Habitats Regulations Assessment of the Cotswold Local Plan Full Review

High Level Screening of Development Strategy Options

Cotswold District Council

Final report

Prepared by LUC

October 2025

Version	Status	Prepared	Checked	Approved	Date
1	Draft report	K Sydney	D Green	D Green	02.10.2025
2	Final report (minor changes since draft)	K Sydney	K Sydney	K Sydney	08.10.2025
3	Updated final report	K Sydney	K Sydney	D Green	23.10.2025

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Introduction

1.1 LUC has been commissioned to carry out a Habitats Regulations Assessment (HRA) of the Cotswold Local Plan Full Review (LPFR).

1.2 The purpose of the HRA is to determine whether the LPFR policies and site allocations 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

1.3 This HRA report contains high level screening of the development strategy options being considered for the LPFR, which will be submitted for consultation (Regulation 18) alongside the LPFR development strategy options. As the LPFR develops, further iterations of this report will be produced which, where required, will include further assessment.

Context of the Local Plan Full Review

1.4 The current Local Plan for Cotswold District was adopted in 2018 and covers the period 2011 to 2031.

1.5 In 2020, Cotswold District Council began work on a Partial Update to the Local Plan, with consultation on the Local Plan Partial Update (LPPU) 'Issues and Options' (Reg.18) taking place in 2022.

1.6 In early 2024, the Council consulted on LPFR development strategy, partial update to policies, and an 'initial ideas' document.

1.7 The Council is now proceeding with a full review of the Local Plan. The next consultation on the LPFR will be a Reg.18 consultation on the development

strategy options, in autumn 2025. This HRA assesses the development strategy options and will be consulted on alongside the emerging Local Plan, as part of the Reg.18 consultation.

Previous HRA work

1.8 LUC prepared an HRA Scoping Report for the LPPU in 2022, to accompany the Issues and Options consultation. Natural England broadly agreed with the Habitats Sites and impact pathways scoped in, and provided advice on additional issues to pick up in later iterations of the HRA (see Appendix B).

1.9 In December 2023, LUC prepared a Scoping Report covering letter to accompany the consultation on the development needs up to 2041 and options for how these may be delivered, and partial update to policies. The letter acknowledged differences between the LPPU and (at the time parallel) LPFR (e.g. extension of plan period) and provided an update on work undertaken since the HRA Scoping Report was prepared (e.g. to recreation mitigation strategies for some Habitats Sites). The covering letter stated that the proposed HRA methodology would remain valid for the LPFR.

The requirement to undertake Habitats Regulations Assessment of development plans

1.10 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** 1**]**; which is now known as the Habitats Regulations 2017 (as amended) **[See reference** 2**]**. When preparing the LPFR, Cotswold District Council therefore required by law to carry out an HRA. The Council 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 Council as the 'competent authority'. It will consider this work and would usually only progress the LPFR if they consider that the LPFR will not adversely affect the integrity **[See reference 3]** 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 4]**.

1.11 HRA refers to the assessment of the potential effects of a development plan on one or more sites 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 5]**. 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 6]**) 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 7]**), and for regularly occurring migratory species not listed in Annex I.

1.12 The term 'European Sites' was previously commonly used in HRA to refer to 'Natura 2000' sites **[See reference 8]** and Ramsar sites (international designated under the Ramsar Convention). However, a Government Policy

Paper **[See reference** 9**]** 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.

1.13 Although Ramsar sites do not form part of the new National Site Network, Government guidance **[See reference** 10**]** 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."

1.14 Furthermore, the NPPF **[See reference** 11**]** and practice guidance **[See reference** 12**]** 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.

1.15 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** 13**]** requires an HRA.

1.16 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

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

- Chapter 2 presents LPFR development strategy options that are assessed in this report.
- Chapter 3 describes the HRA methodology, which takes into account the requirements of the Habitats Regulations and relevant case law.
- Chapter 4 identifies the Habitats Sites requiring consideration in the HRA.
- Chapter 5 sets out the high level Screening of the development strategy options.
- Chapter 6 summarises the HRA conclusions and describes the next steps to be undertaken.

1.18 The following appendices supplement the information provided in the report chapters:

- Appendix A: details of the Habitats Sites considered in this HRA.
- Appendix B: record of consultation and LUC responses.

Chapter 2

LPFR development strategy options

2.1 As part of the emerging LPFR, Cotswold District Council has prepared a Development Strategy Options Topic Paper, which has been informed by a call for sites and broad locations study.

2.2 Seven development strategy options are being considered and will be subject to consultation:

- Scenario 1 (c.7,800 homes): Allocate sites in Principal Settlements, Non-Principal Settlements and Village Clusters, and support Rural Exception Sites in Rural Settlements.
- Scenario 2 (c.8,200 homes): Allocate sites in Principal Settlements, Non-Principal Settlements, Village Clusters and Rural Settlements.
- Scenario 3 (c.9,400 homes): Main Service Centre focus.
- Scenario 4 (c.9,200 homes): Focus growth at transport nodes.
- Preferred option - Scenario 5 (c.14,600 homes): Allocate sites in Principal Settlements, Non-Principal Settlements and Village Clusters. Support Rural Exceptions Sites in Rural Settlements. Create new settlement(s) and/or strategic extensions to existing settlement(s).

2.3 This includes two that have been discounted but are being assessed as reasonable alternatives in the Sustainability Appraisal. These are not assessed in the HRA as they have been discounted, and HRA is not required to assess reasonable alternatives:

- Scenario 6 (c.19,000 homes): As for Scenario 5, plus additional growth within Cotswolds National Landscape (discounted on landscape grounds).
- Scenario 7 (c.15,800 homes): Maximise growth across the district but exclude growth within the Cotswolds National Landscape (discounted in the SHELAA).

2.4 The locations of development for Scenarios 1-5 (Principal Settlements, Non-Principal Settlements, and new settlements / urban extensions) are summarised in Table 2.1 and shown on Figure 2.1. New Settlements / urban extensions outside of Principal / Non-Principal Settlements are shown as 'other' on Figure 2.1

Table 2.1: Summary of development locations for Scenarios 1-5

Settlement (P= Principal; NP= Non Principal)	1	2	3	4	5
Andoversford (P)	•	•		•	•
Blockley (P)	•	•			•
Bourton-on-the-Water (P)	•	•	•	•	•
Chipping Campden (P)	•	•	•		•
Cirencester (P)	•	•	•	•	•
Fairford (P)	•	•	•		•
Kemble (P)	•	•		•	•
Lechlade (P)	•	•			•
Mickleton (P)	•	•			•
Moreton-in-Marsh (P)	•	•	•	•	•
Northleach (P)	•	•		•	•
Siddington (P)	•	•			•
South Cerney (P)	•	•			•
Stow-on-the-Wold (P)	•	•	•	•	•
Tetbury (P)	•	•	•		•
Upper Rissington (P)	•	•			•
Avening (NP)	•	•			•
Bibury (NP)	•	•			•

Settlement (P= Principal; NP= Non Principal)	1	2	3	4	5
Bledington (NP)	•	•			•
Bourton-on-the-Hill (NP)	•	•			•
Broadwell (NP)	•	•			•
Down Ampney (NP)	•	•		•	•
Longborough (NP)	•	•		•	•
Meysey Hampton (NP)		•			•
North Cerney (NP)	•	•			•
Poulton (NP)	•	•			•
Preston (NP)	•	•		•	•
Willersey (NP)	•	•			•
Cluster of: Coln St Aldwyns, Hatherop and Quenington (NP)	•	•			•
Rural settlements / windfall	•	•	•	•	•
New settlements or extensions (see below)					•

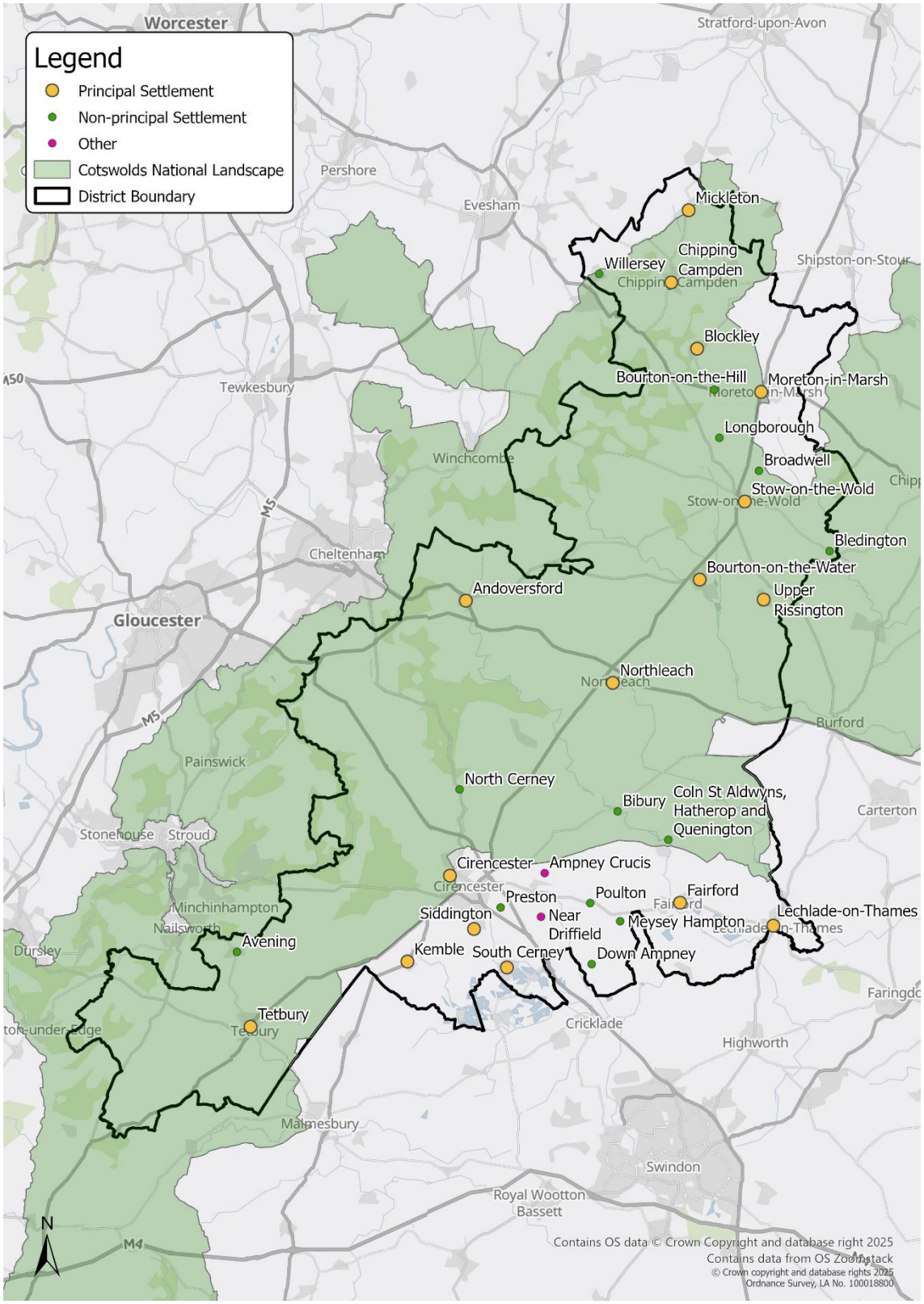
2.5 Scenario 5 also involves the development of one or more new settlements or strategic extensions to villages or towns (500+ homes and other uses). The Council has identified eight locations in which this scale of development could occur:

- Land north of Ampney Crucis (potential for around 660 homes, all delivered by 2043).
- Steadings southern extension, Cirencester (potential for around 1,290 homes, around 400 of which would be delivered by 2043).
- Land at Driffield (potential for around 2,100 homes, around 840 of which would be delivered by 2043).
- Land north-east of Fairford (potential for around 1,400 homes, around 780 of which would be delivered by 2043).

- Land south-west of Kemble (potential for around 1,070 homes, around 590 of which would be delivered by 2043).
- Land north, east and south of Moreton-in-Marsh (potential for around 3,970 homes, around 1,710 of which would be delivered by 2043).
- Land south of Preston (potential for around 2,510 homes, around 960 of which would be delivered by 2043).
- Land surrounding Siddington (potential for around 1,100 homes, around 880 of which would be delivered by 2043).

