Local Plan for Buckinghamshire

Habitats Regulations Assessment Scoping Report

Buckinghamshire Council

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Quality information

Prepared by	Checked by	Verified by	Approved by
Grace Gardner Consultant Ecologist	Dr James Riley Technical Director	Dr Max Wade Technical Director	Dr James Riley Technical Director

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Prepared for:

Buckinghamshire Council

Prepared by:

Grace Gardner
Consultant Ecologist
E: grace.gardner@aecom.com

AECOM Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 310200
aecom.com

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1. Glossary

Appropriate Assessment = The term given to the second, detailed, stage of the Habitats Regulations Assessment process. An assessment that is appropriate to determine whether the integrity of a European site will be affected

Emerald Network = the network of internationally important wildlife sites established under the Bern Convention, 1979, signed in Bern, Switzerland

European sites = an informal term for the network of SACs, SPAs and Ramsar sites

HRA = Habitats Regulations Assessment; the term given in England and Wales for assessments of impacts on European sites designated through the Conservation of Habitats and Species Regulations 2017 (as amended)

Impact pathways = Mechanisms through which a particular activity can affect a particular SAC, SPA or Ramsar site such as air quality, water quality or recreational pressure

Test of Likely Significant Effects = The term given to the first stage of the Habitats Regulations Assessment process. An initial high-level examination of a plan or project to determine whether the potential for significant negative effects on a European site exists

Ramsar site = An internationally important wildlife site designated under the Ramsar Convention on Wetlands of International Importance, 1979, signed in Ramsar, Iran

SAC = Special Area of Conservation; an internationally important wildlife site designated for its habitats or for species other than birds

SANG = Suitable Alternative Natural Greenspace; areas of natural recreational greenspace created to draw visitors away from other sensitive areas of land and spread the recreational load

Site integrity = the ability of a European site to achieve its conservation objectives

SPA = Special Protection Area; an internationally important wildlife site designated for its bird interest

SSSI = Site of Special Scientific Interest; a nationally important wildlife site. All European sites on the UK mainland are also designated as SSSIs

2. Executive Summary

Buckinghamshire Council (BC) is at early stages in producing the new Local Plan for Buckinghamshire (LPFB). The LPFB will set out a spatial vision, objectives, levels and types of growth, strategic and development management policies. It will also identify infrastructure requirements and allocate sites for development in the period up to 2040 including to meet the housing and economic development needs of Buckinghamshire. AECOM has been appointed to undertake the report to inform the Habitats Regulations Assessment (HRA) of the emerging LPFB.

Buckinghamshire Council is a Competent Authority as defined in Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended). Regulation 105 states that 'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which… is likely to have a significant effect on a European site [a Special Area of Conservation, Special Protection Area or, as a matter of Government policy, a Ramsar site] or a European offshore marine site (either alone or in combination with other plans or projects) …must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives'. This entire process is called Habitats Regulations Assessment (HRA).

To inform the HRA, this scoping report is being prepared, although there is no legal requirement to do so. Its purpose is to set out:

- The current legal requirements (with summary of key applicable case law) and how these may change under planning reforms.
- The proposed methodology for the HRA.
- Information on the Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in, and within 10km of, Buckinghamshire.
- The impact pathways required to be addressed in any HRA of the LPFB.
- Identify the agencies/stakeholders that need to be involved in the HRA work.
- Provide an overview of all conservation objectives, current issues and pressures facing relevant European sites.
- Identify any strategic mitigation solutions already in place at relevant European sites;
- Identify at this early stage any opportunities or threats that local plan spatial options for development could have on HRA sites.
- The list of other plans and projects that will be covered in the HRA.

In the case of Buckinghamshire Council, it was determined that for the initial coarse screen international sites within the BC boundary and within 10 km of the boundary (Table 1) required consideration.

Table 1 Internationally Designated Sites for Consideration and their Location in Relation to the Buckinghamshire Council Boundary

Internationally Designated Site	Location
Chilterns Beechwoods Special Area of Conservation (SAC)	This SAC is fragmented. Most fragments are in Buckinghamshire, although the largest fragment (Ashridge Commons and Woods) is split between Buckinghamshire and Dacorum.
Aston Rowant SAC	Located partly within the BC boundary. Located on the south-west of the authority border approximately half the SAC is within the authoritative boundary.
Burnham Beeches SAC	Located within the BC boundary.
Windsor Forest and Great Park SAC	Located 2 km south of BC boundary.
South West London Waterbodies SPA	Main body located 2.5 km south of the BC authority. This site is fragmented into nine areas.
South West London Waterbodies Ramsar	Main body located 2.5 km south of the BC authority. This site is fragmented into nine areas.

