- Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site;
- Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem;
- Change the dynamics of relationships that define the structure or function of the site (e.g. relationships between soil and water, or animals and plants);
- Interfere with anticipated natural changes to the site;
- Reduce the extent of key habitats or the population of key species;
- Reduce the diversity of the site;
- Result in disturbance that could affect the population, density or balance between key species;
- Result in fragmentation; or
- Result in the loss of key features.

3.30 The conservation objectives for each Habitats Site (**Appendix A**) are generally to maintain the qualifying features in favourable condition. The Site Improvement Plans for each Habitats Site provide an overview of the issues (both current and predicted) affecting the condition of the qualifying features on the site(s) and outline the priority measures required to improve the condition of the features. These have been drawn on to help to understand what is needed to maintain the integrity of the Habitats Site.

3.31 For each Habitats Site where HRA Screening identified an uncertain or likely significant effect in relation to the emerging WLWP, the potential impacts are set out and judgements made (based on the information available) regarding whether the impact will have an adverse effect on the integrity of the site. Consideration has been given to the potential for mitigation measures to be implemented that could reduce the likelihood or severity of the potential impacts, such that there would not be an adverse effect on the integrity of the site.

Chapter 4

HRA Screening

4.1 This chapter sets out the assumptions used in Screening the emerging WLWP policies, along with the conclusions of the Screening process (see also **Appendix B**).

Physical damage and loss of habitat

4.2 Development within or immediately adjacent to a Habitats Site or its functionally linked habitats could damage habitats for which the site is designated for, or which its qualifying species rely upon.

4.3 New development or changes to waste management activities resulting from the emerging WLWP would take place within the WLWP area and either within existing (safeguarded) waste sites or at major development sites, industrial areas, previously developed land, or other sites suitable for the proposed use (see paragraph 2.6).

4.4 None of the safeguarded waste sites are within or immediately adjacent to Habitats Sites; however there are two safeguarded waste sites (HI16 & HI07) along the Colne Valley, which potentially has habitats functionally linked to the South West London Waterbodies SPA/Ramsar.

4.5 In addition, the following policies permit development outside of existing waste sites that could, in theory (if mitigation is not taken into account; see Chapter 5), fall within a Habitats Site or its functionally linked habitats:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity;
- Policy WLWP 3 – Residual waste management & energy recovery; and
- Policy WLWP 5 – Recovery and disposal of waste to land.

4.6 Richmond Park SAC and South West London Waterbodies SPA/Ramsar are within the plan area and may have functionally linked habitats used by stag beetles (within 500m of the SAC) or birds (waterbodies along the River Colne) that are also within the plan area. There is also a small part of the plan area that is within 500m of Wimbledon Common SAC and in which functionally linked habitats used by stag beetles could occur.

In relation to physical damage and loss of habitat, likely significant effects (for the WLWP alone) could not be ruled out for:

- Richmond Park SAC (directly or via functionally linked habitats).
- South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats).
- Wimbledon Common SAC (via functionally linked habitats only).

These will be considered further in the Appropriate Assessment.

Non-physical disturbance

4.7 Noise and vibration effects, e.g. during the operation of waste management sites or wastewater treatment facilities, are most likely to disturb bird species and are thus a key consideration with respect to Habitats Sites where birds are the qualifying features, although some mammals and fish species may also be affected. Artificial lighting at night (e.g. from streetlamps, flood lighting and security lights) is most likely to affect nocturnal species such as bats, stag beetles, and some bird species.

4.8 It has been assumed (on a precautionary basis and based on our experience of previous HRAs and consultation on those with Natural England) that the effects of noise, vibration and light pollution are capable of causing an adverse effect if development takes place within 500m of a Habitats Site (or functionally linked habitat) with qualifying features sensitive to these disturbances.

4.9 Habitats Sites that may be adversely affected by noise, vibration and light pollution as a result of the emerging WLWP are those that are both within the emerging WLWP area or within 500m of its boundary and that also support bird species, i.e. South West London Water bodies SPA/Ramsar (birds; directly or via functionally linked habitats), Richmond Park SAC (stag beetle, directly or via functionally linked habitats), or Wimbledon Common SAC (stag beetle, via functionally linked habitats only). All other Habitats Sites are located over 500m from the emerging WLWP area boundary at the closest point and/or do not support species likely to be significantly affected as a result of noise, vibration and light pollution.

4.10 As for 'physical damage and loss of habitat', none of the safeguarded waste sites are within 500m of Habitats Sites; however there are two

safeguarded waste sites (HI16 & HI07) along the Colne Valley, which potentially has habitats functionally linked to the South West London Waterbodies SPA/Ramsar. In addition, the following policies permit development outside of existing waste sites that could, in theory (if mitigation is not taken into account; see Chapter 5), fall within 500m of a Habitats Site or its functionally linked habitats:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity;
- Policy WLWP 3 – Residual waste management & energy recovery; and
- Policy WLWP 5 – Recovery and disposal of waste to land.

In relation to non-physical disturbance, likely significant effects (for the WLWP alone) could not be ruled out for:

- Richmond Park SAC (directly or via functionally linked habitats).
- South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats).
- Wimbledon Common SAC (via functionally linked habitats only).

These will be considered further in the Appropriate Assessment.

Air pollution

Dust

4.11 Air pollution can be caused by the creation of dust from construction or operation. This can smother terrestrial habitats or increase the turbidity of freshwater, estuarine and coastal habitats, preventing natural processes. It can also contribute to nutrient enrichment, which can lead to changes in the rate of vegetative succession and habitat composition.

4.12 The effects of dust creation are most likely to be significant if development takes place within 500m of a Habitats Site with qualifying features sensitive to these effects, such as terrestrial, freshwater or estuarine and coastal habitats, or sites designated for habitats and plant species. This is the distance that, in our experience, provides a robust assessment of effects in plan-level HRA and meets with the agreement of Natural England.

4.13 Habitats Sites that may be adversely affected by the creation of dust as a result of development as part of the emerging WLWP are those within the emerging WLWP area or within 500m of its boundary with qualifying habitats sensitive to dust, i.e.:

- Wimbledon Common SAC (within 500m of the plan area).

4.14 South West London Water Bodies SPA/Ramsar is also within 500m of the plan area (Kempton Park Reservoirs SSSI is partly within the plan area and partly within 500m the plan area; Knight & Bessborough Reservoirs SSSI is also within 500m of the plan area); and Richmond Park SAC is within the plan area. However, these sites are not designated for qualifying habitats.

4.15 The qualifying species of Richmond Park SAC, Wimbledon Common SAC and South West London Waterbodies SPA/Ramsar may also be indirectly affected by dust, if the impact of dust is significant enough to reduce the extent of habitats that the species rely on.

4.16 As for 'physical damage and loss of habitat', none of the safeguarded waste sites are within 500m of Habitats Sites; however there are two safeguarded waste sites (HI16 & HI07) along the Colne Valley, which potentially has habitats functionally linked to the South West London Waterbodies SPA/Ramsar. In addition, the following policies permit development outside of existing waste sites that could, in theory (if mitigation is not taken into account; see Chapter 5), produce dust within 500m of a Habitats Site or its functionally linked habitats:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity;
- Policy WLWP 3 – Residual waste management & energy recovery; and
- Policy WLWP 5 – Recovery and disposal of waste to land.

4.17 However, the scale of potential impact from dust due to individual developments is not considered likely to have significant indirect effects on qualifying bird/invertebrate species, either within the Habitats Sites or at functionally linked habitats. Therefore, only direct impacts on the qualifying habitats of Wimbledon Park SAC are screened in.

4.18 All other Habitats Sites are located over 500m from the emerging WLWP area boundary at the closest point and/or do not support qualifying features likely to be sensitive to the effects of dust.

In relation to dust, likely significant effects (for the WLWP alone) could not be ruled out for:

- Wimbledon Common SAC (direct impacts only).

This will be considered further in the Appropriate Assessment

Industrial emissions

4.19 Industrial emissions may arise from processes such as energy from waste, which can produce air pollutants that include acid gases, particulates, dioxins and heavy metals. These can affect a site's habitats and the species that rely on them. The policy that could result in industrial emissions is:

- Policy WLWP 3 – Residual waste management & energy recovery.

4.20 The area over which industrial emissions can have an adverse effect depends on the nature of the emissions and factors such as stack height and topography of the surrounding area. Environment Agency guidance on environmental permitting [See reference 36] uses a distance of 10km to screen the potential for effects on Habitats Sites from industrial emissions. Habitats Sites within 10km of the emerging WLWP boundary are:

- Burnham Beeches SAC;
- Windsor Forest & Great Park SAC;
- Wimbledon Common SAC;
- South West London Waterbodies SPA/Ramsar; and
- Richmond Park SAC.

4.21 Burnham Beeches SAC, Windsor Forest & Great Park SAC, and Wimbledon Common SAC's qualifying habitats may be affected directly.

4.22 Indirect effects on the sites' qualifying species (birds of South West London Waterbodies SPA/Ramsar site, violet click beetle of Windsor Forest & Great Park SAC, and stag beetles at Wimbledon Common and Richmond Park SACs) may also occur as a result of industrial emissions, if they are significant enough to alter the species' supporting habitat, on or off site.

4.23 However, likely significant effects are not anticipated for stag beetle at Wimbledon Common SAC and Richmond Park SAC, or violet click beetle at Windsor Forest and Great Park SAC either within the Habitats Sites or at

functionally linked land as the dead wood habitat that these species rely on is not sensitive to air pollution.

In relation to industrial emissions, likely significant effects (for the WLWP alone or in-combination) could not be ruled out for:

- Burnham Beeches SAC (direct impacts on qualifying habitats).
- South West London Waterbodies SPA/Ramsar (indirect impacts on qualifying bird species, within Habitats Site or at functionally linked habitats).
- Windsor Forest & Great Park SAC (direct impacts on qualifying habitats).
- Wimbledon Common SAC (direct impacts on qualifying habitats).

These will be considered further in the Appropriate Assessment

Vehicle emissions

4.24 Air pollution from vehicle emissions can cause the deposition of pollutants to the ground and vegetation, which can alter the characteristics of the soil, affecting the pH and nitrogen (N) availability that can then affect plant health, productivity and species composition. Nitrogen oxides (NO_x, i.e. NO and NO₂) are considered to be the key pollutants from vehicles, although ammonia can also arise from vehicle emissions. Deposition of nitrogen compounds may lead to both soil and freshwater acidification, and NO_x can cause eutrophication of soils and water.

4.25 Air pollution from vehicle emissions is most likely to affect Habitats Sites where freshwater or estuarine habitats, nitrogen-limited terrestrial habitats, or plants are the qualifying features. However, some qualifying animal species may also be affected directly or indirectly, by deterioration in habitat as a result of air pollution.

4.26 Policies within the emerging WLWP that could alter traffic flows and therefore air pollution levels due to the potential for changes to safeguarded waste management facilities or new waste management proposals to come forward are:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity;

- Policy WLWP 3 – Residual waste management & energy recovery; and
- Policy WLWP 5 – Recovery and disposal of waste to land.

4.27 The JNCC's 'Guidance on decision-making thresholds for air pollution' **[See reference 37]** states that, when assessing the air pollution impacts of a development plan, 10km should be used as a zone of influence within which the plan is likely to have significant effects on air quality.

4.28 The DMRB Guidance for the assessment of local air quality **[See reference 38]** in relation to highways developments provides criteria that should be applied to ascertain whether there are likely to be significant impacts associated with routes or corridors. Based on the DMRB guidance, roads that should be assessed are those where:

- Daily traffic flows will change by 1,000 AADT (Annual Average Daily Traffic) or more; or
- Heavy duty vehicle (HDV) flows will change by 200 AADT or more; or
- Daily average speed will change by 10km/hr or more; or
- Peak hour speed will change by 20km/hr or more; or
- Road alignment will change by 5m or more.

4.29 In line with the Wealden judgment **[See reference 39]**, where the road traffic effects of other plans or projects are known or can be reasonably estimated (including those of adopted plans or consented projects), then these should be included in road traffic modelling by the local authority whose plan or project is being assessed. The screening criteria of 1,000 AADT should then be applied to the traffic flows of the plans in combination. Typically, it is the roads forming part of the strategic road network (motorways and trunk roads) that experience a significant increase in vehicle traffic as a result of development (e.g. greater than 200 AADT HDVs), although there are sometimes exceptions.

4.30 Major roads within 10km of the plan area and within 200m of the Habitats Sites considered in this HRA include:

- Burnham Beeches SAC: A355.
- Richmond Park SAC: A3, A307 and A308.
- Wimbledon Common SAC: A219, A3, A306.
- Windsor Forest & Great Park SAC: A332 and A329.

4.31 The portion of the South West London Waterbodies SPA and Ramsar site that is within the plan area and within 10km of the Plan area is not adjacent to any major roads and is screened out in relation to vehicle emissions. However, functionally linked habitats along the Colne Valley and near major roads (including the M25, M4 and A4) could potentially be affected by air pollution to the extent that the SPA/Ramsar qualifying bird species are affected.

4.32 As with industrial emissions (paragraph 4.23), effects on functionally linked habitats are screened out for stag beetle and violet click beetle (Richmond Park SAC, Wimbledon Common SAC, and Windsor Forest & Great Park SAC) in relation to vehicle emissions.

In relation to vehicle emissions, likely significant effects (from the WLWP alone or in-combination) could not be ruled out at:

- Burnham Beeches SAC (direct impacts on qualifying habitats).
- Richmond Park SAC (direct impacts on qualifying habitats).
- South West London Waterbodies SPA/Ramsar (indirect impacts on qualifying bird species, at functionally linked habitats only).
- Wimbledon Common SAC (direct impacts on qualifying habitats).
- Windsor Forest & Great Park SAC (direct impacts on qualifying habitats).

These will be considered further in the Appropriate Assessment.

Recreation and urban impacts

4.33 Recreational activities and human presence can result in significant effects on Habitats Sites as a result of erosion and trampling, associated impacts such as fire and vandalism or disturbance to sensitive features, such as birds, through both terrestrial and water-based forms of recreation.

4.34 The emerging WLWP will not alter patterns of recreation and urban impacts.

Recreation and urban impacts are screened out as there is no impact pathway. No Appropriate Assessment is required.

Pests and vermin

4.35 There are potential vermin or pest impacts where waste is managed in the open air, for example composting or landfill. However, it is assumed that impacts from waste facilities would not be significant unless the potential waste site extends within the boundary of a Habitats Site or functionally linked habitats.

4.36 Habitats sites within the plan area or with functionally linked habitat within the plan area are:

- Richmond Park SAC (directly or via functionally linked habitats).
- South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats).
- Wimbledon Common SAC (via functionally linked habitats only).

4.37 New development or changes to waste management activities resulting from the emerging WLWP would take place within the emerging WLWP area and either within existing (safeguarded) waste sites or at major development sites, industrial areas, previously developed land, or other sites suitable for the proposed use (see paragraph 2.6).

4.38 None of the safeguarded waste sites are within or immediately adjacent to Habitats Sites; however there are two safeguarded waste sites (HI16 & HI07) along the Colne Valley, which potentially has habitats functionally linked to the South West London Waterbodies SPA/Ramsar.