2.6 This Screening report provides a high level assessment of Scenarios 1-5 as the preferred option and alternatives being consulted upon.

Figure 2.1: Potential development locations assessed in this HRA



Chapter 3

Approach to HRA

3.1 This chapter describes the approach that will be taken to the HRA of the LPFR 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 Council, 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** 14**]** 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** 15**]** **[See reference** 16**]** **[See reference** 17**]**. 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** 18**]**.
- 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** 19**]**.

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** 20**]**.
- 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 LPFR 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 LPFR 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 LPFR will be 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 At the next HRA stage, LPFR policy and site allocation will be considered, alone and in-combination (e.g. with plans or projects from neighbouring authorities), to identify likely significant effects. At this stage, however, the high level screening of the development strategy options involves a comparative appraisal of the options to identify likely impact pathways and determine which options would be better/worse for each impact type, rather than confirming 'likely significant effects' – this will be undertaken once the site allocations and policies have been confirmed.

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

3.33 Screening assessment considers the potential for likely significant effects resulting from each policy and site allocation, 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 been 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 LPFR is likely to have a significant effect, these are set out in the HRA report.

3.35 Chapter 4 sets out a high level screening of the LPFR development strategy options.

3.36 A full screening of the LPFR's policies and site allocations, following the methodology in this chapter, will be undertaken at the next stage of the HRA, once they are available.

Potential impacts of the LPFR on Habitats Sites

3.37 In our experience of HRA of Local Plans, and based on previous statutory consultee comments on HRAs undertaken elsewhere, the type of development (and related activities) that are permitted by Local Plans have the potential to result in the following broad types of impacts that could affect Habitats Sites:

- **Physical loss of or damage to habitats** e.g. from development or activities within the Habitats Sites themselves or at functionally-linked sites;
- **Non-physical disturbance** e.g. noise, vibration or light from construction or development in close proximity to sensitive species;
- **Non-toxic contamination** e.g. from creation of dust which can smother terrestrial habitats, affect turbidity of aquatic habitats and contribute to nutrient enrichment;
- **Recreation pressure** e.g. dog walking, cycling, trampling, littering, fire, or predation by pets;

- **Air pollution** e.g. from changes in traffic volumes on roads close to sensitive habitats; and
- **Changes in water quality or quanti**ty e.g. changes in flow caused by abstraction/discharge, accidental pollution, or increase nutrient loading from sewage treatment.

3.1 For each of the LPFR policies, consideration is given to the type of development or activity 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 LPFR and possible impact pathways to Habitats Sites is provided in **Chapter 4**.

Identification of Habitats Sites which may be affected by the LPFR

3.3 To begin the search of Habitats Sites that could potentially be affected by the LPFR, 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 LPFR area boundary has been used as a starting point to identify Habitats Sites that could be affected by impacts relating to the LPFR. 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.

Functionally linked habitats

3.5 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.

3.6 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. 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.

3.7 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 21]**, and Natural England's Site Improvement Plans **[See reference 22]**. Natural England's conservation objectives **[See reference 23]** and any supplementary advice on conserving and restoring site features for the SPAs and SACs have also been reviewed.

Assessment of 'likely significant effect'

3.8 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 LPFR. The assessment has been undertaken to identify which policies would be likely to have a significant effect on Habitats Sites in LPFR area (+15km). This assessment will need to be repeated with each HRA iteration of the LPFR.

3.9 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 LPFR would have a significant effect on the integrity of a Habitats Site.

Interpretation of 'likely significant effect'

3.10 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.

3.11 In the Waddenzee case **[See reference** 24**]**, 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).

3.12 An opinion delivered to the Court of Justice of the European Union **[See reference** 25**]** 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."

3.13 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'.

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

In-combination effects

3.15 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 Habitats 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 LPFR may combine with other plans or projects to give rise to significant effects in-combination.

3.16 If the HRA Screening determines that the LPFR 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 LPFR to produce a significant effect. If so, this likely significant effect arising from the LPFR 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 LPFR 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** 26**]**.

3.17 If impact pathways are found to exist for a particular type of effect but it is not likely to be significant from the LPFR 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 (e.g. housing or employment) 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.

3.18 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 LPFR are also identified and reviewed.

3.19 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.

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

Appropriate Assessment methodology

3.21 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

3.22 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.

3.23 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.

3.24 A conclusion needs to be reached as to whether or not the LPFR 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 LPFR 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.

3.25 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.

3.26 For each Habitats Site where HRA Screening identified an uncertain or likely significant effect in relation to the LPFR, 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

Relevant Habitats Sites

4.1 This chapter summarises information about Habitats Sites that are:

- within 15km of the Cotswold district boundary;
- any sites beyond that distance with connectivity to the plan area (for example via river systems); and
- any sites for which functionally linked habitats (or land; FLL) may be relevant.

Habitats Sites within or linked to the plan area

4.2 The following Habitats Sites are within the plan area or within 15km of it (Figure 4.1), and are therefore scoped in to the HRA:

- Cotswold Beechwoods SAC – partially within plan area;
- North Meadow and Clattinger Farm SAC – adjacent to south of plan area;
- Rodborough Common SAC – 2.7km west;
- Dixton Wood SAC – 7.1km west;
- Bredon Hill SAC – 10.1km west; and
- Severn Estuary SAC, SPA & Ramsar – 10.4km west.

4.3 The following Habitats Site is beyond 15km from the Plan area but is hydrologically connected via the River Evenlode and River Thames:

- Oxford Meadows SAC – 23.9km east.

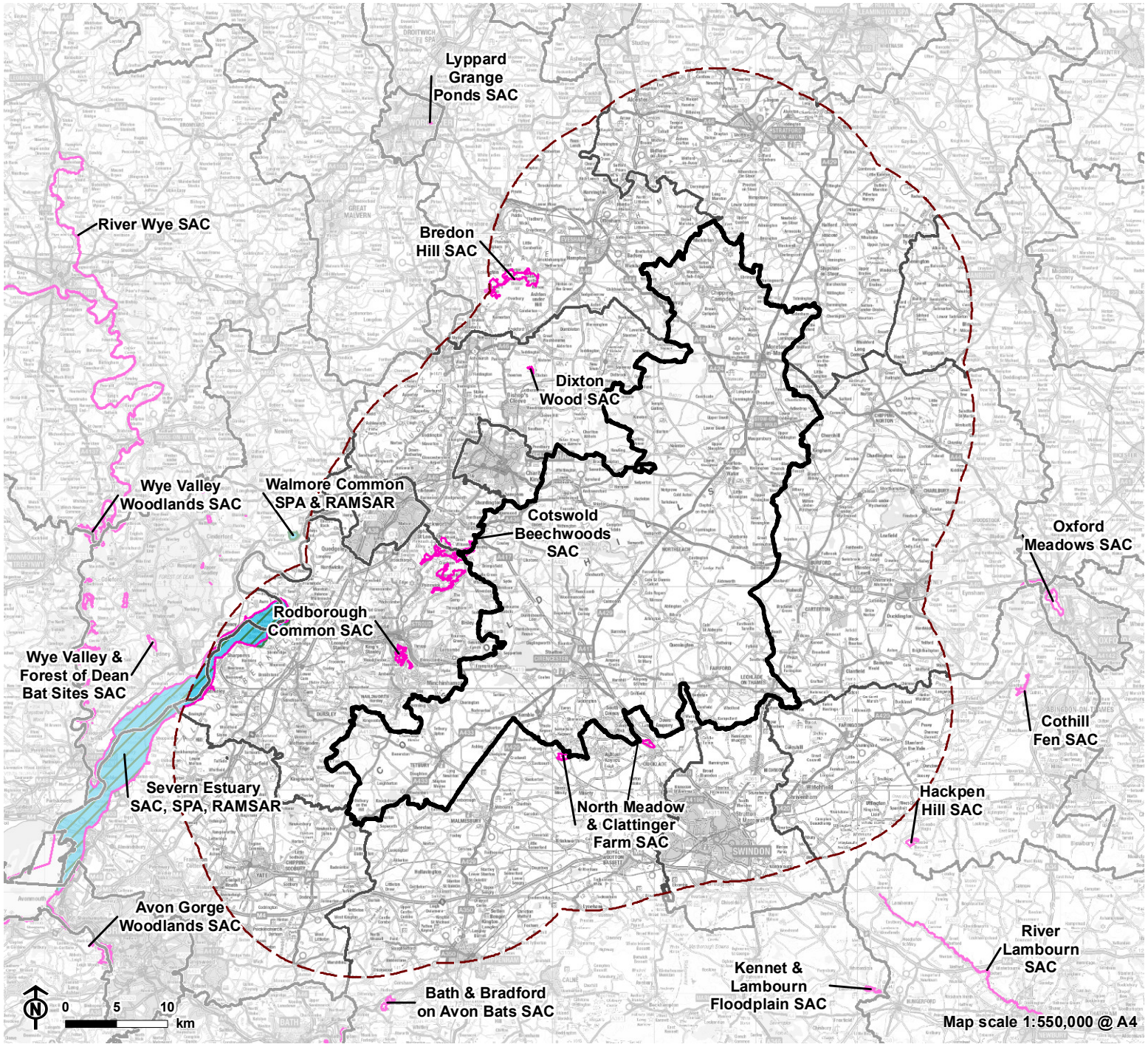


Figure 4.1: Location of Habitats Sites in relation to the LPFR area

- Cotswold District boundary
- 15km from Cotswold District boundary
- Surrounding Local Authorities

Habitat Sites

- Special Areas of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar

CB:RW EB:Willshear_R LUC 11703_FIGA_1_r1_EuropeanSitesWithin15kmCotswoldDistrict_A4L 16/11/2021
Source: OS, NE, LUC

Functionally linked habitats

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

- Dixton Wood SAC: Violet click beetle;
- Bredon Hill SAC: Violet click beetle;
- Severn Estuary:
  - SAC: Sea lamprey, River lamprey, Twaite shad;
  - SPA: Gadwall, Greater white-fronted goose, Dunlin, Bewick's swan, Common shelduck, Common redshank, waterbird assemblage;
  - Ramsar: Gadwall, Greater white-fronted goose, Dunlin, Bewick's swan, Common shelduck, Common redshank; Atlantic salmon, sea trout, sea lamprey, river lamprey, allis shad, twaite shad and eel.

4.5 Further information on the potential for functionally linked habitats (also known as functionally linked land; FLL) associated with the species to be impacted by the Local Plan is set out below. In summary, FLL only needs to be considered in relation to birds of the Severn Estuary SPA/Ramsar and migratory fish of Severn Estuary SAC/Ramsar.

Invertebrates

4.6 Dixton Wood and Bredon Hill SACs are designated for violet click-beetle *Limoniscus violaceus*. Habitats located outside of these Habitats Sites may also contribute to maintaining the population of these species.

4.7 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** 27**]**

and the dispersal abilities of this species is considered to be limited **[See reference** 28**]**. 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** 29**]**. Stag beetles are likely to travel further than violet click beetles, which are likely to remain in the same tree all their lives; therefore, applying the same distance to violet click beetle would be unnecessarily precautionary; for violet click beetle, a distance of 500m is considered sufficient.

4.8 Given the distance of these SACs from the Plan area (>7km), FLL relating to invertebrates does not need to be considered further in this HRA.

Birds

4.9 Severn Estuary SPA is designated for non-breeding bewick's swan *Cygnus columbianus bewickii*, common shelduck *Tadorna Tadorna*, gadwall *Anas strepera*, dunlin *Calidris alpina alpina*, common redshank *Tringa tetanus*, and greater white-fronted goose *Anser albifrons albifrons*. The Severn Estuary Ramsar site is designated for its assemblages of international importance which include: bewick's swan *Cygnus columbianus bewickii*, common shelduck *Tadorna Tadorna*, gadwall *Anas strepera*, dunlin *Calidris alpina alpina*, common redshank *Tringa tetanus*, and greater white-fronted goose *Anser albifrons albifrons*.

4.10 The habitat preferences for qualifying bird species of Severn Estuary SPA and Ramsar includes farmland, grassland, lakes, ponds, wetlands and rivers. Therefore, FLL for qualifying bird species of Severn Estuary SPA and Ramsar is likely to comprise these habitats.