Analysis of the likely pathways of impact identified that traffic related air quality impacts on European sites from Local Plan growth would need consideration (particularly for Aston Rowant SAC but also for elements of Chilterns Beechwoods SAC), as well as hydrological impacts at Burnham Beeches SAC. However, the impact pathways of greatest relevance were likely to be recreational pressure on Chilterns Beechwoods SAC (particularly Ashridge Commons & Woods) and Burnham Beeches SAC. For Burnham Beeches there is a clearly defined 5.6km recreational catchment beyond which significant effects are unlikely to arise from new housing, and within which mitigation is required.. For Ashridge Commons & Woods there is a recreational catchment of 12.6km within which mitigation is required. This must take the form of either Suitable Alternative Natural Greenspace (SANG), financial contributions to SAC management (known as Strategic Management and Monitoring or SAMM contributions) or both. Buckinghamshire Council has commissioned consultants to help it assess sites that may be capable of becoming mitigation hosts for Suitable Alternative Natural Green Space. This study should conclude shortly, with host sites coming forward in 2023. In consultation over this scoping report Natural England advised there is no current evidence to suggest that there are recreational pressures occurring at Tring Woodlands SSSI or any other part of Chilterns Beechwoods SAC, and therefore no mitigation is required on those component parts in relation to recreation.

Hydrological (water-based) impacts on Burnham Beeches SAC from new development within the catchments of the four streams that feed into the SAC has also been identified as an issue which would require mitigation.

The LPFB can take advantage of the opportunities presented by the information presented in this report, either by using it to inform the spatial distribution of development, or by combining European site mitigation solutions with other biodiversity and multifunctional greenspace improvements:

- As part of shaping the Local Plan it will be necessary during the plan development process to consider, not only whether there is an existing problem (as is currently identified for Burnham Beeches SAC and Ashridge Commons and Woods SSSI) but also whether delivering growth where there is no current problem may cause issues in the future. This cannot be done at this initial stage but will be required later in the HRA process as specific site allocations and growth amounts are identified as options. This may trigger the need for mitigation measures or mitigation catchments to be identified around other parts of the Chilterns Beechwoods SAC as the plan development proceeds.
- It would make sense in reducing the mitigation need for the LPFB if decisions over the quantum and distribution of development when developing plan options took into account that the lower the amount of net new housing within the mitigation catchments of Ashridge Commons and Woods SSSI and Burnham Beeches SAC, the less of a mitigation burden is required in the form of SANG or an equivalent. This would be relevant to considerations over the amount of net new housing to be delivered in Amersham and Chesham, east of Aylesbury and in Beaconsfield and Gerrards Cross.
- Consideration should be given to the role of any new legal requirements that may emerge during the Local Plan process. For example, delivering land to achieve Biodiversity Net Gain could potentially be co-located with mitigation solutions for recreational pressure on Chilterns Beechwoods SAC by increasing the amount of available recreational greenspace and delivering significant biodiversity enhancements. For example, a country park could be zoned in order to provide both considerable biodiversity benefits and significant natural recreational benefits Moreover, any large area of biodiversity net gain is likely to be informally used for recreation unless steps are taken to physically exclude the general public. To do this any site for co-location would need to be large and meet requirements for performing as a SANG or other new natural recreational greenspace, such as those originally devised for the Thames Basin Heaths[1].

It is the intention of this document to present the initial scoping exercise, presenting stakeholder opinions and knowledge of various impact pathways of relevance to the LPFB and identifying existing evidence sources that can be drawn upon or the subsequent stages of the appropriate assessment.

At this stage we were interested in stakeholder comments on the proposed approach and other information presented, and of any further scoping details that require inclusion or mention in the subsequent appropriate assessment. Stakeholder comment was of particular interest with regard to the following:

[1] https://www.woking2027.info/allocations/sadpdexam/neguidelinessang

- 500m exclusion zones are in existence around one component part of the Chilterns Beechwoods SAC. This is associated with the Ashridge Commons and Woods SSSI. Views were sought about the idea of incorporating an exclusion zone around the entire SAC (which for the LPFB could only apply within Buckinghamshire) versus its application only to Ashridge Commons and Woods SSSI. In response to the consultation Natural England commented that any 500m exclusion zone should be based on the best available evidence, and that current evidence did not support the need for any further zones. Central Bedfordshire Council supported applying a 500m exclusion zone around all parts of the SAC. Windsor & Maidenhead did not object to the proposal but wanted to understand further the nature of any controls that might be proposed within such exclusion zones and the justification for them before they agreed to them being introduced to parts of the SAC in, or overlapping with, Windsor & Maidenhead. They also clarified that they have not programmed a review of the Borough Local Plan to start within the next 3 years given their Local Plan was adopted relatively recently. South Oxfordshire and Vale of White Horse District Councils also advised that caution should be applied to the identification of such zones. In summary, there is no current identified requirement to extend the 500m exclusion zone to other parts of Chilterns Beechwoods SAC.
- A recreational catchment zone of 12.6km is in place around parts of the Chilterns Beechwoods SAC associated with the Ashridge Commons and Woods SSSI. A recreational catchment zone of 1.7km was identified to exist for the parts of the Chilterns Beechwoods SAC associated with the Tring Woodlands SSSI Note that the existence of a recreational catchment does not mean mitigation is therefore required, it simply identifies the zone within which visitors derive. With regard to Tring Woodlands SSSI, Natural England confirmed in response to this consultation that no recreational pressure mitigation is required. Views were sought about the idea of recreational catchment zones for the remaining fragments of the Chilterns Beechwoods SAC within Buckinghamshire. Natural England confirmed that there was no evidence that other parts of the SAC, other than Ashridge Commons & Woods, would require recreational pressure mitigation.
- As significant investment has been placed in some fragments of the Chilterns Beechwoods SAC (Ashridge Commons and Woods SSSI and Tring Woodlands SSSI), including but not limited to further Ecological surveys, Visitor Survey and Identification of Potential Impacts of Recreation and Conservation/Management/Mitigation plans. A question was asked whether further investigations into the recreational impact pathway into the remaining sections of the SAC be undertaken and if so, what form should these take? Natural England commented that they have no evidence any parts of the SAC other than Ashridge Commons & Woods, would require recreational pressure mitigation. This indicates that none of these possible further studies should be needed.

3. Introduction

3.1 Buckinghamshire is one of the home counties, with towns such as High Wycombe, Amersham, Chesham and the Chalfonts forming some of the most densely populated parts of the county. Development in this region is restricted by the Metropolitan Green Belt and the Chilterns Area of Outstanding Natural Beauty (AONB). Other large settlements include the county town of Aylesbury, Marlow in the south on the Thames and Princes Risborough in the west near Oxfordshire. The areas around the old county town of Buckingham and near Olney in the northeast, are much less populous. Milton Keynes in the northeast was made a city in 2022. Along with the surrounding area it is administered as a unitary authority separately to the rest of Buckinghamshire. The remainder of the county is administered by Buckinghamshire Council as another unitary authority. This Unitary Authority was created in April 2020 from the areas that were previously administered by the former Buckinghamshire County Council and former districts of South Bucks, Chiltern, Wycombe and Aylesbury Vale.

3.2 Buckinghamshire Council (BC) is at early stages preparing the new Local Plan for Buckinghamshire (LPFB). The LPFB will set out a spatial vision, objectives, levels and types of growth and strategic and development management policies. It will also identify infrastructure requirements and allocate sites for development in the period up to 2040 to meet the growth needs of Buckinghamshire. AECOM has been appointed to undertake the report to inform the Habitats Regulations Assessment (HRA) of the emerging LPFB.

3.3 The LPFB will be a planning document, used in assessing planning applications. It has been determined that the LPFB should establish a high-level strategic planning strategy for the county to make sure future development provides the right kind of jobs, homes and transport links in the best and most sustainable locations, so that everyone in the region can share in the county's success.

3.4 The LPFB will cover a period of at least 15 years from adoption (anticipated c.2026/7) and will apply to the administrative boundary of Buckinghamshire Council, excluding Milton Keynes unitary authority.

3.5 Buckinghamshire Council is a Competent Authority as defined in Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended). Regulation 105 states that 'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which… is likely to have a significant effect on a European site [a Special Area of Conservation, Special Protection Area or, as a matter of Government policy, a Ramsar site] or a European offshore marine site (either alone or in combination with other plans or projects) …must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives'. This entire process is called Habitats Regulations Assessment (HRA).