4.39 In addition, the following policy permits landfill development outside of existing waste sites that could, in theory (if mitigation is not taken into account; see Chapter 5), result in pests or vermin at a Habitats Site or its functionally linked habitats:

- Policy WLWP 5 – Recovery and disposal of waste to land (applying the locational criteria within Policy WLWP 2).

In relation to pests and vermin, likely significant effects (for the WLWP alone) could not be ruled out for:

- Richmond Park SAC (directly or via functionally linked habitats).
- South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats).

- Wimbledon Common SAC (via functionally linked habitats only).

These will be considered further in the Appropriate Assessment.

Water quality and quantity

4.40 Changes in water quality or quantity can affect Habitats Sites due to:

- Pollution from direct run-off between new development and waterbodies.
- Abstraction for water supply affecting the hydrology of the aquifer or waterbody being abstracted.
- Discharge of wastewater affecting water quality of receiving water body (the sea), for example due to nutrient loading or other pollutants.

4.41 These could be exacerbated over the plan period by pressures on water infrastructure and hydrology, for example from other development or climate change.

4.42 Habitats Sites with the potential to be affected by changes in water quantity or quality that result from development provided for by the emerging WLWP are principally those that support qualifying features of freshwater, estuarine, coastal and marine habitats either within the emerging WLWP area boundary or that are otherwise hydrologically connected to the emerging WLWP, i.e.:

- South West London Waterbodies SPA/Ramsar.

4.43 Lee Valley SPA/Ramsar is designated for birds, a wetland plant species and a freshwater invertebrate, but is not hydrologically connected to and downstream of the plan area.

4.44 Sites designated for other types of habitats or species may also be affected by direct pollution/run-off, particularly if within or close to the plan area, i.e.:

- Richmond Park SAC; and
- Wimbledon Common SAC.

Direct pollution - runoff

4.45 Direct pollution can occur during construction or due to runoff of surface or groundwater water, or during operation due to temporary impacts such as fuel spills. The distance at which this impact can occur depends on the topography and geology of a site, but is most likely to occur where development is adjacent to a water body or aquifer with hydrological connectivity to a Habitats Site.

4.46 New development or changes to waste management activities resulting from the emerging WLWP would take place within the emerging WLWP area and either within existing (safeguarded) waste sites or at major development sites, industrial areas, previously developed land, or other sites suitable for the proposed use (see paragraph 2.6).

4.47 None of the safeguarded waste sites are within or immediately adjacent to Habitats Sites; however there are two safeguarded waste sites (HI16 & HI07) along the Colne Valley, upstream of the South West London Waterbodies SPA/Ramsar which also potentially has habitats that are functionally linked to the SPA/Ramsar. Other safeguarded sites do not appear to be hydrologically connected to and upstream of Habitats Sites or functionally linked habitats.

4.48 However, policies that permit development outside of safeguarded waste sites could result in direct water pollution at a Habitats Site or functionally linked habitats within the plan area, i.e.:

- Richmond Park SAC (directly or via functionally linked habitats).
- South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats).
- Wimbledon Park SAC (via functionally linked habitats).

4.49 Policies that could result in direct water pollution are therefore:

- Policy WLWP 1 –Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity;
- Policy WLWP 3 – Residual waste management & energy recovery; and
- Policy WLWP 5 – Recovery and disposal of waste to land.

In relation to direct pollution (runoff), likely significant effects (for the WLWP alone) could not be ruled out for:

- Richmond Park SAC (directly or via functionally linked habitats).

- South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats).
- Wimbledon Park SAC (via functionally linked habitats).

These will be considered further in the Appropriate Assessment

Abstraction

4.50 Abstraction can affect the volume and flow of water in the waterbody being abstracted, and waterbodies/habitats downstream.

4.51 Water is supplied to plan area by Thames Water (Richmond upon Thames) and Affinity Water (Brent, Ealing, Harrow, Hillingdon). Thames Water stores water, pumped from the River Thames and River Lee, in large reservoirs in Oxfordshire, West London and North London, including along the River Lee and the reservoirs of South West London Waterbodies SPA/Ramsar. In North London, the reservoirs are also topped up with water from the chalk aquifer. Affinity Water abstracts approximately 65% of water from groundwater sources, and the rest is from surface water, principally from the River Thames [See reference 40].

4.52 Increased demand for water could therefore increase abstraction of water from the Lee Valley SPA/Ramsar (via abstraction from the River Lee) and South West London Waterbodies SPA/Ramsar sites (via abstraction from reservoirs within the SPA/Ramsar). Other Habitats Sites and functionally linked land are not in locations that could be affected by abstraction associated with the WLWP.

4.53 Increases in abstraction could occur if a waste management process changes to one that uses more water. The following policies could therefore result in changes in water abstraction:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity; and
- Policy WLWP 3 – Residual waste management & energy recovery.

In relation to abstraction, likely significant effects (for the WLWP alone or in-combination) could not be ruled out for:

- Lee Valley SPA/Ramsar (direct impacts only).

- South West London Waterbodies SPA/Ramsar (direct impacts only).

These will be considered further in the Appropriate Assessment.

Wastewater treatment

4.54 Wastewater treatment can affect water quality in the waterbodies into which wastewater is discharged, and waterbodies/habitats downstream. Increases in wastewater treatment could occur if a waste management process changes to one that uses more water. The following policies could therefore result in changes in water treatment:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity; and
- Policy WLWP 3 – Residual waste management & energy recovery.

4.55 Sewerage services are provided within the plan area by Thames Water. The two main wastewater treatment works (WwTWs) are:

- Coppermills WwTW, which is adjacent to Lee Valley SPA/Ramsar site.
- Mogden WwTW in Isleworth, which serves West London boroughs, including Brent, Ealing, Harrow, Hillingdon, Hounslow, and Richmond upon Thames. The WwTW discharges to the River Thames at Isleworth, so is not hydrologically linked to the Habitats Sites being considered in this HRA (see paragraphs 3.4-3.7).

4.56 Any waste development that significantly increases water use and the requirement for treatment and discharge via Coppermills WwTW could therefore impact upon Lee Valley SPA/Ramsar.

In relation to wastewater, likely significant effects (for the WLWP alone or in-combination) could not be ruled out for:

- Lee Valley SPA/Ramsar site (direct impacts).

This will be considered further in the Appropriate Assessment.

Summary of HRA Screening

4.57 Following the HRA Screening (Chapter 4 above and Appendix B), likely significant effects could not be ruled out in relation to:

- **Physical damage and loss of habitat:** Richmond Park SAC (directly or via functionally linked habitats); South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats); Wimbledon Common SAC (via functionally linked habitats only). Due to emerging WLWP alone.
- **Non-physical disturbance:** Richmond Park SAC (directly or via functionally linked habitats); South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats); Wimbledon Common SAC (via functionally linked habitats only). Due to emerging WLWP alone.
- **Air pollution (dust):** Wimbledon Common SAC (direct impacts only). Due to emerging WLWP alone.
- **Air pollution (industrial emissions):** Burnham Beeches SAC (direct impacts on qualifying habitats); South West London Waterbodies SPA/Ramsar (indirect impacts on qualifying bird species, within Habitats Site or at functionally linked habitats); Windsor Forest & Great Park SAC (direct impacts on qualifying habitats); Wimbledon Common SAC (direct impacts on qualifying habitats). Due to emerging WLWP alone or in combination with other plans or projects.
- **Air pollution (vehicle emissions):** Burnham Beeches SAC (direct impacts on qualifying habitats); Richmond Park SAC (direct impacts on qualifying habitats); South West London Waterbodies SPA/Ramsar (indirect impacts on qualifying bird species, at functionally linked habitats only); Wimbledon Common SAC (direct impacts on qualifying habitats); Windsor Forest & Great Park SAC (direct impacts on qualifying habitats). Due to emerging WLWP alone or in combination with other plans or projects.
- **Pests and vermin:** Richmond Park SAC (directly or via functionally linked habitats); South West London Waterbodies SPA/Ramsar (directly or via functionally linked habitats); Wimbledon Common SAC (via functionally linked habitats only). Due to emerging WLWP alone.
- **Water quality (direct pollution):** Richmond Park SAC (directly or via functionally linked habitats); South West London Waterbodies

SPA/Ramsar (directly or via functionally linked habitats); Wimbledon Park SAC (via functionally linked habitats). Due to emerging WLWP alone.

- **Water quantity (abstraction):** Lee Valley SPA/Ramsar (direct impacts only); South West London Waterbodies SPA/Ramsar (direct impacts only). Due to emerging WLWP alone or in combination with other plans or projects.
- **Water quality (wastewater treatment):** Lee Valley SPA/Ramsar site (direct impacts). Due to emerging WLWP alone or in combination with other plans or projects.

4.58 Recreation and urban impacts have been screened out as there are no impact pathways.

4.59 The following policies may contribute to the impact pathways screened in and will therefore be considered further in the Appropriate Assessment:

- Policy WLWP 1 – Safeguarding and optimising waste site network;
- Policy WLWP 2 – Provision of additional waste management capacity;
- Policy WLWP 3 – Residual waste management & energy recovery; and
- Policy WLWP 5 – Recovery and disposal of waste to land.

Chapter 5

Appropriate Assessment

5.1 At the Screening stage, likely significant impacts could not be ruled out for:

- Physical damage and loss of habitat;
- Non-physical disturbance;
- Air pollution due to dust, industrial emissions, and vehicle emissions;
- Pests and vermin; or
- Changes in water quantity or quality due to direct pollution (runoff), abstraction and wastewater treatment.

5.2 However, the Appropriate Assessment allows mitigation to be taken into account, which makes it possible to conclude that some impacts will not have an adverse effect on the integrity of Habitats Sites, and to identify where further evidence or mitigation may be required to avoid adverse effects on integrity.

5.3 ‘Policy WLWP 4 – Ensuring high quality and resilient waste facilities’ is the main policy providing mitigation for other policies in the emerging WLWP. It states that:

“All proposed waste management facilities in west London must be designed, built and operated to achieve the highest practicable environmental standards, recognising that environmental standards will evolve over the lifetime of the plan.

Proposals for development should also comply with the London Plan, relevant Borough or OPDC Local Plans, Development Management Policy documents, Site Allocations and Area Action Plans.

(Noting that where subject to an environmental permit, operational standards may be defined by the regulatory body from time to time; and standards for the performance of all built development set in Local Plans and the London Plan apply.)

Proposals for development must demonstrate that:

- The development is of a scale, form and character appropriate to its location; and
- the proximity principle has been complied with (where applicable); and

- it will deliver a lasting and positive contribution to the local environment, economy and community throughout its operational life and post-closure (if applicable) and incorporates measures to;
 - avoid unacceptable adverse impacts arising from noise, dust, litter, vermin, vibration, odour, bioaerosols, external lighting, visual intrusion, traffic or associated risks to the environment and health and wellbeing of local communities;
 - adapt and be resilient to the impacts of climate change; and
 - minimise greenhouse gas emissions from all aspects of its operation, and
 - control, reduce and mitigate impacts from vehicles including the use of low emission vehicles, installation of vehicle charging points and scheduling and management of vehicle routing.
- any process residues requiring offsite management will be subject to further recovery wherever practicable, or otherwise demonstrate how these will be disposed safely.”

5.4 The statement that proposals must also comply with the London Plan and other relevant development plans means that, for example, the London Plan requirement to “ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements” (i.e. the Habitats Regulations) applies to any waste development coming forward as a result of the emerging WLWP. This provides overarching protection for Habitats Sites.

5.5 The policy also refers to the requirement for environmental permitting. Waste management facilities require an environmental permit, which sets standards and controls relating to impacts such as emissions to air and water, and pests. In addition, industrial emissions, water abstraction and wastewater treatment are also subject to environmental permitting by the Environment Agency and Defra, which includes ensuring that proposals will not have an adverse effect on the integrity of Habitats Sites.

5.6 Policy WLWP 4 also specifically refers to the need to avoid adverse impacts relating to non-physical disturbance (light, noise, vibration), vermin and traffic; and to control reduce and mitigate impacts from vehicles.

5.7 In relation to vehicle emissions, mitigation for air pollution effects arising from a development plan (particularly where there are in-combination effects with other plans or projects) is usually provided at the strategic/plan level, rather than relying on individual developments to mitigate possible in-combination effects. However, in this case, as the emerging WLWP does not allocate new sites for waste development, it is not possible to quantify likely vehicle movements that would be associated with the plan; although the scale of future waste management development as a whole is likely to be relatively small in scale compared to plans with specific allocated sites for new waste development. The requirements of Policy WLWP 4 to “control, reduce and mitigate impacts from vehicles including the use of low emission vehicles, installation of vehicle charging points and scheduling and management of vehicle routing” and the requirement to “avoid unacceptable adverse impacts arising from... traffic” are therefore likely to sufficiently reduce the risks of air pollution from vehicles emissions. The overarching requirement (from the London Plan and Habitats Regulations) to avoid adverse effects on Habitats Site will ensure that the effect of individual developments on vehicle emissions is assessed and, if necessary, mitigated further.

5.8 Other policies in the emerging WLWP that include additional safeguards are:

- Policy WLWP 1: “Opportunities should be explored to co-locate waste management facilities together” and safeguarding of railheads and wharves for waste transport – this could contribute to a reduction in vehicle trips and therefore emissions.
- Policy WLWP 2: “On major development sites, the establishment of temporary material exchanges and C,D & E waste processing facilities during construction should be considered where this is demonstrated to not have significant adverse effects on the environment” and that proposals will be supported where “Existing transport links are adequate to serve the development, or where necessary can be improved to an appropriate standard” and “The proposal would not result in significant adverse impacts on the environment or local amenity, or unacceptable impacts on highway safety, including cumulative effects in combination with other existing or proposed development in the vicinity.” The supporting text states that “the assessment of impacts shall include (but is not limited to) traffic, air quality, noise, vibration, odour, litter, visual impact, and community safety/well-being as set out in Policy WLWP4.)” – these provide further general environmental protection and additional requirements to avoid impacts (alone or in combination) associated with traffic.

- Policy WLWP 3: “Energy from Waste facilities must demonstrate....b. the release of non-biogenic gaseous carbon emissions will be minimised, with mechanisms to capture for use and/or storage if use (and prevention) is not viable incorporated into facility design” – provides safeguards relating to industrial emissions.
- Policy WLWP 5: “Proposals for the disposal of non-inert or inert waste to land will be resisted unless it can be demonstrated that [there are]... measures to maximise landfill gas capture and utilisation and minimise leachate production from the proposal” – provides safeguards relating to direct pollution.

5.9 Due to the safeguards within the emerging WLWP, particularly ‘Policy WLWP 4 Ensuring high quality and resilient waste facilities’, along with environmental permitting requirements for waste management in general and for industrial emissions, water abstraction and treatment of wastewater, it is considered that the emerging WLWP will not have an adverse effect on the integrity of any Habitats Sites or their functionally linked habitats, either alone or in combination with other plans or projects.