4.11 To identify habitats used by birds from the Severn Estuary designated sites, Natural England has commissioned studies to identify land with proven or possible functional linkages to the SPA. These studies, by Link Ecology, have been undertaken in phases, for different areas of the estuary.

4.12 Phase 5 of the study (Gloucestershire and Worcestershire) **[See reference 30]** confirmed that a number of the qualifying bird species of the Severn Estuary SPA/Ramsar travel away from the designated site and makes use of habitats some distance from the SPA/Ramsar site in Gloucestershire and Worcestershire for grazing/roosting. Cotswold district is outside the core area of the study; however, Cotswold Lakes (formerly known as *Cotswold Water Park* and which are designated as the Cotswold Water Park Site of Special Scientific Interest that includes the lakes around South Cerney, Fairford and Lechlade), in particular, are identified as locations in which the species counts meet or exceed 1% (i.e. a significant proportion) of the SPA population for one or more species; although some species are more widespread across the district. The presence of these species in Cotswold District does not prove that the individuals originated from the SPA/Ramsar; however, the study states that there is likely to be connectivity with Cotswold Lakes and recommends that a separate review of potential functional linkage to Cotswold Lakes is carried out.

4.13 Given the likely functional linkage between Severn Estuary SPA and the Cotswold Lakes within the District, Severn Estuary SPA and Ramsar have been scoped in for further assessment to determine whether the plan will result in likely significant effects on the qualifying bird species as a result of the loss of FLL.

Fish

4.14 The Severn Estuary SAC and Ramsar is designated for Atlantic salmon *Salmo salar*, sea trout *Salmon trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *Alosa fallax* and eel *Anguilla Anguilla*.

4.15 All of these species are migratory and therefore have the potential to be dependent upon watercourses located outside the boundaries of the SAC and Ramsar but with functional hydrological connectivity.

4.16 The Severn Estuary is a key migration route to their spawning grounds in the many tributaries that flow into the estuary. Salmon, river lamprey, twaite shad, allis shad, sea trout, eel, and sea lamprey are migratory and therefore have the potential to be dependent upon watercourses located outside the boundaries of the SAC/Ramsar but with functional hydrological connectivity. Brook lamprey and bullhead are reliant on a mosaic of aquatic habitats, potentially including areas outside of the relevant SAC/Ramsar boundaries.

4.17 Significant functionally linked habitats are likely to be larger tributaries of the Severn, as well as smaller ditches and rhines near to the Severn Estuary SAC/Ramsar.

4.18 The River Frome (near Stroud) forms part of the boundary of Cotswold District, and the upper reaches of River Chelt (near Cheltenham) extend into the Plan area. Both rivers flow into the Severn, which means that the Severn Estuary SAC and Ramsar is hydrologically connected to the Plan area. The potential for effects on FLL associated with fish from the Severn Estuary SAC / Ramsar therefore require further assessment.

Chapter 5

Screening of development strategy options

5.1 This section sets out the assumptions applied to the screening of impacts, and provides a comparative high level screening of the development strategy options.

Physical loss of habitat

5.2 Any development resulting from the LPFR would take place within the District. Therefore, only Habitats Sites within the District's boundary could be affected through physical damage or loss of habitat from within the Habitats Site's boundaries. Only Cotswold Beechwoods SAC and North Meadow & Clattinger Farm SAC are within or immediately adjacent to the District boundary and therefore have the potential to be affected by physical damage and/or loss from development, directly.

5.3 Habitat loss from development in areas outside of the Habitats Site boundaries may also result where development occurs within or immediately adjacent to potential FLL; ie rivers, lakes or adjacent habitats used by birds or fish from the Severn Estuary SAC, SPA or Ramsar.

5.4 A small part of Cotswolds Beechwoods SAC is within the western edge of the district, near Birdlip. North Meadow and Clattinger Farm SAC is adjacent to the district boundary in the south, near to Somerford Keynes and Cerney Wick.

5.5 Lakes and water courses near to Somerford Keynes, Cerney Wick, Fairford and Lechlade (Cotswold Water Park SSSE), may be used by birds from Severn Estuary SPA/Ramsar. Potential FLL used by fish of Severn Estuary

SAC/Ramsar is also present along the River Frome, which largely follows the district boundary, from near Birdlip, to west of Frampton Marshall; although the river also passes through part of the district, at Edgeworth. Fish from the SAC/Ramsar may also use habitats within the River Chelt, which links Andoversford to Cheltenham.

5.6 There are no Principal Settlements, Non-Principal Settlements or strategic extensions / new towns near to the SACs; however, development at Andoversford or South Cerney (both Principal Settlements) could occur on or adjacent to FLL used by fish/birds. Development strategy options incorporating development in these two locations could therefore impact upon FLL.

5.7 All of the development strategy options also allow for some rural and/or windfall development that could in theory be located within or immediately adjacent to Cotswold Beechwoods SAC or North Meadow and Clattinger Farm SAC, or FLL used by birds/fish from Severn Estuary SAC/SPA/Ramsar.

5.8 Comparison of development strategy options:

- Scenario 1: could result in loss of habitat to SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) or South Cerney (birds from Severn Estuary SPA/Ramsar) Principal Settlements.
- Scenario 2: could result in loss of habitat to SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) or South Cerney (birds from Severn Estuary SPA/Ramsar) Principal Settlements.
- Scenario 3: could result in loss of habitat to SACs or FLL via rural development/windfall (both SACs & FLL).
- Scenario 4: could result in loss of habitat to SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) Principal Settlement.
- Scenario 5: could result in loss of habitat to SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish

from Severn Estuary SAC/Ramsar) or South Cerney (birds from Severn Estuary SPA/Ramsar) Principal Settlements.

Non-physical disturbance

5.9 Noise and vibration effects, e.g. during the construction of new housing or other development, 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 such effects may also impact upon some mammals and fish species. Artificial lighting at night (e.g. from street lamps, flood lighting and security lights) is most likely to affect bat populations and some nocturnal bird species, and therefore have an adverse effect on the integrity of Habitats Sites where bats or nocturnal birds are a qualifying feature.

5.10 It has been assumed (on a precautionary basis and based on our experience of previous HRAs and consultation 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.

5.11 All Habitats Sites either do not support species likely to be significantly affected as a result of noise, vibration and light pollution and/or are located over 500m from the Plan area at the closest point.

5.12 However, the following qualifying species may use functionally linked habitat within the Plan area:

- Bird species of Severn Estuary SPA and Ramsar.
- Migratory fish species of Severn Estuary SAC and Ramsar.

5.13 Migratory fish species are unlikely to be significantly affected as a result of noise, vibration and light pollution resulting from the Local Plan; however, bird species may be. Lakes and water courses near to Somerford Keynes and

Cerney Wick (Cotswold Lakes), and near to Fairford and Lechlade, may be used by birds from Severn Estuary SPA/Ramsar.

5.14 Development at South Cerney, Fairford or Lechlade (all Principal Settlements) could occur on or adjacent to FLL used by birds. Development strategy options incorporating development in these three locations could therefore impact upon FLL.

5.15 All of the development strategy options also allow for some rural and/or windfall development that could in theory be located within 500m of bird FLL.

5.16 Comparison of development strategy options:

- Scenario 1: could result in non-physical disturbance to Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements.
- Scenario 2: could result in non-physical disturbance to Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements.
- Scenario 3: could result in non-physical disturbance to Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at Fairford Principal Settlement.
- Scenario 4: could result in non-physical disturbance to Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall.
- Scenario 5: could result in non-physical disturbance to Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements.

Air pollution

5.17 Air pollution is most likely to affect Habitats Sites where plant, soil and water habitats are the qualifying features, but some qualifying animal species

may also be affected, either directly or indirectly, by any deterioration in habitat as a result of air pollution. Deposition of pollutants to the ground and vegetation can alter the characteristics of the soil, affecting the pH and nitrogen (N) availability that can then affect plant health, productivity and species composition; dust can also smother habitats and increase the turbidity of water. All of the sites have plant species and/or water habitats as their qualifying feature.

Vehicle emissions

5.18 In terms of vehicle traffic, nitrogen deposition, acid deposition, nitrogen oxides (NOx, i.e. NO and NO_2) and ammonia (NH3) are considered to be the key pollutants.

5.19 Based on the Highways Agency Design Manual for Road and Bridges (DMRB) Document LA105: Air Quality **[See reference 31],** which was produced to provide advice regarding the design, assessment and operation of trunk roads (including motorways), it is assumed that air pollution from roads is unlikely to be significant beyond 200m from the road itself. Where increases in traffic volumes are forecast, this 200m buffer needs to be applied to the relevant roads in order to make a judgement about the likely geographical extent of air pollution impacts (the 'affected road network').

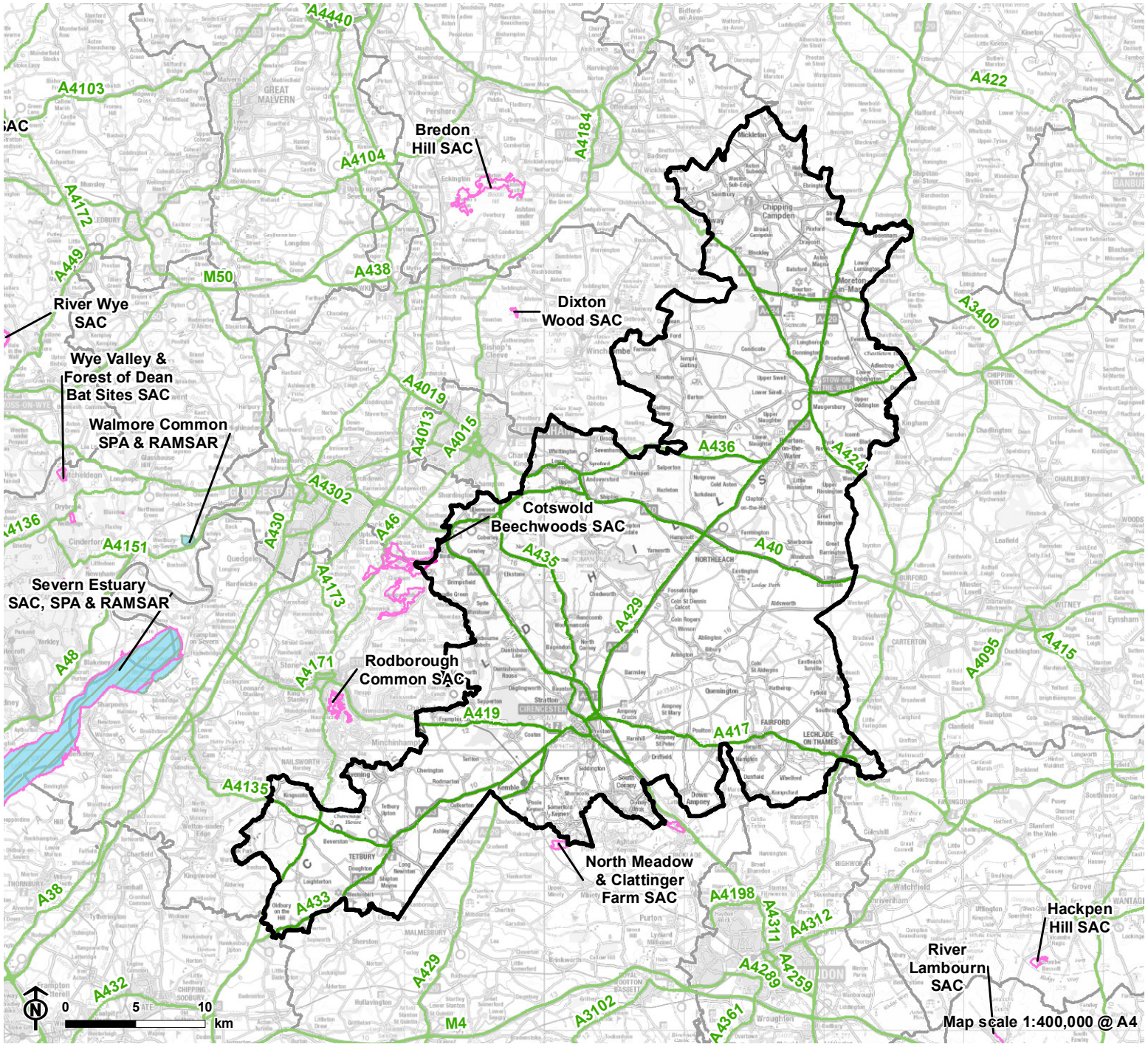
5.20 The JNCC's 'Guidance on decision making thresholds for air pollution' **[See reference 32]** states that "For the purpose of decision-making, unless local circumstances support a wider zone, plan HRA should take account of the potential effects of traffic emissions on European sites located within 10 km of the plan boundary."