3.6 To inform the HRA, this scoping report is being prepared, although there is no legal requirement to do so. Its purpose is to set out:

- The current legal requirements (with summary of key applicable case law) and how these may change under planning reforms.
- The proposed methodology for the HRA.
- Information on the Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in, and within 10km of, Buckinghamshire[2].
- The impact pathways required to be addressed in any HRA of the LPFB.
- The agencies/stakeholders that need to be involved in the HRA work.
- An overview of all conservation objectives, current issues and pressures facing relevant European sites.
- Any strategic mitigation solutions already in place at relevant European sites;
- Inform the identification of any opportunities or threats that local plan growth could have on HRA sites to inform the development of spatial options.

[2] There is no 'one size fits all' guidance regarding zones of influence around European sites. As a general rule it is uncommon for impact pathways arising from housing and conventional employment development to significantly affect European sites more than 10km distant if there is no specific hydrological linkage. Where there is reason to deviate from this 10km zone (such as regarding recreational pressure at Ashridge Commons and Woods SSSI) then an appropriate alternative has been chosen.

- The list of other plans and projects that will be covered in the HRA.

3.7 This scoping report was shared with key stakeholders in the HRA process. Natural England are the required consultee for the HRA process and it is therefore a legal requirement for them to be involved where an Appropriate Assessment is likely to be required. The Council therefore shared the report with Natural England and also consulted neighbouring councils.

4. HRA Law and Methodology

Legal Context

4.1 The UK left the EU on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). However, the Withdrawal Act retains the body of existing EU-derived law within our domestic law. Habitats Regulations Assessment therefore continues as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[3], unless this requirement is changed by future legislation. Note that there are current government plans to change the Habitats Regulations although how they may change is currently unclear. Similarly, although EU case law is currently still considered of relevance in the UK courts that position may change during plan preparation and the Local Plan period. Therefore, all stages of the HRA will need to be mindful of changes in legislation and caselaw.

4.2 The need for Appropriate Assessment (**Figure 1**) is set out in the Conservation of Habitats and Species Regulations 2017 (as amended). The HRA process applies the 'Precautionary Principle'[4] to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. Plans and projects with predicted adverse impacts on the integrity of European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

4.3 In order to ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

Figure 1: The legislative basis for Appropriate Assessment

> Conservation of Habitats and Species Regulations 2017 (As Amended)
>
> The Regulations state that:
> "A competent authority, before deciding to … give any consent for a plan or project which is likely to have a significant effect on a European site … shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives… The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site".

4.4 Over time the phrase 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Habitats Directive from screening through to IROPI. This has arisen in order to distinguish the process from the individual stage described in the law as an 'Appropriate Assessment'.

4.5 In spring 2018 the 'Sweetman' European Court of Justice ruling[5] clarified that 'mitigation' (i.e. measures that are specifically introduced to avoid or reduce a harmful effect on a European site that would otherwise arise) should **not** be taken into account when forming a view on likely significant effects. Mitigation should instead only be considered at the Appropriate Assessment stage.

4.6 In 2018 the Court of Justice of the European Union (CJEU) also ruled in combined cases C-293/17 and C-294/17 (often dubbed the Dutch Nitrogen case). The case related to atmospheric nitrogen deposition from agriculture and the concept of 'headroom' for further deposition. The Dutch government argued that because other measures they were taking (through a national programme known as the PAS) would reduce atmospheric nitrogen deposition considerably, this would create headroom for agricultural growth, such that individual farms would not need Appropriate Assessment or mitigation as long as they remained within that headroom. However, there was considerable uncertainty over the effectiveness of the PAS reductions, and even with the PAS reductions taken into account, large areas of the relevant European sites would still be

[3] these don't replace the 2017 Regulations but are just another set of amendments
[4] The Precautionary Principle, which is referenced in Article 191 of the Treaty on the Functioning of the European Union, has been defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 2005) as: *"When human activities may lead to morally unacceptable harm* [to the environment] *that is scientifically plausible but uncertain, actions shall be taken to avoid or diminish that harm. The judgement of plausibility should be grounded in scientific analysis"*.
[5] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

above the critical load (i.e. the threshold below which damage could be ruled out with confidence). As a result, the Advocate-General advising the court disagreed with the Dutch Government due to the degree of uncertainty over the effectiveness of the PAS and argued that if the critical load was still exceeded there was effectively no headroom available since damage would still arise from further deposition. In other words, to create sufficient headroom at a national level to entirely avoid the need for Appropriate Assessment or mitigation, one would need to not just reduce nitrogen inputs from other sources but do so to such an extent the damage thresholds for the European site was no longer exceeded. The Court concurred, ruling that where a site is already in a negative state the room for permitting further harm is necessarily limited.