Chapter 6

Conclusions and next steps

6.1 The HRA Screening (Chapter 4) could not rule out likely significant effects in relation to physical damage and loss of habitat; non-physical disturbance, air pollution due to dust, industrial emissions, and vehicle emissions; pests and vermin; water quality / quantity impacts due to direct pollution, water abstraction and wastewater. These impacts would arise from four of the emerging WLWP's policies: WLWP 1, WLWP 2, WLWP 3 and WLWP 5.

6.2 However, the Appropriate Assessment (Chapter 5) has concluded that, with safeguards provided by Policy WLWP 4 and other policies in the plan, along with environmental permitting requirements, adverse effects on the integrity of Habitats Sites will be avoided.

6.3 HRA is an iterative process and as such may need to be updated in light of newly available evidence and comments from key consultees. This HRA will be subject to consultation with Natural England alongside the Draft WLWP (Regulation 18) to confirm that they agree with the conclusions of the assessment

LUC

October 2025

Appendix A

Attributes of Habitats Sites considered in the HRA

A.1 Information on the Habitats Sites has been obtained from:

- JNCC standard data forms and information sheets for:
 - SACs [See reference 41]
 - SPAs [See reference 42]
 - Ramsar sites [See reference 43]
- Natural England Site Improvement Plans for SACs & SPAs [See reference 44]
- Conservation objectives and supplementary advice for SACs & SPAs [See reference 45]
- British Trust for Ornithology information [See reference 46].

Burnham Beeches Special Area of Conservation (SAC)

A.2 The site contains an extensive area of former beech *Fagus sylvatica* wood-pasture with many old pollards and associated beech and oak *Quercus* spp. high forest. It is one of the richest sites for dead-wood (saproxylic) invertebrates in the UK and it also retains important epiphytic communities, including the moss *Zygodon forsteri*. The site also supports an extensive area of acid mire with several locally uncommon plants including bog pimpernel *Anagallis tenella*, marsh St. John's wort *Hypericum elodes* and royal fern *Osmunda regalis*.

Qualifying features

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

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

Key vulnerabilities

- A.3** Air Pollution: risk of atmospheric nitrogen deposition – Epiphytic lichen communities are sensitive to nutrient deposition, promoting the growth of nutrient-tolerant species and reducing overall lichen diversity.
- A.4** Public Access/Disturbance – Veteran trees are vulnerable to damage as a result of soil compaction due to trampling or vehicle movements in their root zone.
- A.5** Habitat fragmentation – There is high pressure for new housing development in the vicinity of Burnham Beeches which risks isolating the site from the surrounding countryside.
- A.6** Deer – Deer are numerous in the northern parts of the site and causing adverse impacts on tree regeneration and ground flora composition.
- A.7** Species decline – The number of veteran trees at the site is declining and there is a significant age gap between these and the next generation of future veterans. This could have significant impacts on habitat availability for specialised saproxylic invertebrates.
- A.8** Invasive species – Oak processionary moth is now well-established in sites close to Burnham Beeches. If it reaches Burnham Beeches control measures could pose a threat to native invertebrate populations. The site contains Rhododendron across the site which is of particular concern as it acts as host for the pathogen causing sudden oak death (which also affects beech).
- A.9** Natural England: supplementary advice on conserving and restoring site features
- A.10** In addition to the above, the supplementary advice identifies the following vulnerabilities:
- A.11** Vegetation community composition – the site includes blocks of conifers and broadleaved plantations. The objective is to replace these over time and to promote natural woodland composition and structure. It is desirable that beech remains a prominent component of the canopy at Burnham Beeches but it is acknowledged that there is natural variation in woodland composition across the site in relation to soil chemistry, soil wetness, soil depth etc.
- A.12** Soils – A potential threat to the soil composition is nutrient enrichment from dog waste, as the south of the site is accessible by the public.

A.13 Hydrology – Disruption/ damage to hydrological processes could be caused by activities at some distance from the site boundary, e.g. through extraction of ground or surface waters; diverting or damming river channels; pollution of water source; channel alignment that disrupts natural geomorphological processes; tunnelling etc.

A.14 Illumination – The site is on the edge of Slough and may be sensitive to increases in artificial light adjacent to the site.

Conservation objectives

A.15 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

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

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

A.16 The extent of the Annex I habitat feature at this SAC comprises a mosaic of plant communities including wood pasture, open mire, heath and acid grassland plus some stands of non-native conifers and poplars.

A.17 This qualifying habitat comprises beech *Fagus sylvatica* forests with holly Ilex, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood pasture systems, in which pollarding of beech and oak *Quercus* spp. was common.

A.18 For this feature, this attribute includes the extent of the full range of semi-natural habitats which make up the habitat mosaic. Veteran trees can include dead and living trees. Tree roots (particularly of veteran trees) may extend a considerable distance beyond the boundary of the site.

A.19 At this SAC, site-native species of tree and shrub include Beech *Fagus sylvatica*, Oak *Quercus robur* and *Quercus petraea*, Holly *Ilex aquifolium*, Bramble *Rubus fruticosus* agg., Honeysuckle *Lonicera periclymenum*, Whitebeam *Sorbus aria*, Silver birch *Betula pendula*, Downy birch *Betula*

pubescens, Alder *Alnus glutinosa*, Hazel *Corylus avellana*, Elder *Sambucus nigra*, Rowan *Sorbus aucuparia*, Grey willow *Salix cinerea*, Juniper *Juniperus communis*.

A.20 Dead and actively decaying wood, either as part of a standing tree or as a fallen tree on the woodland floor, is an important component of woodland ecosystems, and supports a range of specialist invertebrates, fungi, lichens and bryophytes, and associated hole-nesting birds and roosting bats, all of which are very typical of the feature.

Epping Forest Special Area of Conservation (SAC)

A.21 Epping Forest is a large ancient wood-pasture with habitats of high nature conservation value including ancient semi-natural woodland, old grassland plains, wet and dry heathland and scattered wetland. The semi-natural woodland is particularly extensive but the Forest plains are also a major feature and contain a variety of unimproved acid grasslands.

Qualifying features

Annex 1 Habitats (which are a primary reason for the selection of this site):

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

Annex 1 Habitats (which are present as a qualifying feature but not a primary reason for the selection of this site):

- European dry heaths
- North Atlantic wet heaths with *Erica tetralix* (wet heathland with etan-leaved heath).

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

- Stag beetle *Lucanus cervus*

Conservation objectives

A.22 Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

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

Threats and pressures

- Air Pollution: impact of atmospheric nitrogen deposition – Nitrogen deposition exceeds site-relevant critical loads for ecosystem protection. Some parts of the site are assessed as in unfavourable condition for reasons linked to air pollution impacts.
- Undergrazing – The quality and diversity of the SAC features requires targeted management best achieved through grazing to: minimise scrub invasion; minimise robust grass domination, and maximise the species diversity of heathland plant communities.
- Public Access / Disturbance – Epping Forest is subject to high recreation pressure.
- Changes in species distributions – Beech tree health and recruitment may not be coping sufficiently with environmental conditions to sustain its presence and representation within the SAC feature. This may be linked to climate change as well as other factors such as air quality, recreation pressure and water availability.
- Inappropriate water levels – Wet heath is dependent on suitable ground water levels. There is a threat of prolonged drying out through climate change.

- Water pollution – Surface run-off of poor quality water from roads with elevated levels of pollutants, nutrients and salinity may be affecting wet heath, probably mostly around the edges.
- Invasive species – Heather beetle has locally impacted on some heathland areas. Grey squirrel is not currently known to be significantly affecting tree health or regeneration but this will need to be monitored.
- Disease – Tree diseases such as *Phytophthora* present a real threat to Beech.
- In addition to the above, the supplementary advice identifies the following vulnerabilities:
 - Adaptation and resilience of the feature – the vulnerability of Epping Forest SAC to climate change has been assessed by Natural England as being Medium taking into account the sensitivity, fragmentation, topography and management of its habitats.
 - Functional connectivity with wider landscape- The heathland resource is extensive in county terms but is fragmented, mainly by closed tree canopy habitat and roads. It is therefore vulnerable to encroachment, boundary effects, pollution, recreational impact and hydrological changes.
 - Vegetation structure – Variations in the structure of the heathland vegetation (vegetation height, amount of canopy closure, and patch structure) is needed to maintain high niche diversity and hence high species richness of characteristic heathland plants and animals. There is currently low cover (<25%) of dwarf shrubs present for the feature and less than 15% of scrub and tree cover.
 - Soils – the soils of the wet heath habitat are vulnerable to, and have been exposed to acidification, nutrient enrichment and pollution due to their fragmentation and proximity to roads and urban/residential development.
 - Illumination – Epping Forest is fragmented by roads and largely surrounded by urban development and residential areas. Opportunities should be sought to minimise and reduce light pollution from existing development and any development plans or projects to ensure SAC features and significant biodiversity assets are safeguarded.

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

- Stag beetles require decaying wood of broadleaved trees for larvae to feed, although not of a particular tree species. The supplementary advice on conserving and restoring site features states that off-site trees in local gardens, parks and along the roadside may be important in helping to maintain the local stag beetle population if decaying timber is present and may help to 'connect' the SAC population with neighbouring colonies.
- The supplementary advice also states:
- The qualifying habitat comprises beech *Fagus sylvatica* forests with holly *Ilex aquifolium*, growing on acid soils, in a humid Atlantic climate. Sites of this habitat type often are, or were, managed as wood-pasture systems, in which pollarding of beech *Fagus sylvatica* and oak *Quercus* spp. Was common.
- Wet heath usually occurs on acidic, nutrient-poor substrates, such as shallow peats or sandy soils with impeded drainage.
- European dry heaths typically occur on freely-draining, acidic to circumneutral soils with generally low nutrient content. Nearly all dry heath is seminatural, being derived from woodland through a long history of grazing and burning. Most dry heaths are managed as extensive grazing for livestock.
- Some plant or animal species (or related groups of such species) make a particularly important contribution to the necessary structure, function and/or quality of qualifying habitats. For wet heath, this includes: *Calluna vulgaris*, *Erica cinerea*, *E. tetralix*, *Salix repens*, *Ulex minor*, *Vaccinium* spp. *Carex panicea*, *C. pulicaris*, *Dactylorhiza etanus*, *Eleocharis* spp., *Eriophorum angustifolium*, *Juncus acutiflorus*, *J. etanus* ion, *Molinia caerulea*, *Anagallis tenella*, *Drosera* spp., *Galium saxatile*, *Genista anglica*, *Polygala serpyllifolia*, *Potentilla erecta*, *Succisa pratensis*. *Pedicularis sylvatica*. For dry heath, this includes: *Calluna vulgaris*, *Erica cinerea*, *E. tetralix*, *Ulex minor*, *Vaccinium* spp *Genista anglica*, *Agrostis* spp., *Carex* spp., *Danthonia decumbens*, *Deschampsia flexuosa*, *Festuca* spp., *Molinia caerulea*, *Nardus stricta*, *Galium saxatile*, *Hypochaeris radicata*, *Lotus corniculatus*, *Pedicularis sylvatica*, *Plantago lanceolata*, *Polygala* spp. *Potentilla erecta*, *Rumex acetosella*, *Succisa pratensis*, *Scilla verna*, *Serratula tinctoria*, *Teucrium scorodonia* *Thymus praecox*, *Viola riviniana*,

- There are many plants and animals which use or co-exist with non-native trees, but many rare and threatened woodland species are specialists adapted to one or a few native trees or shrub species (birches, willows and oaks, are examples of trees that host many specialist insect species). At this SAC, site-native species of tree and shrub include those typical of the H9120 type including Beech *Fagus sylvatica*, Oak *Quercus robur* and *Quercus petraea*, Holly *Ilex aquifolium*, Bramble *Rubus fruticosus* agg. Honeysuckle *Lonicera periclymenum*, Hornbeam *Carpinus betulus*, Silver birch *Betula pendula*, Downy birch *Betula pubescens*, Yew *Taxus baccata*, Elder *Sambucus nigra*, Goat willow *Salix caprea* and Wild Cherry *Prunus avium*. In addition to this, the characteristic mosaics and transitions of ancient forests and wood-pasture-types are well-represented within the site and are necessary for the conservation of SAC features and site integrity.

Lee Valley Special Protection Area (SPA) and Ramsar site

A.23 The Lee Valley SPA comprises a series of embanked water supply reservoirs, sewage treatment lagoons and former gravel pits that display a range of man-made and semi-natural wetland and valley bottom habitats.

Qualifying features

Annex II species (that are a primary reason for the selection of the SPA):

- Great bittern *Botaurus stellaris* (non-breeding)

Annex II species (that are a primary reason for the selection of the SPA):

- Northern shoveler *Anas clypeata* (non-breeding)
- Gadwall *Anas strepera* (non-breeding)

Species meeting Ramsar criteria:

Ramsar Criterion 2:

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

Ramsar Criterion 6:

- Over winter the area regularly supports:
- Gadwell, *Anas strepera* – 456 individuals, representing an average of 1.5% of the population
- Northern shoveler, *Anas clypeata* – 406 individuals, representing an average of 1% of the population

Threats and pressures

- Water Pollution – The vegetation and invertebrates provide food for the ducks, while fish provide food for the bitterns; and the habitat mosaic needs to vary from clear open water with abundant aquatic vegetation to moderately eutrophic conditions. Changes in water quality need to be managed to prevent loss of suitable habitat and food sources.
- Hydrological changes – Reservoir levels linked to operational requirements and all water bodies subject to natural fluctuations accounting for abstraction and climatic change.
- Public Access/Disturbance – Areas of the SPA are subject to a range of recreation pressures including water sports, angling and dog walking. This has the potential to affect SPA populations directly or indirectly.
- Inappropriate scrub control – The reedbed habitats, muddy fringes, and bankside all provide habitat as part of the mosaic for the SPA birds. Scrub control is necessary to ensure these habitats are maintained.
- Fisheries: Fish stocking – Fish population and species composition needs to be appropriate to ensure suitable habitats including food resource and water quality are maintained for SPA bird species.
- Invasive species – Azolla and/or invasive aquatic blanket weeds will adversely affect aquatic habitat (food sources).
- Inappropriate cutting/mowing – The reedbed requires rotational management for bittern.
- Air Pollution: risk of atmospheric nitrogen deposition – Nitrogen deposition exceeds site relevant critical loads.