5.21 The DMRB Guidance for the assessment of local air quality 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, affected roads which 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 10 km/hr or more; or
- Peak hour speed will change by 20 km/hr or more; or
- Road alignment will change by 5 m or more.

5.22 In line with the Wealden judgment **[See reference** 33**]**, in-combination air pollution effects must be screened using the same criteria. The implication of the judgment is that, 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 local 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.

5.23 It is usually only those roads forming part of the primary road network (motorways and 'A' roads) might be likely to experience any significant increases in vehicle traffic as a result of development (i.e. greater than 1,000 AADT etc.), although there are exceptions; the affected road network is confirmed as part of the traffic assessment. The primary road network in Cotswold district is shown on **Figure 5.1**.



LUC

Figure 5.1: Key strategic roads within Cotswold District and surrounding area

- Cotswold District boundary
- Surrounding Local Authorities
- Strategic road

Habitat Sites

- Special Areas of Conservation (SAC)
- Special Protection Area (SPA)
- Ramsar

CB:RW EB:Willshear_R LUC 11703_FIGC_1_r1_KeyStrategicRoads_A4L 30/11/2021
Source: OS, NE, LUC

5.24 Strategic roads within 200m of a Habitats Sites and within 10km of the plan area are:

- Cotswold Beechwoods SAC: A46 (and potentially B4070).
- North Meadow and Clattinger Farm SAC: A419.
- Rodborough Common SAC: A46.

5.25 All of the other Habitats Sites are situated over 10km from the plan area or 200m from strategic roads and have therefore been scoped out. Potential FLL within the plan area comprises water habitats, which are not highly sensitive to air pollution. It is unlikely that air pollution from vehicles would degrade these habitats to the extent that the population of birds/fish at Severn Estuary SAC/SPA/Ramsar would be affected. There are no additional roads that need to be screened in to assess FLL.

5.26 Development in any part of the district could contribute to traffic on the identified roads, in-combination, and the overall scale of development proposed for each development strategy option will influence the total increase in traffic flows. However, development nearer to the identified roads is likely to have a larger contribution to traffic flows, particular if the development is large in scale.

5.27 The development strategy option that plans for the largest number of homes is the preferred option, Scenario 5. This plans for c.14,600 homes. In contrast, Scenarios 1-4 all plan for in the region of 8,000-9,000 homes each.

5.28 Development at Andoversford, and potentially Northleach, (both Principal Settlements) is more likely to result in traffic on the A46 and B4070 past Cotswold Beechwoods SAC. All of the development strategy options except Scenario 3 plan for development in Andoversford and Northleach. Scenarios 1 and 4 specify c.200 homes in these locations; the other options only include these locations as a quantum to be distributed between Principal Settlements.

5.29 Development at Avening (Non-Principal Settlement) and Tetbury (Principal Settlement) is more likely to result in traffic on the A46 past Rodborough Common SAC. Scenarios 1, 2 and 5 include development in both locations; Scenario 3 has development in Tetbury. Scenario 1 specifies c.300 homes in these locations; the other options only include these locations as a quantum to be distributed between Principal / Non-Principal Settlements.

5.30 There are a number of development locations that could contribute to traffic on the A419 past North Meadow and Clattinger Farm SAC, particularly those around Cirencester: South Cerney (Principal), Siddington (Principal & urban extension), Preston (Non-Principal & urban extension), Ampney Crucis (urban extension), Steadings (urban extension), Driffield (urban extension). All development strategy options include development in this area; however Scenario 5 is the only option with development at the urban extension sites (c.3,700 homes at the above locations, plus c.3,200 at Cirencester as part of the c.6,300 homes distributed at Principal Settlements). Scenario 1 and Scenario 3 include c.3,200 homes at Principal / Non-Principal Settlements in the Cirencester area; Scenario 4 has c.4,300; Scenario 2 specifies only c.6,300 homes to be distributed at Principal Settlements. Because of the larger scale of development in this area, the A419 at North Meadow and Clattinger Farm SAC is more likely to experience significant increases in traffic flow that the A46, past the other two SACs.

5.31 Comparison of development strategy options:

- Scenario 1: smallest quantum of development; could contribute to traffic past any of the three SACs.
- Scenario 2: could contribute to traffic past any of the three SACs; less likely to contribute traffic past North Meadow & Clattinger Farm SAC than other options.
- Scenario 3: less likely to contribute traffic past Cotswolds Beechwoods SAC or Rodborough Common SAC.
- Scenario 4: less likely to contribute traffic past Cotswolds Beechwoods SAC or Rodborough Common SAC; more likely to contribute traffic past North Meadow & Clattinger Farm SAC than other options.

- Scenario 5: largest quantum of development; could contribute to traffic past any of the three SACs.

Dust

5.32 The effects of dust are most likely to be significant at qualifying features sensitive to dust, such as riparian and wetland habitats, or sites designated for habitats and plant species.

5.33 The effects of dust deposition in terrestrial habitats are relevant to Cotswold Beechwoods SAC and North Meadow and Clattinger Farm SAC. The effects of dust deposition to the water environment are relevant to functionally linked habitat within the Cotswold District Boundary that is used by:

- Bird species of Severn Estuary SPA and Ramsar.
- Migratory fish species of Severn Estuary SAC and Ramsar.

5.34 There are no major sources of operational dust emissions (e.g. minerals extraction) proposed in the Local Plan; however, construction work for new development can involve temporary dust emissions. Large particles will mostly deposit close to the source and the assumption is that the vast majority of dust deposition would occur within 100m, although some smaller particles may travel up to 200-500m **[See reference** 34**]**.Therefore, significant effects on Habitats Sites from dust are unlikely beyond 100m.

5.35 As the effects are temporary and local, it is considered unlikely that dust deposition from construction would affect FLL to the extent that there was a likely significant effect at a Habitats Site.

5.36 There are no Principal Settlements, Non-Principal Settlements or strategic extensions / new towns within 100m of the SACs; however, all of the development strategy options also allow for some rural and/or windfall development that could in theory be located within 100m one of the SACs.

5.37 Comparison of development strategy options:

- Scenario 1: could result in dust at either SAC via rural development/ windfall.
- Scenario 2: could result in dust at either SAC via rural development/ windfall.
- Scenario 3: could result in dust at either SAC via rural development/ windfall.
- Scenario 4: could result in dust at either SAC via rural development/ windfall.
- Scenario 5: could result in dust at either SAC via rural development/ windfall.

Recreation pressure and urban edge effects

5.38 Recreational activities and human presence can result in significant effects on Habitats Sites as a result of erosion and trampling, or disturbance to sensitive features, such as birds through both terrestrial and water-based forms of recreation. The proximity of urban development to Habitats Sites can also result in significant effects due to fire and vandalism, as well an increase in invasive species and pet predation. For example, research has shown that habitats close to urban areas can have higher densities of mammalian predators such as foxes **[See reference** 35**]** and that there is an increase in the numbers of crows and magpies on sites with greater human activity **[See reference** 36**]**.

5.39 The LPFR will result in housing growth and associated population increase, which will in turn increase visits to accessible greenspaces.

5.40 Habitats Sites with qualifying bird species are likely to be particularly susceptible to recreational disturbances from walking, dog walking, angling,

illegal use of off-road vehicles and motorbikes, wildfowling (shooting wildfowl), and water sports. An increase in recreational pressure from development therefore has the potential to disturb bird populations of SPA and Ramsar sites as a result of both terrestrial and water-based recreation.

5.41 In addition, recreation can physically damage habitat as a result of trampling and also through erosion associated with boat wash (e.g. associated with increased boat moorings and traffic) and terrestrial activities such as use of vehicles.

Recreation pressure

5.42 Each Habitats Site will typically have a 'Zone of Influence' (ZOI) within which increases in population would be expected to result in likely significant effects at sensitive sites. ZOIs are usually established following targeted visitor surveys and the findings are therefore typically specific to each Habitats Site (and often to specific areas within a Habitats Site). ZOIs are typically based on the distance that 75% of visitors travel from.

5.43 At Cotswold Beechwoods SAC, a ZOI of 15.4km is used, based on work by Stroud District Council **[See reference** 37**]**. The ZOI for Rodborough Common SAC is 3.9km, also based on work by Stroud District Council **[See reference** 38**]**.

5.44 At Oxford Meadows SAC, a ZOI of 7km is suggested, based on 2025 work by LUC in the HRA Screening of the West Oxfordshire Local Plan **[See reference** 39**]**. This is based on ZOIs of similar sites elsewhere.

5.45 For North Meadow & Clattinger Farm SAC, the ZOI was established through work by Cotswold District Council and neighbouring authorities and is set out in the North Meadow & Clattinger Farm interim recreation mitigation strategy **[See reference** 40**]**. The strategy states that: “The Clattinger Farm SSSI component of the SAC is managed by the Wiltshire Wildlife Trust. Access to the area is through a visitor centre and is carefully managed by the Trust. At

North Meadow, which is Common Land, the public have access on foot over the whole area, unlike at Clattinger Farm where the Trust can open and close areas and routes. The habitats at Clattinger Farm are not considered to be subjected to damaging recreational pressures at present and the site is therefore not considered further in this Interim Mitigation Strategy". For the North Meadow, Cricklade SSSI component of the SAC, the following ZOIs have been established:

- Year round users: 4.2km; and
- Seasonal summer visitors (snakes head fritillary season): 9.4km.

5.46 At Severn Estuary SAC/SPA/Ramsar, a ZOI of 12.6km has been established through work by Stroud District Council **[See reference** 41**]** and South Gloucestershire Council **[See reference** 42**]**.

5.47 Where the ZOIs are based on visitor survey work and the Habitats Sites have mitigation strategies (all of the above except Oxford Meadows SAC), any residential development within the ZOI is considered to have a likely significant effect. Taking a precautionary approach, this assumption has also been applied to Oxford Meadows SAC.

5.48 The following Habitats Sites have been scoped out of further assessment:

- Bredon Hill SAC – not identified as sensitive to recreation pressure within the SAC's Site Improvement Plan or Supplementary Advice for Conservation Objectives **[See reference** 43**]**.
- Dixton Wood SAC - does not have public access.

5.49 Recreational disturbance can also adversely affect qualifying features at functionally linked habitats, if the disturbance is of a sufficient scale to harm the population of species at the linked Habitats Sites. Potential FLL within the borough may be used by:

- Bird species of Severn Estuary SPA and Ramsar (at Cotswold Water Park).

- Migratory fish species of Severn Estuary SAC and Ramsar (e.g. River Frome, River Chelt).

5.50 A general increase in population due to new development would not be expected to cause a significant increase in recreational activity that could affect fish. Direct recreational activities in rivers, e.g. fishing, are carefully controlled or licensed; the effects of recreation pressure on fish habitat used by species from the Severn Estuary SAC and Ramsar are therefore scoped out.

5.51 Bird species are more susceptible to disturbance from recreation and therefore the effects of recreation pressure at the Cotswold Water Park (where functionally linked to the Severn Estuary SPA/Ramsar) have been scoped in as a precaution. While ZOIs for Habitats Sites are sometimes applied to their associated FLL, this is usually the case where the FLL is near to the Habitats Site and likely to be subject to similar recreation pressure. The Cotswold Lakes are c.29km from the Severn Estuary SPA/Ramsar and likely to have very different patterns of visitor travel and access. The SPA/Ramsar bird populations are also less sensitive to recreation pressure at FLL than from direct impacts within the SPA/Ramsar; i.e. recreation pressure at FLL is less likely to prevent the conservation objectives at the SPA/Ramsar from being met. Impact Risk Zones (IRZs) **[See reference** 44**]**, developed by Natural England to identify the locations in which development can impact upon Sites of Special Scientific Interest (SSSI), can help to identify an appropriate ZOI for the Cotswold Water Park (a SSSI). The IRZs defines the following distances from the SSSI, within which consultation with Natural England would be required:

- 2km: any residential development of 50 units or more; distances beyond 2km do not identify residential development as a risk.
- 1km: residential development of 50 units or more (within existing settlements/urban areas); or rural residential (outside existing settlements/urban areas) of 10 units or more.
- 500m: residential development of 50 units or more (within existing settlements/urban areas); or any rural residential development.
- 200m: residential development of 50 units or more (within existing settlements/urban areas); or any rural residential development.

5.52 The IRZs are based on risks from all impact pathways; and the IRZ guidance **[See reference** 45**]** identifies residential / rural residential development as having impacts associated with water supply/quality, FLL, and recreation pressure. Taking a precautionary approach, it is assumed that any residential development within 2km of the Cotswold Lakes could increase recreation pressure at the site and impact upon Severn Estuary SPA/Ramsar. The smaller IRZ distances could be applied once site allocations have been identified.

5.53 Table 5.3 summarises the ZOIs used in this assessment.

Table 5.1: Zones of Influence (ZOIs) used

Habitats Site	ZOI
Cotswold Beechwoods SAC	15.4km
North Meadow and Clattinger Farm SAC	4.2km year round / 9.4km seasonal visitors
Rodborough Common SAC	3.9km
Oxford Meadows SAC	7.0km
Severn Estuary SAC, SPA and Ramsar (direct)	12.6km from Severn Estuary SAC/SPA/Ramsar
Severn Estuary SPA/Ramsar (via FLL)	2km from Cotswold Water Park SSSI

5.54 The ZOI for Oxford Meadows SAC does not extend into the Cotswold District boundary and impacts on this site can be screened out.

5.55 Only a very small area of the district is within the ZOI for Rodborough Common or the ZOI for Severn Estuary SAC/SPA/Ramsar, and there are no Principal / Non-Principal Settlements in these areas. Rural development / windfall could in theory result in residential development within the ZOI/s, but the absence of rural settlements in these locations means this is less likely.

5.56 The ZOI for FLL associated with Severn Estuary SPA/Ramsar (around Cotswold Water Park SSSI) incorporates Siddington (Principal and urban extension), South Cerney (Principal), Fairford (Principal and urban extension), Lechlade (Principal). Rural development / windfall (all options) could also fall within the ZOI. Scenario 1 includes c.800 homes in these locations; Scenario 2 specifies c.6,300 homes to be distributed at Principal Settlements; Scenario 3 includes c.1,200 homes; Scenario 4 includes only windfall/rural development; and Scenario 5 includes c.1,600 plus c.6,300 homes to be distributed at Principal Settlements.

5.57 Cirencester (Principal) and North Cerney (Non-Principal) are within the ZOI for Cotswold Beechwoods SAC. Scenario 1 includes c.3,200 homes in these locations, Scenario 3 includes c.3,200, Scenario 4 includes c.3,200. Scenarios 2 and 5 include these locations as part of c.6,300 homes to be distributed between Principal / Non-Principal Settlements. Rural development / windfall could also fall within the ZOI.

5.58 Only South Cerney (Principal) is within the 4.2km ZOI for North Meadow and Clattinger Farm SAC (Kemble is within 4.2km of the Clattinger Farm SSSI component, but this part of the site has been screened out; see paragraph 5.45. Rural development / windfall (all options) could also fall within the ZOI. Scenario 1 includes c.100 homes in South Cerney; Scenarios 2 & 5 include c.6,300 homes to be distributed at Principal Settlements; and Scenarios 3 & 4 include windfall/rural development only. If the 9.4km ZOI is applied then (part of) Cirencester (Principal), Fairford (Principal and urban extension), Down Ampney (Non-Principal), Preston (Non-Principal and urban extension), Siddington (Principal and urban extension), Ampney Crucis (urban extension), Steadings (urban extension), and Driffield (urban extension) are also within the ZOI. Rural development / windfall (all options) could also fall within the ZOI. Scenario 1 includes c.3,900 homes in these locations; Scenario 2 specifies c.6,300 homes to be distributed at Principal Settlements; Scenario 3 includes c.4,400 homes; Scenario 4 includes c.4,700 homes; Scenario 5 includes c.4,500 homes at urban extensions plus c.6,300 at Principal Settlements and c.1,000 at Non-Principal Settlements.

5.59 Comparison of development strategy options:

- Scenario 1: could result in recreation pressure at Cotswold Beechwoods SAC; North Meadow & Clattinger Farm SAC (option with highest number of homes in 4.2km ZOI); via FLL used by birds of Severn Estuary SPA/Ramsar; and via rural development/windfall (at same Habitats Sites, plus possibly Rodborough Common SAC or Severn Estuary SAC/SPA/Ramsar directly).
- Scenario 2: could result in recreation pressure at Cotswold Beechwoods SAC; North Meadow & Clattinger Farm SAC; via FLL used by birds of Severn Estuary SPA/Ramsar; via rural development/windfall (at same Habitats Sites, plus possibly Rodborough Common SAC or Severn Estuary SAC/SPA/Ramsar directly).
- Scenario 3: could result in recreation pressure at Cotswold Beechwoods SAC (option with joint largest number of homes); North Meadow & Clattinger Farm SAC; via FLL used by birds of Severn Estuary SPA/Ramsar; via rural development/windfall (at same Habitats Sites, plus possibly Rodborough Common SAC or Severn Estuary SAC/SPA/Ramsar directly).
- Scenario 4: could result in recreation pressure at Cotswold Beechwoods SAC (option with joint largest number of homes); North Meadow & Clattinger Farm SAC; via FLL used by birds of Severn Estuary SPA/Ramsar; and via rural development/windfall (at same Habitats Sites, plus possibly Rodborough Common SAC or Severn Estuary SAC/SPA/Ramsar directly).
- Scenario 5: could result in recreation pressure at Cotswold Beechwoods SAC; North Meadow & Clattinger Farm SAC (option with highest number of homes within 9.4km ZOI); via FLL used by birds of Severn Estuary SPA/Ramsar (option with largest number of homes); and via rural development/windfall (at same Habitats Sites, plus possibly Rodborough Common SAC or Severn Estuary SAC/SPA/Ramsar directly).

Urban edge effects

5.60 Urban edge effects occur where residential development is in close proximity to Habitats Sites. Similarly to non-physical disturbance, it is assumed that these are effects are most likely to be significant where residential development is within 500m of a Habitats Site; ie within 500m of Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC.

5.61 FLL may also be affected by urban edge effects, if residential development disturbs SPA/Ramsar birds to the extent that they cease use of the FLL, i.e. within 500m of the Cotswold Water Park SSSI.

5.62 There are no Principal / Non-Principal Settlements within 500m of Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC; however, windfall/rural development could fall within 500m of either SAC.

5.63 Development at South Cerney, Fairford or Lechlade (all Principal Settlements) or at windfall/rural sites could also within 500m of FLL used by birds.

5.64 Scenario 1 includes c.800 homes at South Cerney / Fairford / Lechlade; Scenarios 2 & 5 includes c.6,300 homes to be distributed at Principal Settlements; Scenario 3 includes c.1,200 homes; Scenario 4 includes windfall/rural development only. All of the development strategy options also allow for some rural and/or windfall development that could in theory be located within 500m of a SAC or bird FLL.

5.65 Comparison of development strategy options:

- Scenario 1: could result in urban edge effects at Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC (windfall/rural only); or Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements.

- Scenario 2: could result in urban edge effects at Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC (windfall/rural only); or Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements.
- Scenario 3: could result in urban edge effects at Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC (windfall/rural only); or Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements (option with largest number of homes).
- Scenario 4: could result in urban edge effects at Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC (windfall/rural only); or Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall (option with smallest number of homes).
- Scenario 5: could result in urban edge effects at Cotswold Beechwoods SAC or North Meadow & Clattinger Farm SAC (windfall/rural only); or Severn Estuary SPA/Ramsar birds using FLL via rural development/windfall or at South Cerney, Fairford or Lechlade Principal Settlements.

Water quantity and quality

5.66 All of the Habitats Sites have qualifying features that have some potential to be sensitive to changes in water quantity or quality. However, the Habitats Sites with the potential to be significantly affected by changes in water quantity or quality are likely to be sites that lie within the CDC boundary or sites with wetland habitats or species, that are hydrologically connected to the CDC boundary.

5.67 The following Habitats Sites have wetland habitats, are sensitive to changes in water quality or quantity, and also have connectivity to the Plan area:

- Severn Estuary SAC, SPA and Ramsar – connected via River Frome, River Chelt and tributaries (Ozleworth Brook, Nailsworth Stream, Bretforton Brook and Broadway-Badsey Brook); water is abstracted from the Severn to supply the district. FLL associated with this site's fish and bird species may also be affected by direct run-off, abstraction or discharge.
- Oxford Meadows SAC – connected via River Evenlode and River Thames; water is abstracted from the Thames to supply the district.

5.68 In addition, Cotswold Beechwoods is screened in as a precaution as it is within the district and could be affected by direct run-off, although it does not have wetland habitats.

5.69 The following sites are screened out:

- North Meadow and Clattinger Farm SAC – connected via Cerney Wick Brook and River Churn, but the sensitivity of the site to hydrological change is related to the flooding regime **[See reference** 46**]**, which will not be altered by development associated with the Local Plan (upstream watercourses are not within the district).
- Rodborough Common SAC – lies close to but uphill from the River Frome and Nailsworth Stream, so no direct connectivity to the Plan area. The site has no wetland habitats.
- Dixton Wood SAC – moist clay soils support the qualifying features but there are no abstraction licences impacting the site **[See reference** 47**]** and no other hydrological connectivity.
- Bredon Hill SAC – moist soils support the qualifying features **[See reference** 48**]**, but the site does not overlay the same aquifer/s as the Plan area; there is no other hydrological connectivity.

Direct pollution

5.70 Direct run-off or deposition of pollutants, for example during construction or from recreational activity in the water (e.g. from boats), could have a significant effect on a Habitats Site where development occurs immediately adjacent to or upstream of a site or FLL (if the pollution incident is sufficient to prevent birds/fish from a Habitats Site from using that habitat).

5.71 There are no Principal / Non-Principal Settlements near to or upstream of Cotswolds Beechwoods SAC or North Meadow & Clattinger Farm SAC, although windfall/rural development could occur near to the site. All of the development strategy options include windfall/rural development.

5.72 Waterbodies in the LPFR area that are potentially functionally linked to Habitats Sites are the Cotswold Water Park (Severn Estuary SPA/Ramsar birds) and The River Frome near Stroud and River Chelt near Cheltenham (Severn Estuary SAC/Ramsar fish).

5.73 Development at Fairford, Lechlade and South Cerney (Principal Settlements) could result in direct pollution at Cotswold Water Park (bird FLL). Development at Andoversford (Principal) could result in direct pollution at the River Chelt (fish FLL).

5.74 Comparison of development strategy options:

- Scenario 1: could result in direct pollution at SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) or South Cerney (birds from Severn Estuary SPA/Ramsar) Principal Settlements.
- Scenario 2: could result in direct pollution at SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) or South Cerney (birds from Severn Estuary SPA/Ramsar) Principal Settlements.

- Scenario 3: could result in direct pollution at SACs or FLL via rural development/windfall (both SACs & FLL).
- Scenario 4: could result in direct pollution at SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) Principal Settlement.
- Scenario 5: could result in direct pollution at SACs or FLL via rural development/windfall (both SACs & FLL); or to FLL at Andoversford (fish from Severn Estuary SAC/Ramsar) or South Cerney (birds from Severn Estuary SPA/Ramsar) Principal Settlements.

Wastewater treatment

5.75 Thames Water manages wastewater collection and treatment for most of Cotswold District. Wessex Water is responsible for wastewater in the southwest corner of the district (around Tetbury); and Severn Trent Water is responsible for wastewater treatment in small areas along the western edge and north of the district (around Avening, Birdlip, and Chipping Campden).

5.76 The following wastewater treatment works serve the district:

- Severn Trent Water (River Stour catchment): Blockley, Chipping Campden, Honeybourne.
- Thames Water (River Thames catchment): Ampney St Peter, Andoversford, Bourton on the Water, Broadwell, Cirencester, Fairford, Lechlade, Moreton-in-Marsh, Northleach.
- Wessex Water (River Avon / Severn catchment): Tetbury.