- The Information Sheet on Ramsar Wetlands also notes the whole site supports high levels of visitor pressure; principally for purposes of angling, walking, cycling and birdwatching; with boating on the adjacent canal. These activities are mostly well regulated and at current levels are not considered to threaten the interest of the Ramsar site (although they may reduce the potential for enhancing the interest). In addition to the above, the supplementary advice identifies the following vulnerabilities:
- Conservation measures – Active and ongoing conservation management is often needed to protect, maintain or restore *Botaurus stellaris* Great bittern (non-breeding) at this site.
- Vegetation characteristics – Many bird species will have specific requirements that conservation measures will aim to maintain, for others such requirements will be less clear. Activities that may directly or indirectly affect the vegetation of supporting habitats and modify these characteristics may adversely affect the feature.
- Connectivity with supporting habitats – Bitterns clearly move between sites within the Lee Valley and to do this they will need to move safely to and from supporting habitat between individual waterbodies and above/across land outside the SPA. Also, the ability of Northern Shoveler to safely and successfully move to and from feeding and roosting areas is critical to their adult fitness and survival.
- Water depth – As the birds will rely on detecting their prey within the water to hunt, the depth of water at critical times of year may be paramount for successful feeding and therefore their fitness and survival.
- Population abundance – the population of Northern Shoveler within Lee Valley SPA has shown a slight decrease since Classification. The key SPA sites at Amwell and Turnford & Cheshunt Pits experienced a population decline during the 1999/00 – 2008/09 period, along with the is linked non-SPA Holyfield gravel pits. The SPA Walthamstow reservoirs and non-SPA Chingford reservoirs show population trends that appear to be related to water levels and available food resource.
- Food availability within supporting habitat – the availability of an abundant food supply is critically important for successful breeding, adult fitness and survival and the overall sustainability of the population. As a result, inappropriate management and direct or indirect impacts which may affect the distribution, abundance and availability of prey may adversely affect the population.

Non qualifying habitats and species upon which the qualifying habitats and/or species depend

■ Great bittern

- Standing open water and canals – bittern rely on the presence and continuity of open water habitat. Changes in water area, and associated marginal habitat, can adversely affect the suitability of supporting open water habitat.
- Reedbeds.
- Open terrain – bittern favour large areas of open terrain, largely free of obstructions, in and around its nesting, roosting and feeding areas. Often there is a need to maintain an unobstructed line of sight within nesting, feeding or roosting habitat to detect approaching predators, or to ensure visibility of displaying behaviour.
- Key prey species include eel, rudd, roach, frogs, toads and invertebrates.
- Within the SPA/Ramsar, the majority of bittern are found in the Turnford and Cheshunt Pits site while Amwell Quarry and Rye Meads also support the species. Walthamstow Reservoirs also occasionally supports bittern.

■ Gadwall

- Standing open water – gadwall favour gravel pits and reservoirs during the winter period where they feed on seeds, leaves and stems of water plants.
- Preferred food plants – sweet-grass (*Glyceria fluitans*), creeping bent (*Arostis stolonifera*), stoneworts (*Chara*), pondweeds (*Potamogeton*, *Ceratophyllum* spp., *Ruppia*, *Elodeo nuttallii*).

- Each of the SPA/Ramsar's component SSSIs support gadwall in numbers which are sufficient to qualify them as being of national importance.

■ Northern shoveler

- Standing open water – in winter, shoveler frequent shallow water areas on marshes, flooded pasture, reservoirs and lakes with plentiful, marginal reeds or emergent vegetation and are found throughout.
- Preferred food plants – *Scirpus*, *Eleocharis*, *Carex*, *Potamogeton*, *Glyceria*. Shoveler also feed on zooplankton (e.g. *Hydrobia*, crustaceans, caddisflies, *Diptera*, beetles) in the shallow margins of waterbodies. Preferred food plants are linked with early successional

stages of waterbodies, therefore succession, particularly tree cover, can lead to the loss of suitable foraging habitat.

- The British Trust for Ornithology records the site's qualifying bird species' diets as:
 - Bittern: mostly fish, amphibians, insects but wide variety;
 - Shoveler: omnivorous (incl. insects, crustaceans, molluscs, seeds); and
 - Gadwall: leaves and shoots.
- The Information Sheet on Ramsar Wetlands also notes the ecological features of the site include open water, with associated wetland habitats including reedbeds, fen grassland and woodland which support a number of wetland plant and animal species including internationally important numbers of wintering wildfowl.

Mole Gap to Reigate Escarpment Special Area of Conservation

This Site contains the largest part of the North Downs in Surrey, which includes a range of outstanding wildlife habitats such as broad-leaved woodland, chalk grassland, chalk scrub and heathland. These form a landscape scale mosaic which support a wide diversity of characteristic plants and animals, of which many are local or rare; especially orchid species, great crested newts, insect species and Bechsteins bats.

Qualifying features

Annex I habitats that are primary reason for section of this Site:

- European dry heaths,
- Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.); Natural box scrub,
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco Brometalia*) (important orchid Sites); Dry grasslands and scrublands on chalk or limestone (important orchid sites).
 - This is considered a priority natural habitat for conservation at a European Scale and subject to special provisions in the Habitat Regulations.

- *Asperulo-Fagetum* beech forests; Beech forests on neutral to rich soils.
- *Taxus baccata* woods of the British Isles; Yew-dominated woodland.
 - This is considered a priority natural habitat for conservation at a European Scale and subject to special provisions in the Habitat Regulations.

Annex II species present as a qualifying feature, but not a primary reason for Site selection:

- *Triturus cristatus*; Great crested newt.
- *Myotis bechsteinii*; Bechstein`s bat.

Key vulnerabilities

Threats include disease from natural box scrub, change in land management resulting in potential mismanagement of qualifying habitat features, increased public disturbance and air pollution from atmospheric nitrogen deposition. Pressures also exist from inappropriate scrub control affecting the habitats.

Conservation objectives

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

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

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

European Dry Heaths

Extent and Distribution of the Feature

- Extent of the feature within the Site: Maintain the total extent of the feature to baseline value of approximately 83 hectares.
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the Site.

Structure and Function (including its typical species)

- Vegetation community composition: Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type(s):
 - *Calluna vulgaris-Ulex minor* heath
 - Mosaics of H2 and acid grassland of type U1 *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland
- Vegetation community transitions: Maintain (or restore where habitats are degraded) areas of transition between this and communities which form other heathland-associated habitats, such as acid grassland, scrub and woodland.
- Vegetation structure: cover of dwarf shrubs. Maintain (or restore where habitats are degraded or neglected) an overall cover of dwarf shrub species which is typically between 25-90%.
- Vegetation composition: bracken cover. Maintain (or restore where habitats are degraded or neglected) a cover of dense bracken which is low, typically at <10%.
- Vegetation: undesirable species. Restore the frequency/cover of the following undesirable species to <1% and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread: Birch (*Betula* spp), Oak (*Quercus* spp), Sweet chestnut (*Castanea sativa*), Bramble (*Rubus fruticosus*), *Rhododendron ponticum*, *Gaultheria shallon*, ragwort, nettle, thistles and other injurious weeds, negative indicators such as foxglove (*Digitalis purpurea*), rosebay willowherb

(*Chamerion angustifolium*) and coarse grasses such as cocksfoot (*Dactylis glomerata*).

- Key structural, influential and distinctive species: Maintain (or restore where habitats are degraded) the abundance of the 'typical' species listed below to enable each of them to be a viable component of the H4030 Annex 1 habitat:
 - Constant and preferential plant species of the H2 *Calluna vulgaris* – *Ulex minor* heath and U1 *Festuca ovina*-*Agrostis capillaris*-*Rumex acetosella* grassland NVC vegetation types at this Special Area of Conservation.
- Functional connectivity with the wider landscape: Maintain (or restore where habitats are fragmented or isolated) the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site, such as critical habitat 'corridors' and habitat patches.
- Adaptation and resilience: Maintain (or restore where the resilience of the feature is degraded) the H4030 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.
- Soils, substrate and nutrient cycling. Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the H4030 feature.
- Vegetation structure
 - Cover of gorse: Maintain or restore as necessary cover of common gorse (*Ulex europaeus*) at <10%.
 - Tree cover: Maintain (or restore where habitats are neglected) the open character of the H4030 feature, with a typically scattered and low cover of trees and scrub (<20% cover).
 - Heather age structure: Maintain (or restore where habitats are degraded or neglected) a diverse age structure of heather and dwarf gorse.

Supporting Processes (on which the feature relies)

- Conservation measures: Maintain (or restore where Sites are neglected) the management measures (either within and/or outside the Site boundary

as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H4030 feature.

- Air quality: Maintain or restore as necessary the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Water quality and quantity: Where the feature is dependent on surface water and/or groundwater flow, maintain water quality and quantity to a standard which provides the necessary conditions to support the feature, i.e. low nutrient status, pH <7.

Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes (*Berberidion* p.p.); Natural box scrub

Extent and distribution of the Feature

- Extent of the feature within the Site: Maintain the total extent of the feature to at least a baseline value of 8.4 hectares.
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Vegetation structure - age class: Maintain a population of Box (*Buxus sempervirens*) comprising plants at different life stages from seedlings to mature shrubs.
- Vegetation community composition: Ensure the component vegetation communities of the feature are typical of the habitat type.
- Resilience of the feature to plant disease: Maintain the resilience of the feature to resist diseases such as box blight.
- Regeneration potential: Maintain the Site's capacity for natural tree and shrub regeneration.
- Key structural, influential and/or distinctive species: Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat: Box (*Buxus sempervirens*), Hawthorn (*Crataegus monogyna*), Wild privet (*Ligustrum vulgare*), Yew

(*Taxus baccata*), Beech (*Fagus sylvatica*), Common whitebeam (*Sorbus aria*).

- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.

Supporting processes (on which the features relies)

- Functional connectivity with wider landscape: Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Air quality: Restore as necessary the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Illumination: Ensure artificial light is maintained to a level which is unlikely to affect natural phenological cycles and processes to the detriment of the feature and its typical species at this Site.

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

This is considered a priority natural habitat for conservation at a European Scale and subject to special provisions in the Habitat Regulations.

Extent and distribution of the feature

- Extent of the feature within the Site: Maintain or restore as necessary the total extent of the feature to at least a baseline value of 114.7 hectares.
- Spatial distribution of the feature within the Site: Maintain or restore as necessary the distribution and configuration of the feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Vegetation community composition: Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:
 - CG2 *Festuca ovina* – *Avenula pratensis* grassland

Appendix A Attributes of Habitats Sites considered in the HRA

- CG3 *Bromus erectus* grassland
- CG4 *Brachypodium pinnatum* grassland
- CG7 *Festuca ovina-Hieracium pilosella-Thymus* spp grassland.
- Vegetation: proportion of herbs (including *Carex* spp). Maintain or restore where necessary the proportion of herbaceous species to grasses within the range 40%-90%.
- Key structural, influential and/or distinctive species: Maintain or restore where necessary the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat:
 - Constant and preferential plant species of the CG2 *Festuca ovina – Avenula pratensis* grassland, CG3 *Bromus erectus* grassland, CG4 *Brachypodium pinnatum* grassland and CG7 *Festuca ovina-Hieracium pilosella-Thymus* spp grassland NVC vegetation types at this Special Area of Conservation.
 - Juniper (*Juniperus communis*).
 - Vascular plant assemblage including Man orchid (*Orchis anthropophora*), Musk orchid (*Herminium monorchis*), Early gentian (*Gentianella anglica*), Cut-leaved germander (*Teucrium botrys*), Wild liquorice (*Astragalus glycyphyllos*), Wild candytuft (*Iberis amara*), Round-headed rampion (*Phyteuma tenerum*), Meadow clary (*Salvia pratensis*), Glandular eyebright (*Euphrasia anglica*).
 - Invertebrate assemblage including Adonis blue (*Lysandra belargus*), Silverspotted skipper (*Hesperia comma*), Straw belle moth (*Aspitates gilvara*), Hornet robberfly (*Asilus crabroniformis*), Hazel leafbeetle (*Cryptocephalus coryli*).
- Vegetation: undesirable species. Maintain or restore as necessary the frequency and cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread: *Cotoneaster* spp, Butterfly bush (*Buddleja davidii*), Tor grass (*Brachypodium pinnatum*).
- Vegetation community transitions: Maintain or restore as necessary the pattern of natural vegetation zonations/transitions, particularly the 'scrub edge' transition between grassland and woodland.
- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.

Appendix A **Attributes of Habitats Sites considered in the HRA**

- Supporting off-Site habitat: Maintain or restore where necessary the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the Site which is known to support the feature, particularly adjacent areas of permanent grassland.
- Functional connectivity with wider landscape: Maintain or restore as necessary the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Adaptation and resilience: Maintain or restore as necessary the feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.

Supporting processes (on which the feature relies)

- Air quality: Maintain or restore as necessary, the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Conservation measures: Maintain or restore as necessary the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature.

***Asperulo-Fagetum* beech forests; Beech forests on neutral to rich soils**

- Extent of the feature within the Site: Maintain the total extent of the feature to at least a baseline value of 973.6 hectares (but note that this is the combined total area of woodland cover including yew woodland).
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Adaptation and resilience: Maintain the H9130 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.
- Key structural, influential and/or distinctive species: Maintain the abundance of the typical species listed below to enable each of them to be

a viable component of the Annex 1 habitat: The constant and preferential plants of the W12 woodland type.

- Regeneration potential: Maintain the potential for sufficient natural regeneration of desirable trees and shrubs; typically tree seedlings of desirable species (measured by seedlings and sufficient numbers in gaps, at the wood edge and/or as re-growth as appropriate).
- Root zones of trees: Maintain the soil structure within and around the root zones of the mature and ancient tree cohort in an un-compacted condition.
- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.
- Tree and shrub species composition Maintain a canopy and understorey of which 95% is composed of Site native trees and shrubs Maintain a diversity (at least 3 species) of Site-native trees (e.g. beech, ash, oak, cherry, rowan, yew, hazel, holly, elder) across the Site.
- Vegetation community composition: Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification types:
 - W8 *Fraxinus excelsior* – *Acer campestre* - *Mercurialis perennis* woodland
 - W12 *Fagus sylvatica* – *Rubus fruticosus* woodland
- Vegetation structure
 - Age class distribution: Maintain at least 3 age classes (pole stage/ medium/ mature) spread across the average life expectancy of the commonest trees.
 - Canopy cover: Maintain an appropriate tree canopy cover across the feature, which will typically be between 75-90% of each woodland block.
 - Dead wood: Maintain the continuity and abundance of standing or fallen dead and decaying wood, typically between 30 - 50 m³ per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare, and >10 standing dead trees per hectare.
 - Woodland edge (graduated edge; buffered mosaics with other habitats): Maintain a graduated woodland edge into adjacent semi-natural open habitats, other woodland/wood-pasture types or scrub.

Supporting processes (on which the feature relies)

- Air quality: Maintain or restore as necessary, the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Conservation measures: Maintain the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to restore the structure, functions and supporting processes associated with the H9130 feature.
- Illumination: Ensure artificial light is maintained/ to a level which is unlikely to affect natural phenological cycles and processes to the detriment of the feature and its typical species at this Site.

***Taxus baccata* woods of the British Isles; Yew-dominated woodland**

This is considered a priority natural habitat for conservation at a European Scale and subject to special provisions in the Habitat Regulations.

Extent and distribution of the feature

- Extent of the feature within the Site: Maintain the total extent of the feature to at least a baseline value of 973.6 hectares (but note that this is the combined total area of woodland cover including beech – ash woodland).
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Adaptation and resilience: Maintain the resilience of the feature by ensuring a diversity of Site-native tree species; although yew may be overwhelmingly dominant.
- Invasive, non-native and/or introduced species: Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the feature.
- Regeneration potential: Maintain the potential for sufficient natural regeneration of desirable trees and shrubs; typically tree seedlings of desirable species (measured by seedlings and <1.3m saplings - above

grazing and browsing height) should be visible sufficient numbers in gaps, at the wood edge and/or as re-growth as appropriate.

- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, to within typical values for the habitat.
- Tree and shrub species composition: Maintain a canopy and understorey of which 95% is composed of Site native trees and shrubs, such as yew, whitebeam, box, beech, ash and hawthorn.
- Key structural, influential and/or distinctive species: Maintain the abundance of the typical species listed below to enable each of them to be a viable component of the Annex 1 habitat:
 - Constant and preferential plant species of the W13 *Taxus baccata* woodland NVC vegetation types at this Special Area of Conservation.
- Vegetation community composition: Ensure the component vegetation communities of the feature are referable to and characterised by the following National Vegetation Classification type: W13 *Taxus baccata*.
- Vegetation structure
 - Age class distribution: Maintain at least 2 age classes (e.g. sapling stage, mature, veteran) spread across the average life expectancy of the trees - which in the case of yew can be hundreds of years.
 - Canopy cover: Maintain an appropriate tree canopy cover across the feature, which will typically be between 75-90% of each stand.
 - Dead wood: Maintain the continuity and abundance of standing or fallen dead and decaying wood, typically between 30 - 50 m³ per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare.
 - Old growth: Maintain the extent and continuity of undisturbed, mature/old growth stands (typically comprising at least 50% of the feature at any one time) and the assemblages of veteran and ancient trees.
 - Open space: Maintain areas of permanent/ temporary open space within the woodland feature, typically to cover approximately 5% of area each stand.
 - Shrub layer: Maintain a sparse understorey of bushes or young trees of characteristic species e.g. holly, hawthorn, elder and box.

- Woodland edge (graduated edge; buffered; mosaics with other habitats): Maintain a graduated woodland edge into adjacent semi-natural open habitats, other woodland/ wood-pasture types or scrub.

Supporting Processes (on which the feature relies)

- Air quality: Maintain or restore as necessary, the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Functional connectivity with wider landscape: Maintain or restore where necessary the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Illumination: Ensure artificial light is maintained to a level which is unlikely to affect natural phenological cycles and processes to the detriment of the feature and its typical species at this Site.

***Triturus cristatus*; Great crested newt**

Population (of the feature)

- Supporting meta-populations: Maintain or restore as necessary the connectivity of the Special Area of Conservation population to any associated meta-populations (either within or outside of the Site boundary).

Supporting habitat: extent and distribution

- Distribution of supporting habitat: Maintain or restore as necessary the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the Site.
- Extent of supporting habitat: Maintain or restore as necessary the total extent of the habitat(s) which support the feature.

Supportingh: structure/ function

- Cover of macrophytes: Maintain or restore where necessary a high cover of macrophytes, typically between 50-80%, in ponds.

Appendix A **Attributes of Habitats Sites considered in the HRA**

- Overall Habitat Suitability Index score: Maintain an overall Great Crested Newt Habitat Suitability Index score of no less than 0.8.
- Permanence of ponds: Maintain the natural water regime of ponds.
- Presence of fish: Ensure fish are absent in all breeding ponds.
- Presence of ponds: Maintain or restore where necessary the number of ponds present within the Site.
- Shading of ponds: Ensure pond margins are generally free of shade (typically no more than 60% cover of the shoreline).
- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat.
- Supporting terrestrial habitat: Maintain or restore where necessary the quality of terrestrial habitat likely to be utilised by Great Crested Newts, with no fragmentation of habitat by significant barriers to newt dispersal.

Supporting processes (on which the feature and/or its supporting habitat relies)

- Adaptation and resilience: Maintain or restore as necessary the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the Site.
- Air quality: Maintain or, where necessary, restore concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Conservation measures: Maintain or restore as necessary the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.
- Water quantity/ quality: Where the feature or its supporting habitat is dependent on surface water and/or groundwater maintain water quality and quantity to a standard which provides the necessary conditions to support the feature.
- Water quality: Maintain high water quality in all ponds in the core area supporting the meta-population.

Bechstein`s bat (*Myotis bechsteini*)

Supporting habitat: extent and distribution

- Distribution of supporting habitat: Maintain the distribution and continuity of the feature and its supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the Site.
- Extent of supporting habitat: Maintain the total extent of the habitat(s) which support the feature at the baseline level of 25 hectares.
- Commuting routes from roost into surrounding habitat and foraging areas: Maintain the presence, structure and quality of any linear landscape features which function as habitually used routes along which bats navigate to foraging and swarming areas. Routes should remain unlit, functioning as dark corridors.
- External condition of hibernation Site: Maintain the structural integrity and weatherproofing of the known hibernation Sites, with no significant shading of the main roost area by trees/vegetation or man-made structures.
- Internal condition of hibernation roost Sites: Maintain appropriate light levels, humidity, temperature and ventilation in the known hibernation roost Sites.
- Roost access: Maintain the number of access points to the roost at an optimal size and in an unlit and unobstructed state, with surrounding vegetation providing sheltered flyways without obstructing access.
- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal: bacterial ratio, within typical values for the supporting habitat.

Supporting processes (on which the feature and/or its supporting habitat relies)

- Adaptation and resilience: Maintain the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the Site.
- Air quality: Maintain or, where necessary, restore concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.

- Conservation measures: Maintain the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the feature and/or its supporting habitats.
- Disturbance from human activity: Control and minimise human access to roost Sites.

Richmond Park Special Area of Conservation (SAC)

Richmond Park has a large number of ancient trees with decaying timber. It is at the heart of the south London centre of distribution for stag beetle (*Lucanus cervus*), and is a Site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees.

Qualifying features

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

- 1083 Stag beetle (*Lucanus cervus*)

Key vulnerabilities

No current issues affecting the Natura 2000 feature have been identified. Despite this, the Richmond Park Management Plan should continue to be periodically reviewed to ensure the continuing availability of decaying wood habitat.

Conservation objectives

Ensure that the integrity of the Site is maintained or restored as appropriate, and ensure that the Site contributes to achieving the Favourable Conservation Status of Stag beetle, by maintaining or restoring:

- The extent and distribution of the habitats of qualifying species.
- The structure and function of the habitats of qualifying species.
- The supporting processes on which the habitats of qualifying species rely.

- The populations of qualifying species, and,
- The distribution of qualifying species within the Site

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

Stag beetle (*Lucanus cervus*)

Supporting habitats

- Decaying-wood habitat: Maintain an abundance and constant supply of ancient trees, standing dead trees, fallen trees, stumps and roots in a state of decay. In urban areas ensure larger native trees and man-made timber structures persist as a larval resource.
- Woodland habitat structure: Maintain a well-structured broadleaved woodland habitat, with sheltered, sunlit glades and rides containing stumps and other suitable decaying wood.

Supporting processes

- Natural processes: Ensure the continuity of timber decay and nutrient recycling processes, in particular the continued provision of plentiful decaying stumps and roots.
- Conservation measures: Maintain the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the stag beetle feature and/or its supporting habitats.

South West London Waterbodies Special Protection Area (SPA) and Ramsar site

This site comprises several gravel pits reservoirs located in Staines, Greater London, where hundreds of migratory wintering Gadwall (*Anas strepera*) and Shoveler (*A. clypeata*) spend the winter on and around these waterbodies.

Qualifying features

Annex II species (that are a primary reason for the selection of the SPA):

- Northern shoveler *Anas clypeata* (non-breeding)
- Gadwall *Anas strepera* (non-breeding)

Species meeting Ramsar criteria:

Ramsar Criterion 6:

- Over winter the area regularly supports:
- Gadwall, *Anas strepera* – 487 individuals, representing an average of 2.8% of the population
- Northern shoveler, *Anas clypeata* – 397 individuals, representing an average of 2.6% of the population

Key vulnerabilities

The qualifying features of this Site are vulnerable to disturbance from recreation and there is also an issue surrounding the potential future decommissioning of reservoirs once they are no longer required for the purposes of water supply, as well as the potential impacts of maintenance works. There is a threat to distributions of the bird species, which should be monitored using data gained from bird recorders/watches. Other threats/pressures include invasive species, specifically *Crassula helmsii* and Egyptian geese, fish stocking levels which should be secured appropriately and inappropriate weed control which should be clarified with owners and tenants.

Conservation objectives

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

- The extent and distribution of the habitats of the qualifying features.
- The structure and function of the habitats of the qualifying features.

- The supporting processes on which the habitats of the qualifying features rely.
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the Site.

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

Gadwall (*Anas strepera*)

Extent and distribution of supporting habitat

- Extent and distribution of supporting non-breeding habitat: Maintain the extent and distribution of suitable habitat (either within or outside the Site boundary) which supports Gadwall for all necessary stages of the non-breeding/wintering period (moulting, roosting, loafing, feeding) Estimated baseline habitat extents for the Special Protection Area as a whole are: open water: 699.2 ha grassland: 41 ha (although not all of this will be suitable for Gadwall).

Function/supporting process

- Water quality/quantity: Ensure water quality and quantity is maintained to a standard which provides the necessary conditions to support Gadwall during the non-breeding season.
- Conservation measures: Maintain management or other measures (whether within and/or outside the Site boundary as appropriate) necessary to maintain the structure, function and/or the supporting processes associated with non-breeding Gadwall and its supporting habitats.
- Air quality: Maintain the concentrations and deposition of air pollutants at or below the Site-relevant Critical Load or Level values given for the supporting habitats of this feature on the Air Pollution Information System.
- Water depth: Maintain the current extent of available littoral zone (the shallow standing water capable of supporting submerged plant growth).
- Food availability within supporting habitat: Maintain a high cover/abundance of food plants preferred by Gadwall. Gadwall frequently forage on common and abundant macrophytes such as *Elodea* and

Ceratophyllum, as well as filamentous green algae. A key aspect of the food source is that sufficient plant material persists in the water and is thus available to Gadwall through the winter. Gadwall will feed on charophytes (*Chara*, *Tolypella*, *Nitella* spp); these aquatic plants have been found in surveys at some Sites within the South-west London waterbodies, but they require good water quality with high clarity and low nutrient levels and are not thought to be as frequent in the diet at this Site as the commoner macrophytes.

Minimising disturbance

- Disturbance caused by human activity: Restrict the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that the Gadwall feature is not significantly disturbed.

Northern Shoveler (*Anas clypeata*)

Supporting Habitat (both within and outside the Special Protection Area)

Extent and distribution

- Extent and distribution of non-breeding habitat: Maintain the extent and distribution of suitable habitat (either within or outside the Site boundary) which support Shoveler for all necessary stages of the non-breeding/wintering period (moulting, roosting, loafing and feeding). Estimated baseline habitat extents for the Special Protection Area as a whole are: Open water 699.2 ha Grassland: 41 ha (although not all of this will be suitable for Shoveler).

Function/supporting process

- Water quality/quantity: Ensure water quality and quantity is maintained to a standard which provides the necessary conditions to support nonbreeding Shoveler.
- Conservation measures: Maintain management or other measures (whether within and/or outside the Site boundary as appropriate) necessary to maintain the structure, function and/or the supporting processes associated with non-breeding Shoveler feature and its supporting habitats.

- Air quality: Maintain concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for the supporting habitats of this feature on the Air Pollution Information System.
- Water depth: Maintain the extent and availability of standing water at optimal depth, typically <0.3m deep [not applicable to the water supply reservoirs in the Special Protection Area].
- Connectivity with supporting habitats: Maintain the safe passage of Shoveler moving between roosting and feeding areas.
- Food availability within supporting habitat: Maintain a high cover/abundance of those food plants and invertebrate fauna preferred by Shoveler.

Disturbance

A.24 Disturbance caused by human activity: Restrict the frequency, duration and/or intensity of disturbance affecting roosting, foraging, feeding, moulting and/or loafing birds so that the Shoveler feature is not significantly disturbed

Thames Basin Heaths Special Protection Area

This is an extensive complex made up of lowland heathland, acid grassland, mire and commercial conifer plantations.

Qualifying features

Annex II species (that are a primary reason for the selection of the SPA):

- European nightjar, *Caprimulgus europaeus* (breeding),
- Woodlark, *Lullula arborea* (breeding), and,
- Dartford warbler, *Sylvia undata* (breeding).

Key vulnerabilities

Threats exist from increased public access/ disturbance and air pollution. A management strategy including for public access and atmospheric nitrogen deposition should be agreed and implemented. Other pressures/threats include

undergrazing which threatens habitats and the bird species that depend on them, hydrological changes to the heathland and depression peat, forestry and woodland management, inappropriate scrub control, encroachment of invasive species and wildfire arson. An abundance of habitat mitigation and management strategies will need to be agreed and implemented as well as hydrological investigations.

Conservation objectives

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

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

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

European Nightjar (*Camprimulgus europaeus*)

Function/supporting process

- Conservation measures: Maintain management or other measures (whether within and/or outside the Site boundary as appropriate) necessary to maintain or restore the structure, function and/or the supporting processes associated with Nightjar and its supporting habitats.
- Air quality: Restore as necessary the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Food availability: Maintain or restore the distribution, abundance and availability of key prey items (e.g. moths, beetles) at prey sizes preferred by Nightjar.

Appendix A **Attributes of Habitats Sites considered in the HRA**

- Connectivity with supporting habitats: Maintain or restore the safe passage of birds moving between nesting and feeding areas

Extent and distribution of supporting habitat

- Extent and distribution of supporting habitat for the breeding season: Maintain the extent, distribution and availability of suitable breeding habitat which supports nightjar for all necessary stages of its breeding cycle (courtship, nesting, feeding and roosting).

Disturbance

- Disturbance caused by human activity: Restrict and reduce the frequency, duration and/or intensity of disturbance affecting nesting, roosting and/or foraging birds so that the nightjar feature is not significantly disturbed

Structure

- Landscape: Maintain or restore the amount and continuity of open and unobstructed patches within nesting and foraging areas, including areas of clear-fell, windfall, wide tracks, open spaces within forests and heath
- Predation: Reduce or restrict predation and disturbance caused by native and non-native predators.

Structure of supporting habitat:

- Vegetation characteristics: Maintain or restore the mix of vegetation (optimal conditions normally with vegetation mostly of 20-60 cm with frequent bare patches of >2 m², 10-20% bare ground and <50% tree/scrub cover overall; trees <2m in height) throughout nesting areas.

Woodlark (*Lullula aborea*)

Function/supporting process

- Conservation measures: Maintain or restore management or other measures (whether within and/or outside the Site boundary as appropriate) necessary to maintain or restore the structure, function and/or the supporting processes associated with woodlark and its supporting habitats.
- Air quality: Maintain or restore as necessary concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level

values given for this feature of the Site on the Air Pollution Information System.

- Food availability: Maintain or restore the distribution, abundance and availability of key prey items (e.g. spiders, weevils, caterpillars) at prey sizes preferred by Woodlark.

Extent and distribution of supporting habitat

- Extent and distribution of supporting habitat for the breeding season: Maintain or restore the extent, distribution and availability of suitable breeding habitat which supports woodlark for all necessary stages of its breeding cycle (courtship, nesting, feeding).