5.77 Of these, the following are hydrologically linked to Habitats Sites or their FLL:

- Tetbury (Principal Settlement) is hydrologically linked to Severn Estuary SAC and SPA/Ramsar via the Avon/Severn; and

- Cirencester (Principal), Siddington (Principal and urban extension) and South Cerney (Principal) are linked to Cotswold Water Park (FLL used by birds of Severn Estuary SPA/Ramsar) via the River Churn.

5.78 Development strategy options proposing a larger scale of development have a higher chance of resulting in likely significant effects due to wastewater treatment.

5.79 At Tetbury, Scenario 1 & 3 include c.300 homes, Scenario 2 & 5 include c.6,300 to be distributed at Principal Settlements, Scenario 4 no development. Windfall/rural development for all options could also result in wastewater discharge at/near Tetbury; however, windfall/rural development alone is unlikely to result in significant effects.

5.80 At Cirencester, Siddington and South Cerney, Scenario 1 includes c.3,300 homes, Scenario 2 includes c.6,300 to be distributed at Principal Settlements, Scenarios 3 & 4 include c.3,210, Scenario 5 includes c.800 plus c.6,300 to be distributed at Principal Settlements.

5.81 Comparison of development strategy options:

- Scenario 1: could result in wastewater treatment that affects Severn Estuary SAC/SPA/Ramsar directly (option with joint highest number of homes at Tetbury) or via FLL used by birds of the SPA/Ramsar.
- Scenario 2: could result in wastewater treatment that affects Severn Estuary SAC/SPA/Ramsar directly or via FLL used by birds of the SPA/Ramsar.
- Scenario 3: could result in wastewater treatment that affects Severn Estuary SAC/SPA/Ramsar directly (option with joint highest number of homes at Tetbury) or via FLL used by birds of the SPA/Ramsar (option within joint highest number of homes near FLL).
- Scenario 4: could result in wastewater treatment that affects Severn Estuary SPA/Ramsar via FLL used by birds of the SPA/Ramsar (option within joint highest number of homes near FLL).

- Scenario 5: could result in wastewater treatment that affects Severn Estuary SAC/SPA/Ramsar directly or via FLL used by birds of the SPA/Ramsar.

Water abstraction

5.82 Water supply in the district is as follows:

- Thames Water: supplies most of the district;
- Bristol Water: supplies the southwest corner of the district, including Tetbury (Principal Settlement); and
- Severn Trent Water: supplies some western parts of the district, including Chipping Campden (Principal Settlement), Cowley and Birdlip.

5.83 Water supplied to Cotswold District comes from a mix of groundwater, rivers (Severn and Thames) and reservoirs. The Severn Estuary SAC and SPA/Ramsar and Oxford Meadows SAC are linked to the Plan area via surface waterbodies: Oxford Meadows SAC via the River Thames (Thames Water); and Severn Estuary SAC/Ramsar (and SPA indirectly) via the River Severn (Bristol Water & Severn Trent Water). Development could therefore increase abstraction that affects these sites. No water is supplied from water bodies in Cotswold Lakes and the tributaries of the River Severn/Thames are not a significant source of water supply; therefore there are no likely significant effects on FLL.

5.84 All of the development strategy options include development within the Thames Water area. The development strategy option that plans for the largest number of homes is the preferred option, Scenario 5. This plans for c.14,600 homes. In contrast, Scenarios 1-4 all plan for in the region of 8,000-9,000 homes each.

5.85 In the Bristol Water and Severn Trent Water areas, Scenarios 1 & 3 include c.550 homes, Scenarios 2 & 5 include c.6,300 homes to be distributed at Principal Settlements, Scenario 4 includes windfall/rural development only.

5.86 Comparison of development strategy options:

- Scenario 1: could result in abstraction that affects Severn Estuary SAC/Ramsar (and SPA indirectly) (option with joint largest number of homes in Severn Trent Water area) or Oxford Meadows SAC.
- Scenario 2: could result in abstraction that affects Severn Estuary SAC/Ramsar (and SPA indirectly) or Oxford Meadows SAC.
- Scenario 3: could result in abstraction that affects Severn Estuary SAC/Ramsar (and SPA indirectly) (option with joint largest number of homes in Severn Trent Water area) or Oxford Meadows SAC.
- Scenario 4: could result in abstraction that affects Severn Estuary SAC/Ramsar (and SPA indirectly) or Oxford Meadows SAC.
- Scenario 5: could result in abstraction that affects Severn Estuary SAC/Ramsar (and SPA indirectly) or Oxford Meadows SAC (option with largest number of homes in Thames Water area).

Summary of screening findings

5.87 Table 5.1 summarises the screening conclusions for each impact pathway and development strategy option.

5.88 Scenarios with each listed impact pathway are marked with a dot (•). Those with the highest/most likely risk of significant effects are in grey cells. Those with some risk but lowest/least likely are underlined.

Table 5.2: Summary of screening findings for Scenarios 1-5

Impact	1	2	3	4	5
Physical loss of habitat: Cotswold Beechwood SAC and/or North Meadow &	•	•	•	•	•

Impact	1	2	3	4	5
Clattinger Farm SAC and/or Severn Estuary SPA/Ramsar (bird/fish FLL)					
Non-physical disturbance: Severn Estuary SPA/Ramsar (bird FLL)	•	•	•	•	•
Air pollution (vehicles): Rodborough Common SAC	•	•	•	•	•
Air pollution (vehicles): Cotswold Beechwoods SAC	•	•	•	•	•
Air pollution (vehicles): North Meadow & Clattinger Farm SAC	•	•	•	•	•
Air pollution (dust): Cotswold Beechwoods SAC and/or North Meadow & Clattinger Farm SAC	•	•	•	•	•
Recreation pressure: Cotswold Beechwoods SAC	•	•	•	•	•
Recreation pressure: North Meadow & Clattinger Farm SAC	•	•	•	•	•
Recreation pressure: Severn Estuary SPA/Ramsar (bird FLL)	•	•	•	•	•
Recreation pressure: Severn Estuary SAC/SPA/Ramsar (directly) and/or Rodborough Common SAC	•	•	•	•	•
Urban edge effects: Cotswold Beechwoods SAC and/or North Meadow & Clattinger Farm SAC	•	•	•	•	•
Urban edge effects: Severn Estuary SPA/Ramsar (bird FLL)	•	•	•	•	•
Direct pollution: Cotswold Beechwoods SAC and/or North Meadow & Clattinger Farm SAC	•	•	•	•	•
Direct pollution: Severn Estuary SAC/Ramsar (fish FLL) or SPA/Ramsar (bird FLL)	•	•	•	•	•

Impact	1	2	3	4	5
Wastewater treatment: Severn Estuary SAC/SPA/Ramsar (direct)	•	•	•		•
Wastewater treatment: Severn Estuary SPA/Ramsar (bird FLL)	•	•	•	•	•
Abstraction: Severn Estuary SAC/Ramsar (and SPA, indirectly)	•	•	•	•	•
Abstraction: Oxford Meadows SAC	•	•	•	•	•

Chapter 6

Conclusions and next steps

6.1 All of the development strategy options could result in likely significant effects associated with all of the assessed impact pathways. The only exception is Scenario 4, which will not have likely significant effects associated with wastewater treatment, at Severn Estuary SAC/SPA/Ramsar (directly). However, the scale and location of development varies between the options.

6.2 HRA Screening cannot take into account mitigation; consideration of mitigation occurs at the Appropriate Assessment stage, which will be undertaken once site allocations and policies are available (for the LPFR Reg.19 consultation). However, it is likely that some impact pathways will be easier to mitigate – for example with existing safeguards in LPFR policies, or with minor amendments to those. This is more likely for impacts that can be mitigated by individual developments, using good practice habitat protection or pollution control policies i.e.:

- Physical loss of habitat;
- Non-physical disturbance;
- Air pollution (dust);
- Urban edge effects; or
- Direct pollution.

6.3 In addition, unless existing infrastructure is insufficient for planned development, wastewater treatment or water abstraction impacts can often be ruled out on the basis of licencing requirements and measures within water companies' Water Resource Management Plans and their HRAs.

6.4 For recreation pressure, there are existing mitigation strategies in place for most of the identified impact pathways, but there is likely to be further work required to assess and, if necessary, mitigate impacts associated with

recreation. The preferred development strategy option (Scenario 5) provides for the largest number of homes overall and is more likely to contribute to recreation pressure effects (except at Cotswold Beechwoods SAC, as most of the proposed development locations are not within its ZOI).

6.5 The assessment of air pollution effects from vehicle emissions will require further assessment, and it is likely that the preferred option (Scenario 5) will contribute the largest volume of traffic to roads near Habitats Sites, particularly North Meadow & Clattinger Farm SAC, due to the larger quantum of development proposed.

6.6 These are high-level conclusions only and are subject to more detailed Screening and Appropriate Assessment of the LPFR policies and site allocations, once available.

Assessing air pollution

6.7 Traffic data will need to show current traffic flows (AADT for all traffic and for HDVs) and modelled flows at the end of the plan period (with and without LPFR development) and identify the affected road network, in line with Design Manual for Roads and Bridges guidance LA105 **[See reference** 49**]**. It will then need to assess the changes in traffic flow where roads pass within 200m of a Habitats Site. This is likely to include the A419, A46 and possibly the B4070, where they pass Cotswold Beechwoods SAC, North Meadow & Clattinger Farm SAC, and Rodborough Common SAC. The assessment will need to take into account changes expected over the plan period due to the 'A417 Missing Link' road upgrade project, and any other major projects; the scope will be agreed with Natural England.

6.8 If this data shows increases of more than 1,000 AADT or 200 HDV from the LPFR alone or in combination with other plans and projects, then air quality assessment will be required in line with Institute of Air Quality Management guidance **[See reference** 50**]**. Ecological assessment may also be needed. If

likely significant effects are identified, mitigation will need to be agreed, tested and secured prior to the adoption of the Local Plan.

Next steps for the HRA

6.9 This high-level HRA Screening of development strategy options will be consulted upon alongside the LPFR at the Regulation 18 consultation stage.

6.10 The LPFR site allocations and policies will then be screened fully and subject to Appropriate Assessment, in line with the methodology set out in Chapter 3, and taking into account any comments received on this document.

LUC

October 2025

Appendix A

Attributes of Habitats Sites considered in the HRA

A.1 This appendix contains information about the Habitats Sites scoped into the HRA. Information about each site's area, the site descriptions, qualifying features and pressures and threats are drawn from Natural England's Site Improvement Plans (SIPs), Supplementary Advice Notes, and the Standard Data Forms or Ramsar Information Sheets available from the JNCC website. Site conservation objectives are drawn from Natural England's website and are only available for SACs and SPAs.

Cotswold Beechwoods SAC

Site description

A.2 The Cotswold Beechwoods represent the most westerly extensive blocks of *Asperulo-Fagetum* beech forests in the UK.

A.3 The woods are floristically rich, and rare plants include red helleborine *Cephalanthera rubra*, stinking hellebore *Helleborus foetidus*, narrow-lipped helleborine *Epipactis leptochila* and wood barley *Hordelymus europaeus*. There is a rich mollusc fauna. The woods are structurally varied, including blocks of high forest and some areas of remnant beech coppice.

Qualifying features

A.4 Annex 1 habitats that are a primary reason for the selection of this site:

- 9130 *Asperulo-Fagetum* beech forests

A.5 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites)

Conservation objectives

A.6 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.

Key vulnerabilities

A.7 The main current threats to the site include:

- Invasive Species - The dumping of garden waste and the consequent spread of invasive plants is an on-going threat. The spread of the non-native sycamore provides a challenge and has made particular use of canopy gaps created by storm damage. Although sycamore is considered an acceptable component of woodlands, including beechwoods, on the continent, in the Cotswold it tends to dominate understorey and canopy to the detriment of other (native) tree species.
- Deer - Deer browsing of regenerating trees (and possibly ground flora) remains a major threat to favourable condition throughout the beechwoods.
- Invasive Species - Grey squirrel numbers have increased sharply over the past decade or so and now cause significant damage to tree species, in particular beech. In places, this can lead to pole stage beech being systematically ring barked and killed.
- Disease - Although not known to be present in the Cotswold as yet, Chalara (ash disease) is a major future threat to the beechwoods.
- Public Access/Disturbance - . A particular increase has been the use of mountain bikes and horse-riding which use the woods far beyond the limited network of bridleways. This has created numerous additional trackways and so increasing the erosion of the ground flora and potentially opportunities for water erosion. Although the routes away from bridleways are not usually permitted, much of the SAC woodland is NNR or has public access by foot. Additionally, dog walking has increased within the SAC especially at Coopers Hill where car parking is available. This has become a particular issue where professional dog walkers release large numbers

of dogs (up to 12) to run uncontrolled through the woods. This causes disturbance to wildlife as well as local nutrification through dog faeces.

- Changes in Species Distributions - There is a risk that global warming will increase the risk of drought to beech trees (which are shallow rooted).
- Air Pollution: impact of atmospheric nitrogen deposition - Nitrogen deposition exceeds site relevant critical loads. High atmospheric nitrogen levels could affect the SAC features through: changes in ground vegetation and mycorrhiza; nutrient imbalance; changes to soil fauna; increase in tall grasses; decline in diversity; increased mineralization; N leaching; or surface acidification.

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

A.8 The qualifying habitats rely upon soil quality and water quality/quantity.

North Meadow & Clattinger Farm SAC

Site description

A.9 North Meadow & Clattinger Farm Meadows SAC consists of a series of traditionally managed unimproved grasslands within the floodplain of the Upper Thames which continue to be managed as pasture and as hay-meadow.

A.10 It contains a rich variety of species-rich grassland types including the rare MG4 community for which the SAC is designated as well as a number of notable plant species. These grasslands represent rare and scattered remnants of a much more widespread unimproved grassland habitat before agricultural intensification and extensive gravel quarrying locally were responsible for widespread losses of this habitat and its subsequent fragmentation.

Qualifying features

A.11 Annex I habitats that are a primary reason for selection of this site:

- 6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)

Conservation objectives

A.12 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.

Key vulnerabilities

A.13 The main current threats to the site include:

- Inappropriate Water Levels - An effective WLMP needs to be in place in order to protect the integrity of the site. There have been several unseasonal floods over the last six years which are beginning to cause changes and losses in the vegetation communities on the site.
- Water Pollution - Both sediment and nutrient input are of concern. A diffuse pollution plan is in place and catchment sensitive farming initiative covers the catchment. Diffuse pollution has the potential to affect aquatic habitats and species as well as habitat quality in areas of riverside habitat supporting *Vertigo moulinsiana*. Diffuse pollution is arising from highway runoff as well as from farmland. Pollution also results from overflowing sewers (a result of high groundwater levels infiltrating sewers) with ongoing/recurring incidents at numerous locations on the River Lambourn.
- Habitat Fragmentation - The two component SSSIs are located 8km apart. Inclusion and restoration of a number of intervening sites locally would increase the habitat, thereby making it more resilient to fluctuating water levels in the face of climate change. The NNR team at North Meadow has, over a number of years, been working to achieve this aim. Also, one option is that additional land should be included within the North Meadow SSSI for this purpose. This would help buffer the site, possibly provide space for adaptation in anticipation of the effects of climate change, and better manage visitor impacts. Clattinger forms part of a more extensive site which provides good opportunities for on-site management.
- Commons Management - Fencing is required to keep livestock from straying off site. North Meadow NNR is common land and it is the responsibility of neighbouring landowners to erect fences. There are a number of problems involved in achieving this.

- Public Access/Disturbance - There is increasing visitor pressure especially during the flowering time of Snake's-head Fritillary leading to localised damage on sites in the SAC.
- Water Pollution - The SAC's hay meadow vegetation communities are sensitive to elevated nutrient levels. With increasing flooding there is an increased risk of flood water carrying diffuse pollution onto the site and causing soil enrichment with negative consequences for the species richness of the meadows.

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

A.14 The qualifying habitats rely upon soil quality and water quality/quantity.

Oxford Meadows SAC

Site description

A.15 Oxford Meadows is one of two SACs that represent lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*) in the Thames Valley. It includes vegetation communities that are perhaps unique in the world in reflecting the influence of long-term grazing and hay-cutting on lowland hay meadows. The site has benefited from the survival of traditional management, which has been undertaken for several centuries, and so exhibits good conservation of structure and function. The site is selected because Port Meadow is the larger of only two known sites in the UK for creeping marshwort *Apium repens*.

Qualifying features

A.16 Annex I habitats that are a primary reason for selection of this site:

- H6510 Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)
- S1614 *Apium repens*: Creeping marshwort

Conservation objectives

A.17 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.

Key vulnerabilities

A.18 The main current threats to the site include:

A.19 Hydrological changes: A recent survey (August 2014) indicates the Apium repens population in Port Meadow has significantly declined in size. It is considered that this change may be associated directly or indirectly with hydrological changes possibly deeper, more prolonged and frequent flood episodes. Adjustment of the water level management is proposed as a means to help mitigate for these changes.

A.20 Invasive species: The interest features for Oxford Meadows SAC are MG4 grassland and *Apium repens*. The *Apium repens* only occurs on Port Meadow SSSI. The concern is that *Crassula* will spread to the lower areas on Port Meadow where the *Apium repens* occurs and that it will swamp it out.

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

A.21 The qualifying habitats rely upon soil quality and water quality/quantity.

Rodborough Common SAC

Site description:

A.22 Rodborough Common is the most extensive area of semi-natural dry grasslands surviving in the Cotswolds of central southern England, and represents CG5 *Bromus erectus – Brachypodium pinnatum* grassland, which is more or less confined to the Cotswolds.

A.23 The site contains a wide range of structural types, ranging from short turf through to scrub margins, although short-turf vegetation is mainly confined to areas of shallower soils.

Qualifying features

A.24 Annex I habitats that are a primary reason for selection of this site

- 6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (important orchid sites)

Conservation objectives

A.25 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 habitat;
- The structure and function (including typical species) of qualifying natural habitat; and
- The supporting processes on which qualifying natural habitat rely.

Key vulnerabilities

A.26 The main current threats to the site include:

- Undergrazing - Undergrazing is an issue due to the reliance on the rights of commoners to turn out cattle. The number of stock have dropped over the years to the point that additional cattle now need to be electric fenced on to the most species-rich areas on the slopes. It is the lower slopes that are the most species-rich and are suffering from a lack of grazing.
- Public Access/Disturbance - The common is very close to Stroud and recreational use has greatly increased over the past few decades. This has created many new paths and parking areas which cause soil compaction to the detriment of the surrounding sward. Dog faeces is a particular issue which also damages the sward . New and proposed housing continues to add to the problem.
- Air Pollution: risk of atmospheric nitrogen deposition - Nitrogen deposition exceeds the site-relevant critical load for ecosystem protection and hence there is a risk of harmful effects, but the sensitive features are currently considered to be in favourable condition on the site.

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

A.27 The qualifying habitats rely upon soil quality and water quality/quantity.

Dixton Wood SAC

Site description

A.28 Violet click beetle *Limoniscus violaceus* was discovered at Dixton Wood in 1998 and it has been found at the site on a single occasion subsequently. It is

A.29 a small site with large number of ancient ash *Fraxinus excelsior* pollards, and supports a rich fauna of scarce invertebrate species associated with decaying timber on ancient trees.

Qualifying features

A.30 Annex II species that are a primary reason for selection of this site:

- 1079 Violet click beetle *Limoniscus violaceus.*

Conservation objectives

A.31 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 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.

Key vulnerabilities

A.32 The main current threats to the site include:

- Changes in Species Distributions - Because of its rarity and highly specialised ecology associated with decaying wood and leaf litter in tree cavities, specialist involvement is required for survey, monitoring and the provision of detailed habitat management advice.
- Forestry and Woodland Management - The beetle depends on the production of humid wood mould where it lives for part of its life cycle within decaying trees; this is typically found in veteran trees where they show signs of rot. The amount of suitable and available wood mould in the SAC is unknown. The lack of succession in veteran cohorts is an issue and it make the need for extending the life of the existing veteran trees even more important.
- Disease - Ash dieback disease Chalara fraxinea is a potential threat to the site. The Violet click beetle population at Dixton Wood is thought only to use ash trees.

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

A.33 Violet click beetle

- Habitat preferences – ancient and veteran trees
- Diet – wood mould

Bredon Hill SAC

Site description

A.34 Bredon Hill is an outlier of the Cotswolds with remnants of wood pasture and many veteran trees. Their dead wood supports one of the three known populations of the Violet click beetle *Limoniscus violaceus*, in the UK.

Qualifying features

A.35 Annex II species that are a primary reason for selection of this site:

- 1079 Violet click beetle *Limoniscus violaceus*

Conservation objectives

A.36 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 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.

Key vulnerabilities

A.37 The main current threats to the site include:

- Forestry and Woodland Management - The lack of succession in veteran tree cohorts is an issue, as current planting will only benefit the beetles after about 400 years and it is uncertain how long tree surgery will prolong the veterans' lives. The beetle depends on the production of humid wood mould within decaying trees and the amount of available wood mould in the SAC is unknown.
- Feature Location/Extent/Condition Unknown - There is a current lack of information on the distribution across the site of the rare and secretive Violet click beetle.
- Disease - Ash die-back caused by the Chalara fraxinea fungus threatens the large number of current veteran ash trees and their replacements on which the Violet click beetle depends. Whilst the beetle is known to use other species elsewhere (eg Windsor), ash dominates the trees on Bredon Hill. The scale of this impact on the persistence and continuity of wood mould is uncertain and is likely to be beyond human control.
- Air Pollution: impact of atmospheric nitrogen deposition - Nitrogen deposition exceeds site relevant critical loads. This site is sensitive to nitrogen deposition.
- Climate Change - The likelihood of increased violent storm events and the viability of ash in a changed environment threatens the veteran ash trees on which the beetle depends.

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

A.38 Violet click beetle

- Habitat preferences – ancient and veteran trees

- Diet – wood mould

Severn Estuary SAC

Site description

A.39 The Severn Estuary is located between Wales and England in south-west Britain. It is a large estuary with extensive intertidal mud-flats and sand-flats, rocky platforms and islands. Saltmarsh fringes the coast backed by grazing marsh with freshwater ditches and occasional brackish ditches. The subtidal seabed is rock and gravel with subtidal sandbanks. The site also supports reefs of the tube forming worm *Sabellaria alveolata*.

A.40 The estuary's classic funnel shape, unique in the UK, is a factor causing the Severn to have one of the highest tidal ranges in the world. A consequence of the large tidal range is an extensive intertidal zone, one of the largest in the UK. The tidal regime results in plant and animal communities typical of the extreme physical conditions of liquid mud and tide-swept sand and rock. The species-poor intertidal invertebrate community includes high densities of ragworms, lugworms and other invertebrates forming an important food source for passage and wintering waders and fish.

A.41 The site is of importance during the spring and autumn migration periods for waders, as well as in winter for large numbers of waterbirds, especially swans, ducks and waders. The fish fauna is very diverse with more than 110 species identified. The site is of particular importance for migratory fish.

Qualifying features

A.42 Annex I habitats that are a primary reason for selection of this site:

- 1130 Estuaries
- 1140 Mudflats and sandflats not covered by seawater at low tide

- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

A.43 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:

- 1110 Sandbanks which are slightly covered by sea water all the time
- 1170 Reefs

A.44 Annex II species that are a primary reason for selection of this site:

- 1095 Sea lamprey *Petromyzon marinus*
- 1099 River lamprey *Lampetra fluviatilis*
- 1103 Twaite shad *Alosa fallax*

Conservation objectives

A.45 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.

Key vulnerabilities

A.46 The main current threats to the site include:

- Public Access/Disturbance - Public access and recreation (including third party activities) may have an impact on bird species sensitive to disturbance, causing displacement from feeding, roosting and moulting areas, and if severe could affect long term survival and population numbers and distributions within the Estuary.
- Physical Modification - Modification to water courses and barriers to Annex II migratory fish (and those included in the fish assemblage) in the tributary rivers are preventing completion of the life cycle and potentially altering the hydrodynamics of the site.
- Impacts of Development - Strategic planning issue. More rigorous assessment of cumulative, in-combination and offsite impacts (drainage, disturbance, runoff, impacts on managed realignment etc) on sensitive bird species and other habitats and species may be required, given the range of planned development within and adjacent to the Estuary (including residential, transport, energy and other industrial developments).
- Coastal Squeeze - As sea levels rise, man-made defences are constraining the natural roll back of estuarine habitats, causing squeeze and loss of habitat and having impacts on species dependent upon those habitats (birds: feeding/ roosting, and fish: feeding/ nursery and shelter areas).
- Change in Land Management - Changes in management and use of grassland and saltmarsh habitat within and bordering the estuary. Changes in ownership and other land practices can result in changes in management and use of land (e.g. changes in grazing practice) which affects species composition, habitat availability, and quality of saltmarsh habitats and use of land for other activities that may cause damage or disturbance.
- Changes in Species Distributions - There is a risk of significant changes in estuarine populations (including declines in some SPA bird populations) in parts of the Estuary resulting from climate change and other man-made

and natural modifications to on and offsite environments. In many cases the causes of the changes to species distribution are unknown.