Disturbance

- Disturbance caused by human activity: Restrict and reduce the frequency, duration and/or intensity of disturbance affecting nesting, foraging or feeding birds so that the Woodlark feature is not significantly disturbed.

Predation

- Reduce or restrict predation and disturbance caused by native and non-native predators.

Structure

- Landscape: Maintain or restore open and unobstructed terrain, typically within at least 0.2 km of nesting areas, with no increases in tall (>0.2 m) vegetation cover to >50% of the Site overall.
- Vegetation characteristics: Within nesting and feeding areas, maintain or restore ground vegetation which is predominantly short (<5cm) or medium (10-20cm) in height, with frequent patches of bare or sparsely-vegetated ground and scattered clumps of shrubs and trees.

Dartford Warbler (*Sylvia undata*)

Function/supporting process

- Conservation measures: Maintain or restore management or other measures (whether within and/or outside the Site boundary as appropriate) necessary to maintain or restore the structure, function and/or

the supporting processes associated with the Dartford warbler population and its supporting habitats.

- Air quality: Maintain or restore as necessary concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Food availability: Maintain or restore the distribution, abundance and availability of key prey items (e.g. beetles, spiders, caterpillars, bugs) at prey sizes preferred by Dartford Warbler.

Predation

- Predation: Reduce or restrict predation and disturbance caused by native and non-native predators.

Extent and distribution of supporting habitat

- Extent and distribution of supporting habitat for the breeding season: Maintain or restore the extent, distribution and availability of suitable habitat which supports Dartford warbler for all necessary stages of its breeding cycle (courtship, nesting, feeding).

Structure

- Vegetation characteristics: Maintain or restore an optimal mix of vegetation (>50% cover of heather and/or gorse, <25 trees/ha and of 0.5-3 m height) in nesting areas with areas of structurally diverse vegetation.
- Landscape: Maintain or restore the connectivity of structurally diverse heath and patches of dense gorse across the network of Sites which comprise the Special Protection Area.

Disturbance

A.25 Disturbance caused by human activity: Restrict or reduce the frequency, duration and/or intensity of disturbance affecting nesting, foraging or feeding birds so that the Dartford Warbler feature is not significantly disturbed.

Thursley, Ash, Pirbright and Chobham Special Area of Conservation (SAC)

Thursley, Ash, Pirbright and Chobham Special Area of Conservation is an extensive complex of heaths in the south east of England with extensive areas of wet and dry heath, acid mire and bog pools.

Qualifying features

Annex I habitats that are primary reason for section of this Site:

- Depressions on peat substrates of the *Rhynchosporion*,
- European dry heaths,
- Northern Atlantic wet heaths with *Erica tetralix*, and,
- Wet heathland with cross-leaved heath.

Key vulnerabilities

Threats exist from increased public access/ disturbance and air pollution. A management strategy including for public access and atmospheric nitrogen deposition should be agreed and implemented. Other pressures/threats include undergrazing which threatens habitats and the bird species that depend on them, hydrological changes to the heathland and depression peat, forestry and woodland management, inappropriate scrub control, encroachment of invasive species and wildfire arson. An abundance of habitat mitigation and management strategies will need to be agreed and implemented as well as hydrological investigations.

Conservation objectives

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

- The extent and distribution of qualifying natural habitats.
- The structure and function (including typical species) of qualifying natural habitats, and,

- The supporting processes on which qualifying natural habitats rely.

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

Depressions of peat substrates of the *Rhynchosporion*

Extent and distribution of the feature

- Extent of the feature within the Site: Maintain the total extent of the H7150 feature at approximately 35.3 hectares.
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the H7150 feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Vegetation community composition: Ensure the component vegetation communities of the H7150 feature are referable to and characterised by the following National Vegetation Classification types:
 - M21 *Narthecium ossifragum*- *Sphagnum papillosum* valley mire
 - M14 *Schoenus nigricans*- *Narthecium ossifragum* mire
 - M1 *Sphagnum auriculatum* bog pool
 - M2 *Sphagnum cuspidatum* bog pool
 - M6 *Carex echinata* – *Sphagnum recurvum* mire
- Key structural, influential and distinctive species: Maintain the abundance of the species listed below to enable each of them to be a viable component of the H7150 habitat:
 - Flora; Heather (*Calluna vulgaris*), crossleaved heath (*Erica tetralix*), purple moor-grass (*Molinia caerulea*), common cotton-grass (*Eriophorum angustifolium*), bog asphodel (*Narthecium ossifragum*), white beak-sedge (*Rhynchospora alba*), meadow thistle (*Cirsium dissectum*), roundleaved sundew (*Drosera rotundifolia*), intermediate sundew (*D. intermedia*), bog myrtle (*Myrica gale*), cranberry (*Vaccinium oxycoccos*), royal fern (*Osmunda regalis*), black bog-rush (*Schoenus nigricans*), lesser bladderwort (*Utricularia minor*).

Appendix A Attributes of Habitats Sites considered in the HRA

- Assemblage of mosses: *Calypogeia sphagnicola*, *Cephalozia macrostachya*, *Sphagnum auriculatum*, *S. cuspidatum*, *S. capillifolium*, *S. papillosum*, *S. magellanicum*, *S. tenellum*.
- Fauna; Raft spider (*Dolomedes fimbriatus*), small red damselfly (*Ceriagrion tenellum*), curlew (*Numenius arquata*).
- Assemblage of reptiles including smooth snake (*Coronella austriaca*).
- Invasive, non-native and/or introduced species: Ensure invasive, non-native and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H7150 feature.
- Presence/cover of woody species: Maintain (or restore where habitats are degraded or neglected) a very low cover of scrub or trees (<1% of the area of any single stand).
- Exposed substrate: Maintain (or restore where habitats are degraded or suffering excessive disturbance) a low cover of exposed substrate of between 1-10% across the H7150 feature.
- Hydrology
 - At a Site, unit and/or catchment level, maintain (or restore where habitats are suffering from effects of drainage) natural hydrological processes to provide the conditions necessary to sustain the H7150 feature within the Site.
 - Maintain (or restore where water supply has been modified) a high piezometric head and permanently high water table (allowing for natural seasonal fluctuations).
- Water chemistry: Maintain (or restore where habitats are suffering from changes in water flow or chemistry) the surface water and groundwater supporting the hydrology of the bog at a low nutrient status and within natural variation of pH levels.
- Adaptation and resilience: Maintain (or restore where the resilience of the feature is degraded) the H7150 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.
- Supporting off-Site habitat: Maintain the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the Site which is known to support the H7150 feature.

Supporting processes (on which the feature relies)

- Air quality: Restore the concentrations and deposition of air pollutants to below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Conservation measures: Maintain (or restore where appropriate) the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H7150 feature.

European dry heaths

Extent and distribution of the feature

- Extent of the feature within the Site: Maintain the total extent of the H4030 feature to baseline value of approximately 1830 hectares.
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the H4030 feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Vegetation community composition: Ensure the component vegetation communities of the H4030 feature are referable to and characterised by the following National Vegetation Classification type(s):
 - *Calluna vulgaris-Ulex minor* heath H2,
 - *Ulex minor-Agrostis curtisii* heath H3, with transitions to acid grasslands including *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland U1,
 - *Deschampsia flexuosa* grassland U2, *Agrostis curitsii* grassland U3 and *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland U4.
- Vegetation community transitions: Maintain (or restore where habitats are degraded) areas of transition between this and communities which form other heathland-associated habitats, such as 'humid' heath, wet heath, mire, acid grassland, scrub and woodland.
- Vegetation structure: cover of dwarf shrubs. Maintain (or restore where habitats are degraded or neglected) an overall cover of dwarf shrub species which is typically between 25-90% (except in areas of acid grassland where grasses are naturally dominant).

Appendix A Attributes of Habitats Sites considered in the HRA

- Vegetation composition: bracken cover. Maintain (or restore where habitats are degraded or neglected) a cover of dense bracken which is low, typically at <5%.
- Vegetation: undesirable species. Maintain the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread: Piri-pir bur (*Acaena* spp.), Rhododendron (*Rhododendron ponticum*), Gaultheria (*Gaultheria shallon*), Japanese knotweed (*Fallopia japonica*), creeping thistle (*Cirsium arvense*), foxglove (*Digitalis purpurea*), willowherb (*Epilobium* spp.), creeping buttercup (*Ranunculus repens*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), nettle (*Urtica dioica*).
- Key structural, influential and distinctive species: Maintain (or restore where habitats are degraded) the abundance of the 'typical' species listed below to enable each of them to be a viable component of the H4030 Annex 1 habitat:
 - Higher plants: Heather (*Calluna vulgaris*), bell heather (*Erica cinerea*), dwarf gorse (*Ulex minor*), bilberry (*Vaccinium myrtillus*), petty whin (*Genista anglica*), sand sedge (*Carex arenaria*).
 - Assemblage of mosses; *Hypnum jutlandicum*, *Dicranum scoparium*, *Polytrichum juniperinum*.
 - Assemblage of lichens; *Cladonia floerkeana*, *C. fimbriata*, *C. furcata*, *C. portentosa*,
 - Fauna: Assemblage of native reptiles including smooth snake (*Coronella austriaca*), and sand lizard (*L. agilis*), Silver-studded blue (*Plebejus argus*), heath tiger-beetle (*Cicindela sylvatica*), mottled bee fly (*Thyridanthrax fenestratus*), heath grasper (*Haplodrassus dalmatensis*).
- Functional connectivity with the wider landscape: Maintain (or restore where habitats are fragmented or isolated) the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site, such as critical habitat 'corridors' and habitat patches.
- Adaptation and resilience: Maintain (or restore where the resilience of the feature is degraded) the H4030 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.

Appendix A **Attributes of Habitats Sites considered in the HRA**

- Soils, substrate and nutrient cycling. Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the H4030 feature.

Vegetation structure

- Cover of gorse: Maintain cover of all gorse species at or below 25%, in each continuous block of dry heath.
- Tree cover: Maintain (or restore where habitats are neglected) the open character of the H4030 feature, with a scattered cover of trees and scrub at or below 10% cover in each continuous block of dry heath.
- Heather age structure: Maintain (or restore where habitats are degraded or neglected) a diverse age structure amongst the ericaceous shrubs typically found on the Site.

Supporting Processes (on which the feature relies)

- Conservation measures: Maintain (or restore where Sites are neglected) the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H4030 feature.
- Air quality: Maintain the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.

Northern Atlantic wet heaths with *Erica tetralix*

Extent and distribution of the feature

- Extent of the feature within the Site: Maintain the total extent of the H4010 feature to baseline extent of approximately 321 hectares.
- Spatial distribution of the feature within the Site: Maintain (or restore where habitats are degraded) the distribution and configuration of H4010 wet heath feature, including where applicable its component vegetation types, across the Site.

Structure and Function (including its typical species)

- Vegetation community transitions: Maintain (or restore where habitats are degraded) any areas of transition between this and communities which form other heathland-associated habitats, such as dry and humid heath, mire, acid grassland, scrub and woodland.
- Vegetation community composition: Ensure the component vegetation communities of the H4010 feature are referable to and characterised by the following National Vegetation Classification type (s):
 - M16 *Erica tetralix* wet heath and/or as mosaics with wet grassland types such as M25 *Molinia caerulea*-*Potentilla erecta* mire.
- Vegetation: undesirable species: Maintain or restore where habitats are degraded) the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread: Rhododendron (*Rhododendron ponticum*), gaultheria (*Gaultheria shallon*), Japanese knotweed (*Fallopia japonica*), creeping thistle (*Cirsium arvense*), foxglove (*Digitalis purpurea*), willowherb (*Epilobium spp.*) (excl. *E. palustre*), floating sweet-grass (*Glyceria fluitans*), reed (*Phragmites australis*), creeping buttercup (*Ranunculus repens*), ragwort (*Senecio jacobaea*), dock (*Rumex obtusifolius*), nettle (*Urtica dioica*), soft rush (*Juncus effusus*).
- Functional connectivity with wider landscape: Maintain (or restore where habitats are fragmented or isolated) the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Adaptation and resilience: Maintain or restore the H4010 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.
- Key structural, influential and Site-distinctive species: Maintain (or restore where habitats are degraded) the abundance of the 'typical' species listed below to enable each of them to be a viable component of the H4010 Annex 1 habitat:
 - Higher plants; Heather (*Calluna vulgaris*), bell heather (*Erica tetralix*), creeping willow (*Salix repens*), dwarf gorse (*Ulex minor*), sedges (*Carex spp.*) common cotton-grass (*Eriophorum angustifolium*), purple moor-grass (*Molinia caerulea*), marsh clubmoss (*Lycopodiella inundatum*), brown beak-sedge (*Rhynchospora fusca*), deer grass (*Trichophorum cespitosum*), round-leaved sundew (*Drosera*

rotundifolia), intermediate sundew (*D. intermedia*), marsh gentian (*Gentiana pneumonanthe*).

- Assemblage of mosses: *Aulacomnium palustre*, *Sphagnum capillifolium*, *S. compactum*.
- Fauna; assemblage of native reptiles including smooth snake (*Coronella austriaca*).
- Vegetation structure
 - Cover of dwarf shrubs: Maintain (or restore where habitats are degraded) an overall cover of dwarf shrub species which is typically between 25- 75%
 - Cover of gorse: Maintain a low cover of common gorse across the H4010 feature, typically at <10%.
 - Tree cover: Maintain (or restore where habitats are neglected) the open character of the feature, with a scattered cover of trees and scrub at or below 10% cover in each continuous block of wet heath.

Supporting processes (on which the feature relies)

- Conservation measures: Maintain or restore the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H4010 feature.
- Soils, substrate and nutrient cycling: Maintain or restore the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the H4010 habitat.
- Air quality: Maintain or restore as necessary, the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for the H4010 feature of the Site on the Air Pollution Information System.
- Water quality: Where the H4010 feature is dependent on surface water and/or groundwater, maintain or restore water quality and quantity to a standard which provides the necessary conditions to support the feature, such as the permanently high water table, very low nutrient status, low base-status and low pH.

- Hydrology: At a Site unit and/or catchment level as necessary, maintain or restore the natural hydrological regime to provide the conditions necessary to sustain the H4010 feature.

Wimbledon Common Special Area of Conservation (SAC)

Wimbledon Common has a large number of old trees and much fallen decaying timber. It is at the heart of the south London centre of distribution for stag beetle (*Lucanus cervus*). The Site supports a number of other scarce invertebrate species associated with decaying timber.

Qualifying features

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

- 4010 Northern Atlantic wet heaths with *Erica tetralix*
- 4030 European dry heaths

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

- 1083 Stag beetle (*Lucanus cervus*)

Key vulnerabilities

The Site is located in an urban area and therefore experiences air pollution and heavy recreational pressure. According to Natural England's Site Improvement Plans, measures should be implemented by Natural England to establish a Site Nitrogen Action Plan. Furthermore, Natural England and Wimbledon and Putney Common Conservators should implement measures to reduce visitor impact. Issues associated with habitat fragmentation and invasive species have also been identified. The Species Recovery Programme should address this, while an invasives response plan should be developed.

Conservation objectives

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

- The extent and distribution of qualifying natural habitats (4010 Northern Atlantic wet heaths with *Erica tetralix* & 4030 European dry heaths) and habitats of qualifying species (Stag beetle).
- The structure and function (including typical species) of qualifying natural habitats.
- The structure and function of the habitats of qualifying species.
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.
- The populations of qualifying species, and
- The distribution of qualifying species within the Site.

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

Stag beetle (*Lucanus cervus*)

Supporting habitats

- Decaying-wood habitat: Maintain an abundance and constant supply of ancient trees, standing dead trees, fallen trees, stumps and roots in a state of decay. In urban areas ensure larger native trees and man-made timber structures persist as a larval resource.
- Woodland habitat structure: Maintain a well-structured broadleaved woodland habitat, with sheltered, sunlit glades and rides containing stumps and other suitable decaying wood.

Supporting processes

- Natural processes: Ensure the continuity of timber decay and nutrient recycling processes, in particular the continued provision of plentiful decaying stumps and roots.

- Conservation measures: Maintain the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the stag beetle feature and/or its supporting habitats.

H4030 European Dry Heaths Supporting habitats

Vegetation Composition

- Bracken cover: Maintain or restore a cover of dense bracken which is low, typically at <5%, across the H4030 feature.
- Vegetation community composition: Ensure the component vegetation communities of the H4030 feature are referable to and characterised by the following National Vegetation Classification type (s):
 - H1 *Calluna vulgaris* – *Festuca ovina* Heathland;
 - H2 *Calluna vulgaris* – *Ulex minor* heath (and as mosaics with acid grassland vegetation).
- Vegetation community transitions: Maintain or restore any areas of transition between the H4030 feature and other heathland associated habitats, such as humid heath, mires, acid grassland, scrub and woodland.
- Key structural, influential and distinctive species: Maintain or restore the abundance of the species listed below to enable each of them to be a viable component of the Annex 1 habitat: Heather (*Calluna vulgaris*), Bell heather (*Erica cinerea*), dwarf gorse (*Ulex minor*), pill sedge (*Carex pilulifera*), heath bedstraw (*Galium saxatile*), petty whin (*Genista anglica*, *Hypochaeris radicata*), tormentil (*Potentilla erecta*), sheep's sorrel (*Rumex acetosella*, Mosses (*Hypnum jutlandicum*, *Dicranum scoparium*, *Polytrichum juniperinum*).

Vegetation Structure

- Cover of gorse: Maintain or restore a cover of common gorse *Ulex europaeus* at <1-5% and a combined cover of *U.europaeus* and dwarf gorse *U.minor* at <20%, across the H4030 feature.
- Tree and scrub cover: Maintain or restore the open character of the H4030 feature, with a typically scattered and low cover of trees and scrub <10% cover (excluding common gorse).

Appendix A Attributes of Habitats Sites considered in the HRA

- Heather age structure: Maintain or restore a diverse age structure amongst the ericaceous shrubs typically found as part of the H4030 feature.
- Cover of dwarf shrubs: Maintain or restore an overall cover of dwarf shrub species which is typically between 75- 90% of the H4030 feature.

Extent and distribution

- Extent of the feature within the Site: Restore the combined total extent of the H4030 and H4010 feature to 48.6 hectares, including its component habitat types and transitions to adjacent habitats.
- Spatial distribution within the Site: Maintain or restore the distribution and configuration of the H4030 feature, including where applicable its component vegetation types, across the Site.

Structure andf

- Vegetation: undesirable species. Maintain or restore the frequency/cover of the following undesirable species to within acceptable levels and prevent changes to surface condition, soils, nutrient levels or hydrology which may encourage their spread: *Acaena* spp., *Rhododendron ponticum*, *Gaultheria shallon*, *Fallopia japonica*, *Cirsium arvense*, *Digitalis purpurea*, *Epilobium* spp. (excl. *E. palustre*), *Ranunculus repens*, *Senecio jacobaea*, *Rumex obtusifolius*, *Urtica dioica*.
- Functional connectivity with the wider landscape: Maintain or restore the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Adaptation and resilience: Maintain or restore the H4030 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.
- Soils, substrate and nutrient cycling: Maintain or restore the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal/bacterial ratio, to within typical values for the H4030 feature.

Supporting processes

- Conservation measures: Maintain or restore the management measures (either within and/or outside the Site boundary as appropriate) which are

necessary to maintain or restore the structure, functions and supporting processes associated with the H4030 feature.

- Air quality: Restore the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.

Northern Atlantic wet heaths with *Erica tetralix*

Extent and distribution

- Extent of the feature within the Site: Restore the total extent of the H4010 and H4030 features to 48.6 hectares.
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the H4010 feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Vegetation community transitions: Maintain or restore any areas of transition between this and communities which form other heathland-associated habitats, such as dry and humid heaths, mires, acid grasslands, scrub and woodland.
- Vegetation community composition: Ensure the component vegetation communities of the H4010 feature are referable to and characterised by the following National Vegetation Classification type (s):
 - M16 *Erica tetralix* – *Sphagnum compactum* heathland
 - Mosaics with M25 *Molinia caerulea* – *Potentilla erecta* mire.
- Vegetation structure: cover of dwarf shrubs. Maintain an overall cover of dwarf shrub species which is typically between 75-90%.
- Vegetation structure: heather age structure. Maintain a diverse age structure amongst the ericaceous shrubs typically found on the Site.
- Vegetation structure: cover of gorse: Maintain cover of common gorse at <10%.
- Vegetation structure: tree and shrub cover. Maintain the open character of the H4010 feature, with a typically scattered and low cover of trees and scrub (<10% cover).

Appendix A Attributes of Habitats Sites considered in the HRA

- Vegetation composition: bracken cover. Restore a cover of dense bracken which is low, typically at <5%.
- Key structural, influential and Site distinctive species: Restore the abundance of the species listed below to enable each of them to be a viable component of the H4010 Annex 1 habitat: *Calluna vulgaris*, *Erica tetralix*, *Myrica gale*, *Salix repens*, *Ulex minor*, *Eleocharis spp.*, *Eriophorum angustifolium*, *Molinia caerulea*, *Trichophorum cespitosum*, *Anagallis tenella*, *Drosera spp.*, *Narthecium ossifragum*.
- Vegetation: undesirable species. Restore the frequency/cover of the following undesirable species to within acceptable levels and prevent changes in surface condition, soils, nutrient levels or hydrology which may encourage their spread: *Acaena spp.*, *Rhododendron ponticum*, *Gaultheria shallon*, *Fallopia japonica*, *Cirsium arvense*, *Digitalis purpurea*, *Epilobium spp. (excl. E. palustre)*, *Ranunculus repens*, *Senecio jacobaea*, *Rumex obtusifolius*, *Urtica dioica*.
- Functional connectivity with the wider landscape: Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Adaptation and resilience: Maintain or restore the H4010 feature's ability, and that of its supporting processes, to adapt or evolve to wider environmental change, either within or external to the Site.

Supporting processes

- Conservation measures: Maintain the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H4010 feature.
- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, at within typical values for the H4010 habitat.
- Air quality: Restore the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for the H4010 feature of the Site on the Air Pollution Information System.
- Hydrology: At a Site, unit and/or catchment level as necessary, maintain or restore the natural hydrological regime to provide the conditions necessary to sustain the H4010 feature within the Site.

Windsor Forest & Great Park Special Area of Conservation (SAC)

Windsor has the largest number of veteran oaks *Quercus spp.* in Britain (and possibly Europe) and Windsor Forest is listed as the most important Site in the UK for fauna associated with decaying timber on ancient trees (oak spp, beech, and other species of tree). It is of importance for its range and diversity of saproxylic invertebrates, including many rare species (e.g. the beetle *Lacon quercus*). The Special Area of Conservation is thought to support the largest of the known populations in the UK of European important Violet click beetle (*Limonicus violaceus*). It is also recognised as having rich fungal assemblages.

Qualifying features

Annex I habitats that are primary reason for section of this Site:

- 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 also *Taxus* in the shrublayer (*Quercion roboripetraeae* or *Illici-Fagenion*).

Annex II species present as a qualifying feature, but not a primary reason for Site selection:

- *Limonicus violaceus*: Violet click beetle.

Key vulnerabilities

The important habitats and species at Windsor Forest & Great Park Special Area of Conservation at risk from a variety of threats/pressures including tree diseases, invasive species and forest and woodland management which if not managed appropriately threaten the dry-oak dominated woodland. Air pollution from atmospheric nitrogen deposition also threatens the dry-oak dominated woodland as well the beech forests if a Site nitrogen action plan isn't established.

Conservation objectives

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

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

Non-qualifying habitats and species upon which the qualifying habitats and/or species depend

Old acidophilous oak woods with *Quercus robur* on sandy plains; Dry oak-dominated woodland

Extent and distribution of the feature

- Extent of the feature within the Site Maintain the total extent of the H9190 feature at 621.67 hectares.
- Spatial distribution of the feature within the Site Maintain the distribution and configuration of the H9190 feature, including where applicable its component vegetation types, across the Site.

Structure and function (including its typical species)

- Vegetation community composition: Ensure the component vegetation communities of the H9190 feature are referable to and characterised by the following National Vegetation Classification type: NVC type W10 *Quercus robur*, *Pteridium aquilinum* – *Rubus fruticosus* woodland.

Appendix A **Attributes of Habitats Sites considered in the HRA**

- Old growth: Maintain the extent and continuity of undisturbed, mature/old growth stands (typically comprising at least 20% of the feature at any one time). Maintain the extent and continuity of the assemblage of veteran and ancient trees.
- Open space: Maintain or restore where necessary areas of permanent/ temporary open space within the H9190 woodland feature, typically to cover between 10- 30% of area.
- Vegetation Structure -Dead wood: Maintain the continuity and abundance of standing or fallen dead and decaying wood, typically between 30 - 50 m³ per hectare of standing or fallen timber or 3-5 fallen trees >30cm per hectare, and >10 standing dead trees per hectare.
- Open space for ancient/ veteran tree trees: Maintain or restore where necessary a canopy of open grown native trees with free crowns over between 20-80% of each stand.
- Tree age class distribution: Maintain at least 4 age classes (well-established saplings with space to develop an open crown/ middle age/ mature/over-mature) spread across the average life expectancy of the commonest trees.
- Shrub layer: Maintain or restore where necessary an understorey of scrub or young growth covering 15 - 30% of the semi-natural woodland areas of the Site.
- Woodland edge: Maintain a graduated woodland edge into adjacent semi-natural open habitats, other woodland/ wood-pasture types or scrub.
- Adaptation and resilience: Maintain the resilience of the feature to climate change
- Browsing and grazing by herbivores: Maintain browsing/grazing to sufficient levels to allow tree seedlings and saplings the opportunity to exceed browse height, and which maintain the characteristic structure of the woodland feature in the areas of semi-natural woodland.
- Regeneration potential: Maintain the potential for sufficient natural regeneration of desirable trees and shrubs.
- Tree and shrub species composition: Maintain or restore where necessary a canopy and understorey of which 95% is composed of Site-native trees and shrubs in the areas of semi-natural and plantation woodland.
- Key structural, influential and/or distinctive species: Maintain the abundance of the species listed to enable each of them to be a viable

component of the Annex I habitat feature (referring to the areas of semi natural woodland):

- Trees and shrubs Beech (*Fagus sylvatica*), Pedunculate oak (*Quercus robur*), Hornbeam (*Carpinus betulus*), Silver birch (*Betula pendula*), Rowan (*Sorbus aucuparia*), Cherry (*Prunus avium*), Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*).
- Other plants Honeysuckle (*Lonicera periclymenum*), Male fern (*Dryopteris filix-mas*), Broad buckler-fern (*Dryopteris dilatata*), Pignut (*Conopodium majus*), Wood sorrel (*Oxalis acetosella*), Wood anemone (*Anemone nemoralis*), Bluebell (*Endymion non-scriptus*), Wood speedwell (*Veronica montana*), Primrose (*Primula vulgaris*), Hairy wood-rush (*Luzula Pilosa*), Black bryony (*Tamus communis*), Broad-leaved helleborine (*Epipactis helleborine*).
- Assemblages of specialised fungi.
- Assemblages of saproxylic invertebrates.
- Assemblages of epiphytic lichens.
- Assemblage of bats
- Invasive, non-native and/or introduced species: Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H9190 feature.
- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the H9190 habitat.
- Root zones of ancient trees: Maintain the soil structure within and around the root zones of the mature and ancient tree cohort in an un-compacted condition.

Supporting processes (on which the feature relies)

- Functional connectivity with wider landscape: Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Air quality: Restore as necessary the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.

- Hydrology: At a Site, unit and/or catchment level as necessary, maintain natural hydrological processes to provide the conditions necessary to sustain the H9190 feature within the Site.
- Illumination: Ensure artificial light is maintained to a level which is unlikely to affect natural phenological cycles and processes to the detriment of the feature and its typical species at this Site.

Atlantic acidophilous beech forests with Ilex and sometimes also *Taxus* in the shrub layer (*Quercion robori-petraeae* or *Ilici-Fagenion*); 'Beech forests on acid soils'

Extent and distribution of the feature

- Extent of the feature within the Site: Maintain the total extent of the H9120 feature at or above 272.69 hectares.
- Spatial distribution of the feature within the Site: Maintain the distribution and configuration of the H9120 feature, including where applicable its component vegetation types, across the Site.

Structure andf (including its typical species)

- Vegetation community composition: Ensure the component vegetation communities of the H9120 feature are referable to and characterised by the following National Vegetation Classification types: NVC W14 & NVC W15.
- Canopy cover: Maintain or restore where necessary a canopy of open grown native trees with free crowns over between 20-80% of each stand.
- Open space: Maintain or restore where necessary areas of permanent/ temporary open space within the woodland feature, typically to cover between 10-30% of woodland area.
- Old growth: Maintain the extent and the continuity of the assemblages of veteran and ancient trees.
- Dead and decaying wood: Maintain the continuity and abundance of standing and fallen dead and decaying wood, typically between 30 - 50 m³ per hectare of standing or fallen decaying wood or 3-5 fallen trees >30cm diameter per hectare, and >10 standing dead trees per hectare.