- Water Pollution - There is uncertainty over water quality in the Estuary due to diffuse (including agricultural) or direct pollution (e.g. industrial, sewage treatment works, thermal, radioactive).
- Air Pollution: impact of atmospheric nitrogen deposition - Activities around the Estuary include fertiliser application, potentially dairy and poultry production, road traffic, industry (including power stations), and shipping which are all sources of nitrogen pollution. Nitrogen deposition exceeds site relevant critical loads, with potential impacts on vegetation structure and diversity.
- Marine Consents and Permits: minerals and waste - The cumulative impacts of aggregate extraction, maintenance dredging and disposal can have adverse impacts on features. While most activity is regulated under marine licences, cumulative effects are not always fully considered.
- Fisheries: Recreational marine and estuarine - Further information is required on the levels and location of activity and potential impact of recreational bait digging and recreational fishing/angling. There are unknown impacts in the vicinity of potentially sensitive roosting and feeding areas, and on intertidal reef habitats.
- Fisheries: Commercial marine and estuarine - Dredges (inc. hydraulic), benthic trawls and seines are categorised as 'red' for the reef features (specifically the sub-feature Sabellaria spp. reef) as part of Defra's revised approach to commercial fisheries management in European Marine Sites (EMS).
- Invasive Species - There are recent reports of marine invasive non-native species (the Australian barnacle Austrominius modestus, Mitten crab Eriocheir sinensis, and the Pacific Oyster Crassostrea gigas) in the Estuary (or the Bristol Channel). These could have an impact on native species and habitats but the abundance and impact in the Severn Estuary of these species is unclear.
- Marine Litter - The marine environment is a sink for man-made litter which often originates from rivers. Impacts are not fully understood.

- Marine Pollution Incidents - Marine pollution incidents and responses to such incidents have the potential for significant negative impacts on the site and its features.

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

A.47 The qualifying habitats rely upon water quality/quantity.

A.48 River lamprey

- Habitat preferences – freshwater and wetlands
- Diet – aquatic fauna

A.49 Sea lamprey

- Habitat preferences – marine, although spawns in freshwater rivers, requiring clean gravel or silt/sand for borrowing juveniles.
- Diet – aquatic fauna

A.50 Twaite shad

- Habitat preferences – marine, although spawns in freshwater rivers, requiring deep pools.
- Diet – aquatic fauna

Severn Estuary SPA

Site description

A.51 As for Severn Estuary SAC.

Qualifying features

- A037 *Cygnus columbianus bewickii*; Bewick's swan (Non-breeding)
- A048 *Tadorna tadorna*; Common shelduck (Non-breeding)
- A051 *Anas strepera*; Gadwall (Non-breeding)
- A149 *Calidris alpina alpina*; Dunlin (Non-breeding)
- A162 *Tringa totanus*; Common redshank (Non-breeding)
- A394 *Anser albifrons albifrons*; Greater white-fronted goose (Non-breeding)
- Waterbird assemblage:
  - Bewick's swan;
  - Greater white-fronted goose;
  - Common shelduck;
  - Gadwall;
  - Dunlin; and
  - Common redshank.

Conservation objectives

A.52 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.

Key vulnerabilities

A.53 Severn Estuary Site Improvement Plan covers both the Severn Estuary SPA and Severn Estuary SAC. See Severn Estuary SAC for further information.

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

A.54 The qualifying habitats rely upon water quality/quantity.

A.55 Bewick's swan

- Habitat preference – freshwater, farmland, coastal, wetlands
- Diet – potatoes, grain, aquatic plants and grasses

A.56 Common shelduck

- Habitat preference – coastal areas, inland reservoirs and gravel workings.
- Diet – invertebrates, small shellfish and aquatic snails

A.57 Gadwall

- Habitat preference – marshes, lakes, and on migration also rivers and estuaries.
- Diet – leaves, shoots, mostly while swimming with head under water.

A.58 Dunlin

- Habitat preference – tundra, moor, heath, and on migration estuaries and coastal habitat.
- Diet - insects, snails and worms.

A.59 Common redshank

- Habitat preference – rivers, wet grassland, moors and estuaries.
- Diet - invertebrates, especially earthworms, cranefly larvae (inland) crustaceans, molluscs, marine worms (estuaries).

A.60 Greater white-fronted goose

- Habitat preference – farmland grassland marine and intertidal wetland
- Diet - grass, clover, grain, winter wheat and potatoes.

Severn Estuary Ramsar

Site description

A.61 The estuary's classic funnel shape, unique in Britain, is a factor causing the Severn to have the second-largest tidal range in the world (after the Bay of Fundy, Canada). This tidal regime results in plant and animal communities typical of the extreme physical conditions of liquid mud and tide swept sand and rock. The species-poor invertebrate community includes high densities of ragworms, lugworms and other invertebrates forming an important food source for passage and wintering waders.

A.62 A further consequence of the large tidal range is the extensive intertidal zone, one of the largest in the UK, comprising mudflats, sand banks, shingle, and rocky platforms.

A.63 Glassworts and annual sea-blite colonise the open mud, with beds of all three species of eelgrass Zostera occurring on more sheltered mud and sandbanks. Large expanses of common cord-grass also occur on the outer marshes. Heavily grazed saltmarsh fringes the estuary with a range of saltmarsh types present. The middle marsh sward is dominated by common saltmarsh-grass with typical associated species. In the upper marsh, red fescue and saltmarsh rush become more prominent.

Qualifying features

Criterion 1

A.64 Due to immense tidal range (second-largest in world), this affects both the physical environment and biological communities.

A.65 Habitats Directive Annex I features present on the Ramsar site include H1110 Sandbanks which are slightly covered by sea water all the time, H1130 Estuaries, H1140 Mudflats and sandflats not covered by seawater at low tide, and H1330 Atlantic salt meadows (Glauco-Puccinellietalia maritimae).

Criterion 3

A.66 Due to unusual estuarine communities, reduced diversity and high productivity.

Criterion 4

A.67 This site is important for the run of migratory fish between sea and river via estuary. Species include Salmon Salmo salar, sea trout Salmo trutta, sea lamprey Petromyzon marinus, river lamprey Lampetra fluviatilis, allis shad Alosa alosa, twaite shad Alosa fallax, and eel Anguilla anguilla.

A.68 It is also of particular importance for migratory birds during spring and autumn.

Criterion 5

A.69 Assemblages of international importance:

- Species with peak counts in winter:
  - 70919 waterfowl (5 year peak mean 1998/99-2002/2003).

Criterion 6

A.70 Species/populations occurring at levels of international importance:

- Bewick's swan Cygnus columbianus bewickii;
- Common shelduck Tadorna tadorna;
- Gadwall Anas strepera;
- Dunlin Calidris alpina alpina;
- Common redshank Tringa tetanus; and
- Greater white-fronted goose Anser albifrons albifrons.

Qualifying species/populations (as identified at designation)

Criterion 8

A.71 The fish of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded. Salmon Salmo salar, sea trout Salmo trutta, sea lamprey Petromyzon marinus, river lamprey Lampetra fluviatilis, allis shad Alosa alosa, twaite shad Alosa fallax, and eel Anguilla anguilla use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries that flow into the estuary.

A.72 The site is important as a feeding and nursery ground for many fish species particularly allis shad Alosa alosa and twaite shad Alosa fallax which feed on mysid shrimps in the salt wedge.

Conservation objectives

A.73 None available.

Key vulnerabilities

- Dredging
- Erosion
- Recreational/tourism disturbance (unspecified)

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

A.74 See Severn Estuary SPA

Appendix B

Record of consultation

B.1 Table B.1 sets out comments received during consultation on previous iterations of the HRA, and how those have been addressed.

Table B.1: Record of HRA consultation comments and LUC response

Consultee, date, consultation stage	Comments (relevant excerpts)	LUC response
Natural England February 2022 LPPU Issues and Options Consultation (Reg.18)	*Have we correctly identified the European sites that should be scoped-in to the HRA of the Local Plan Partial Update (see Chapter 3 and Appendix A)?* For the most part yes – please see detailed comments below *Have we correctly identified the sensitivities of the scoped-in European sites to potential impacts from the Local Plan Partial Plan Update (see Chapter 4 and Appendix B)?* Yes – subject to detailed comments below *Is the proposed approach to HRA of the Local Plan Partial Update reasonable (see Chapters 2 and 4)* Yes – subject to detailed comments below	Noted – Natural England in broad agreement with scope of HRA
	2.23 – Definition of terms - 'recreation impacts' – We propose that the council distinguishes recreation impacts from urban effects. Arson, fly tipping, litter and vandalism may be argued to be separate from recreation issues. Stroud DC's Regulation 19 HRA report provides an example where this approach has been used. The document is in the Stroud DC Examination Library on their website: https://www.stroud.gov.uk/environment/planning-and-building-control/planning-strategy/stroud-district-local-plan-review/local-plan-examination/examination-library	Urban effects separated from recreation impacts in later HRA reports (including this report).

Consultee, date, consultation stage	Comments (relevant excerpts)	LUC response
	4.10 - Severn Estuary Special Protection Area (SPA) – reference to functional linkages with Cotswold Water Park. We would welcome further dialogue with the Council on this subject in the light of the report's status as a preliminary assessment.	Further work has been completed on this study, since 2022; the HRA references the most up to date work.
	4.30 - Highways Agency "Design Manual for Road and Bridges (DMRB) Document LA105: Air Quality" – this paragraph refers to what is otherwise known as the 'affected road network'. Table 4.1: European sites which are situated within 200 m of a strategic road and their corresponding SSSI units condition With regard to SSSI unit condition we draw the Council's attention to the fact that air quality data available on APIS – www.apis.ac.uk - (Site Relevant Critical Load) data is NOT currently reflected in the SSSI condition assessment summary information. A number of additional information sources on this theme are evolving at the time of writing. We would welcome continued dialogue with the Council to ensure the partial review reflects the most up to date relevant information and evidence. Table 4.2: AADT data provided by Cotswold DC for those European sites within 200m of a strategic road. Natural England notes the nil return for the Cotswold Beechwoods SAC and A46. We therefore draw your attention to Stroud DC's Reg19 HRA findings in the light of the Wealden judgement. Paragraphs 8.41-8.43 refer (link to HRA report above). The Council should check whether any cumulative increase in traffic associated with the Cotswold District plan review needs further consideration.	Transport and air quality work will need to be completed once the Local Plan preferred site allocations are confirmed (at Reg.19). LUC will agree the scope of this work in consultation with Natural England, and ensure that these comments are picked up.

Consultee, date, consultation stage	Comments (relevant excerpts)	LUC response
	Recreational disturbance 4.48 A review of the European sites and their recreational ZOI determined that the following European sites do not have a recreational ZOI that extends into the CDC boundary and can therefore be scoped out of further assessment: ■ Bredon Hill SAC; ■ Oxford Meadows SAC; and ■ Severn Estuary SAC, SPA and Ramsar. NB Current Severn Estuary SAC/SPA/Ramsar Site recreation commission by the Gloucestershire local planning authorities – No Zone of influence (ZOI) has yet been determined. However the plan review should recognise that visitor surveys are due to be completed by the end of March and a report is expected April/May 2022. The visitor survey report is expected to define the extent of the ZOI.	Further work has been completed on this study, since 2022; the HRA references the most up to date work.
	Table 4.4 – inclusion of Dixton Wood SAC (recreation pressure) – NB To our knowledge no public rights of way exist within this SAC. The Council may screen out this SAC from recreation considerations accordingly.	Dixton Wood SAC scoped out for recreation pressure on this basis.

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19 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.

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