Appendix A Attributes of Habitats Sites considered in the HRA

- Ancient/ veteran trees: Restore the open space around at least 75% of ancient/veteran trees so that they are growing in open locations or with open halo around them.
- Tree age class distribution: Maintain at least 4 age classes (well-established saplings with space to develop an open crown/ middle age/ mature/over-mature) spread across the average life expectancy of the commonest trees.
- Shrub layer: Maintain or restore where necessary an understorey of shrubs and trees covering 15 - 30% of the semi-natural woodland areas of the Site.
- Woodland edge: Maintain or restore where practically achievable a graduated woodland edge into adjacent semi-natural open habitats, other woodland/ wood-pasture types or scrub.
- Adaptation and resilience: Maintain the resilience of the feature to climate change.
- Tree and shrub species composition: Maintain or restore where necessary a canopy and understorey of which 95% is composed of Site native trees and shrubs in the areas of semi-natural woodland and plantation on ancient woodland.
- Browsing and grazing by herbivores: Maintain browsing/grazing to sufficient levels to allow tree seedlings and saplings the opportunity to exceed browse height, and which maintain the characteristic structure of the woodland feature in the areas of semi-natural woodland.
- Regeneration potential: Maintain the potential for sufficient natural regeneration of desirable trees and shrubs.
- Key structural, influential and/or distinctive species: Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature (referring to the areas of seminatural woodland).
 - Trees and shrubs: Beech (*Fagus sylvatica*), Pedunculate oak (*Quercus robur*), Silver birch (*Betula pendula*), Hornbeam (*Carpinus betulus*), Rowan (*Sorbus aucuparia*), Cherry (*Prunus avium*), Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*), Bramble (*Rubus fruticosus*).
 - Other plants: Honeysuckle (*Lonicera periclymenum*), Male fern (*Dryopteris filix-mas*), Broad buckler-fern (*Dryopteris dilatata*), Pignut (*Conopodium majus*), Wood sorrel (*Oxalis acetosella*), Wood anemone

(*Anemone nemoralis*), Bluebell (*Endymion non-scriptus*), Wood speedwell (*Veronica montana*), Primrose (*Primula vulgaris*), Hairy wood-rush (*Luzula Pilosa*), Black bryony (*Tamus communis*), Broad-leaved helleborine (*Epipactis helleborine*).

- Assemblages of specialised fungi
- Assemblages of saproxylic invertebrates
- Assemblages of epiphytic lichens
- Assemblage of bats
- Invasive, non-native and/or introduced species: Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the feature.
- Soils, substrate and nutrient cycling Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, to within typical values for the habitat in the areas of seminatural woodland.
- Root zones of ancient trees Maintain the soil structure within and around the root zones of the mature and ancient tree cohort in an un-compacted condition.

Supporting processes (on which the features relies)

- Functional connectivity with wider landscape: Maintain the overall extent, quality and function of any supporting features within the local landscape which provide a critical functional connection with the Site.
- Hydrology: At a Site, unit and/or catchment level as necessary, maintain natural hydrological processes to provide the conditions necessary to sustain the semi-natural woodland feature within the Site.
- Air quality: Restore as necessary the concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Illumination: Ensure artificial light is maintained to a level which is unlikely to affect natural phenological cycles and processes to the detriment of the feature and its typical species at this Site.

Violet click beetle (*Limoniscus violaceus*)

Supporting processes (on which the feature and/or its supporting habitat relies)

Appendix A **Attributes of Habitats Sites considered in the HRA**

- Conservation measures: Maintain the management measures (either within and/or outside the Site boundary as appropriate) which are necessary to maintain the structure, functions and supporting processes associated with the Violet click beetle and/or its supporting habitats.
- Adaptation and resilience: Maintain the feature's ability, and that of its supporting habitat, to adapt or evolve to wider environmental change, either within or external to the Site.
- Air quality: Maintain or, where necessary, restore concentrations and deposition of air pollutants to at or below the Site-relevant Critical Load or Level values given for this feature of the Site on the Air Pollution Information System.
- Continuity of natural processes: Maintain continuity of natural processes through timber decay and nutrient recycling.

Supporting habitat: extent and distribution

- Extent of supporting habitat: Maintain the total extent of the habitat(s) which support the feature, which, as a precautionary approach, is the extent of woodland present at time of Special Area of Conservation classification.
- Distribution of supporting habitat: Maintain the distribution and continuity of the Violet click beetle's supporting habitat, including where applicable its component vegetation types and associated transitional vegetation types, across the Site.

Supporting Habitat: Structure/Function

- Soils, substrate and nutrient cycling: Maintain the properties of the underlying soil types, including structure, bulk density, total carbon, pH, soil nutrient status and fungal:bacterial ratio, within typical values for the supporting habitat.
- Abundance of standing decaying-wood: Maintain all large-diameter veteran and ancient trees where they do not pose a significant health and safety risk.
- Continuity of decaying-wood habitat: Ensure the continuous presence of future ancient tree cohorts for long-term survival of the species.

Appendix B

Screening of policies

Policy WLWP 1 –Safeguarding and optimising waste site network

Activities likely to result as a consequence of the policy

B.1 New waste management facilities - This policy safeguards existing waste sites and associated rail depots/wharves, enabling their continued waste-related use. It also allows redevelopment of safeguarded sites for waste uses where capacity is retained or improved, or for non-waste uses where compensatory capacity is provided elsewhere.

Likely effect if policy is implemented

B.2 Change in vehicle movements: air pollution (vehicle emissions).

B.3 Change in water demand/discharge: water quantity/quality.

B.4 Construction / operational activities: air pollution (dust), non-physical disturbance, direct pollution.

Will the policy have likely significant effects and therefore require Appropriate Assessment?

B.5 Yes.

B.6 Changes in vehicle emissions, although they may not be significant at an individual site, could contribute to significant increases in traffic within 200m of a Habitats Site, in combination with other projects/plans.

B.7 Depending on the location of safeguarded waste sites (i.e. potential locations for development under this policy), development coming forward under this policy could also have location-based impacts such as direct pollution.

Policy WLWP 2 – Provision of additional waste management capacity

Activities likely to result as a consequence of the policy

B.8 New waste management facilities - This policy allows for some additional new capacity in locations both within and outside of existing (safeguarded) waste sites.

Likely effect if policy is implemented

B.9 Development outside existing waste sites - physical damage/loss of habitat.

B.10 Changes in vehicle movements: air pollution (vehicle emissions).

B.11 Change in water demand/discharge: water quantity/quality.

B.12 Construction / operational activities: air pollution (dust), non-physical disturbance, direct pollution.

Will the policy have likely significant effects and therefore require Appropriate Assessment?

B.13 Yes.

B.14 Changes in vehicle emissions, although they may not be significant at an individual site, could contribute to significant increases in traffic within 200m of a Habitats Site, in combination with other projects/plans.

B.15 Depending on the location of development, new waste development coming forward under this policy could also have location-based impacts such as direct pollution or loss of functionally linked habitats.

Policy WLWP 3 – Residual waste management & energy recovery

Activities likely to result as a consequence of the policy

B.16 New waste management facilities - This policy permits the development of residual waste treatment facilities, including: energy from waste plants and other recovery operations, associated infrastructure for energy recovery (heat networks, fuel supply systems, carbon capture), and the management and transport of residues off-site for further recovery or disposal.

Likely effect if policy is implemented

B.17 Development outside existing waste sites: physical damage/loss of habitat.

B.18 Changes in vehicle movements: air pollution (vehicle emissions and industrial emissions).

B.19 Change in water demand/discharge: water quantity/quality.

B.20 Construction / operational activities: air pollution (dust), non-physical disturbance, direct pollution.

Will the policy have likely significant effects and therefore require Appropriate Assessment?

B.21 Yes.

B.22 Changes in vehicle emissions, although they may not be significant at an individual site, could contribute to significant increases in traffic within 200m of a Habitats Site, in combination with other projects/plans. Energy from waste development or other activities involving the incineration of waste could also contribute to industrial emissions.

B.23 Depending on the location of development, new waste development coming forward under this policy could also have location-based impacts such as direct pollution or loss of functionally linked habitats.

Policy WLWP 4 – Ensuring high quality and resilient waste facilities

Activities likely to result as a consequence of the policy

B.24 None – this policy sets out environmental protection measures that apply to waste development arising from other policies in the plan, and will not itself result in new development.

Likely effect if policy is implemented

B.25 None.

Will the policy have likely significant effects and therefore require Appropriate Assessment?

B.26 No, but mitigation within this policy will be taken into account in the Appropriate Assessment of impacts arising from the other policies.

Policy WLWP 5 – Recovery and disposal of waste to land

Activities likely to result as a consequence of the policy

B.27 Permits the deposit of inert or non-inert waste in limited circumstances such as the deposit of inert waste for beneficial purposes (e.g. restoration or engineering works, and reworking of historic landfill sites) or where there is an overriding need for additional disposal capacity for inert/non-inert waste.

Likely effect if policy is implemented

B.28 Development outside existing waste sites - physical damage/loss of habitat.

B.29 Changes in vehicle movements - air pollution (vehicle emissions).

B.30 Change in water demand/discharge: water quantity/quality.

B.31 Construction / operational activities: air pollution (dust), non-physical disturbance, direct pollution, pests/vermin.

Will the policy have likely significant effects and therefore require Appropriate Assessment?

B.32 Yes.

B.33 Changes in vehicle emissions, although they may not be significant at an individual site, could contribute to significant increases in traffic within 200m of a Habitats Site, in combination with other projects/plans.

B.34 Depending on the location of development, new waste development coming forward under this policy could also have location-based impacts such as direct pollution or loss of functionally linked habitats.

Policy WLWP 6 – Circular Economy and resource efficiency

Activities likely to result as a consequence of the policy

B.35 None – this policy sets out the principles of the Circular Economy and how they will be integrated into waste management development proposals and will not itself result in new development.

Likely effect if policy is implemented

B.36 None.

Will the policy have likely significant effects and therefore require Appropriate Assessment?

B.37 No.

References

- 1 West London Waste Plan (2015) West London Waste Plan [online]. Available at: https://www.london.gov.uk/sites/default/files/osd49_west_london_waste_plan_adopted_plan_final_version_july_2015.pdf
- 2 West London Waste Plan (2015). West London Waste Plan [online]. Available at: <https://www.wlwp.net/>
- 3 The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007 (2007) (SI No. 2007/1843). TSO (The Stationery Office), London.
- 4 The Conservation of Habitats and Species Regulations 2017 (2017) (SI No. 2017/1012), as amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (2019) (SI 2019/579).
- 5 The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was designated. [Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government \(2016, updated 2021\) Planning practice guidance: The National Planning Policy Framework and relevant planning practice guidance \[online\]](#)
- 6 [Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government \(2019\) Appropriate assessment: Guidance on the use of Habitats Regulations Assessment](#)
- 7 The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007 (2007) (SI No. 2007/1843). TSO (The Stationery Office), London.
- 8 Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive').
- 9 Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds (the 'Birds Directive').
- 10 [European Commission \(2008\) Natura 2000 \[online\]](#) – The network of protected areas identified by the EU.
- 11 [Department for Environment, Food and Rural Affairs \(2021\) Changes to the Habitats Regulations 2017 \[online\]](#)

- 12 [Department for Environment, Food and Rural Affairs, Natural England, Welsh Government and Natural Resources Wales \(2021\) Habitats regulations assessments: protecting a European site \[online\]](#)
- 13 [Ministry of Housing, Communities and Local Government \(2021\) National Planning Policy Framework \[pdf\] \(Paragraph 176\)](#)
- 14 [David Tyldesley & Associates \(2021\) The HRA Handbook \(Section A3\) \[online\]](#) – A subscription based online guidance document.
- 15 [Department for Environment, Food and Rural Affairs, Natural England, Welsh Government and Natural Resources Wales \(2021\) Habitats regulations assessments: protecting a European site \[online\]](#)
- 16 Regulation 5 of the Habitats Regulations 2017.
- 17 [Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities and Local Government \(2019\) Appropriate assessment: Guidance on the use of Habitats Regulations Assessment \[online\]](#)
- 18 European Commission (2001) Assessment of plans and projects significantly affecting European Sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
- 19 [David Tyldesley & Associates \(2021\) The HRA Handbook \(Section A3\) \[online\]](#) – A subscription based online guidance document.
- 20 [Natural England \(undated\) Conservation Objectives for European Sites \[online\]](#)
- 21 In line with the CJEU judgment in Case C-323/17 People Over Wind v Coillte Teoranta, mitigation must only be taken into consideration at this stage and not during Stage 1: HRA Screening.
- 22 In addition to Habitats Site citations and conservation objectives, key information sources for understanding factors contributing to the integrity of Habitats Sites include (where available) conservation objectives supplementary advice and Site Improvement Plans prepared by Natural England. [Natural England \(Undated\) Site Improvement Plans by region \[online\]](#)
- 23 Available via the following link:
<http://onlinelibrary.wiley.com/doi/10.1111/j.1469-7998.2006.00282.x/abstract>

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- 24 Available via the following link:
<https://www.royalparks.org.uk/parks/richmond-park/richmond-park-attractions/wildlife/stag-beetles>
- 25 <https://www.wildlifetrusts.org/wildlife-explorer/invertebrates/beetles/violet-click-beetle>
- 26 Radio-telemetric monitoring of dispersing stag beetles: implications for conservation: <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-7998.2006.00282.x/abstract>
- 27 Gloucestershire Wildlife Trust, violet click beetle:
<https://www.gloucestershirewildlifetrust.co.uk/wildlife-explorer/invertebrates/beetles/violet-click-beetle>
- 28 <https://www.gov.uk/guidance/great-crested-newts-surveys-and-mitigation-for-development-projects>
- 29 Bat Conservation Trust information on Bechstein's bats
<https://cdn.bats.org.uk/uploads/pdf/Bechsteins-bat-species-account.pdf>
- 30 [Obtained from JNCC](#) website.
- 31 [Obtained from the Natural England website](#)
- 32 [Obtained from Natural England website](#)
- 33 European Court of Justice in Case C-127/02 Landelijke Vereniging tot Behoud van de Waddenzee.
- 34 Advocate General's Opinion to CJEU in Case C-258/11 Sweetman and others v An Bord Pleanala 22nd Nov 2012.
- 35 [David Tyldesley & Associates \(2021\) The HRA Handbook \(Section A3\) \[online\]](#) – A subscription based online guidance document.
- 36 Environment Agency and Department for Environment, Food & Rural Affairs guidance (2025) Air emissions risk assessment for your environmental permit. Available at: <https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit#screening-for-protected-conservation-areas>
- 37 JNCC (2021) Guidance on decision-making thresholds for air pollution. Available at: <https://hub.jncc.gov.uk/assets/6cce4f2e-e481-4ec2-b369-2b4026c88447>

- 38** DMRB guidance LA105:
<https://www.standardsforhighways.co.uk/search/10191621-07df-44a3-892e-c1d5c7a28d90>
- 39** Wealden District Council v. (1) Secretary of State for Communities and Local Government; (2) Lewes District Council; (3) South Downs National Park Authority and Natural England.
- 40** Affinity Water, 2024. Water Resources Management Plan.
<https://affinitywater.uk.engagementhq.com/wrmp>
- 41** JNCC standard data forms for SACs, <https://jncc.gov.uk/our-work/special-areas-of-conservation>
- 42** JNCC standard data forms for SPAs, <https://jncc.gov.uk/our-work/special-protection-areas>
- 43** JNCC information sheets for Ramsar sites, <https://jncc.gov.uk/our-work/ramsar-sites/>
- 44** Natural England Site Improvement Plans,
<https://publications.naturalengland.org.uk/category/6149691318206464>
- 45** Natural England Conservation Objectives and Supplementary Advice for SACs and SPAs, available within designated sites details,
<https://designatedsites.naturalengland.org.uk/>
- 46** British Trust for Ornithology (2023). Welcome to BirdFacts. Available at:
<https://www.bto.org/understanding-birds/birdfacts>

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