4.7 The LPFB HRA will be mindful of these rulings.

Introduction to HRA Methodology

4.8 The HRA will be carried out with reference to the general EC guidance on HRA[6]; the UK government has also produced its own guidance[7]. These will be referred to in undertaking this HRA.

4.9 **Figure 2** below outlines the stages of HRA according to current guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

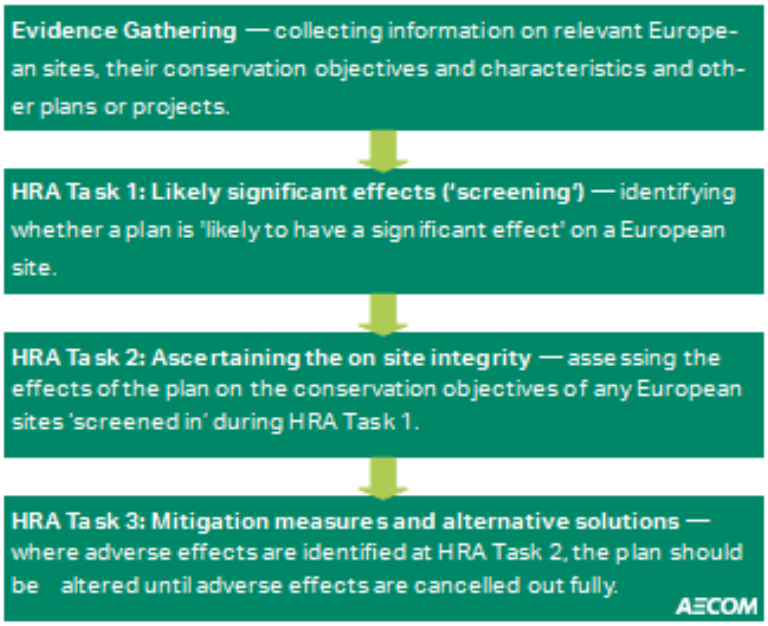

Figure 2. Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001[1].

Description of HRA Tasks

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

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

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

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

[6] European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
[7] https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

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

4.13 In the Waddenzee case[8], the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive, including that:

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

4.14 The ToLSE consists of two parts: firstly, determining whether there are any policies that could result in negative impact pathways and secondly determining whether there are any European sites that might be affected.

4.15 This scoping report identifies European designated sites that could be affected by the LPFB and also those impact pathways that are most likely to require consideration in the ToLSE within the HRA report.

4.16 Note that as a result of aforementioned 2018 case law, the conclusion of 'no likely significant effect' must not take account of any measures specifically introduced to avoid or reduce harm to European sites. Embedded measures (i.e. those that are integral to the plan itself) can be considered at this stage but other types of mitigation must be deferred to the appropriate assessment.

4.17 It is important to note that the ToLSE must generally follow the precautionary principle as its main purpose is to determine whether the subsequent stage of 'appropriate assessment' (i.e. a more detailed investigation) is required.

HRA Task 2 – Appropriate Assessment (AA)

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

4.19 There is a clear implication that the analysis in an appropriate assessment should be more detailed than undertaken at the previous stage. One of the key considerations during Appropriate Assessment is whether there is available mitigation that would entirely address the potential effect. In practice, the Appropriate Assessment would take any policies or allocations that could not be dismissed following the high-level Likely Significant Effects Test analysis and assess the potential for an effect in more detail. The purpose would be to conclude whether there would actually be an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the European site(s)).

4.20 In 2018 the Holohan ruling[9] was handed down by the European Court of Justice. This included paragraph 39 which stated that '*As regards other habitat types or species, which are present on the site, but for which that site has not been listed, and with respect to habitat types and species located outside that site, … typical habitats or species must be included in the appropriate assessment, if they are necessary to the conservation of the habitat types and species listed for the protected area*' [emphasis added].

4.21 Where necessary, measures will be recommended for incorporation into the emerging LPFB in order to avoid or mitigate adverse effects on European sites. There is considerable precedent, both nationally and locally, concerning the level of detail that a Plan document needs to contain regarding mitigation for recreational impacts on European sites, for example. The implication of this precedent is that it is not

[8] Case C-127/02
[9] Case C-461/17

necessary for all measures that will be deployed to be fully developed prior to adoption of the LPFB, but the LPFB must provide an adequate policy framework within which these measures can be delivered.

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

4.23 When discussing 'mitigation' for a LPFB document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the detail of the mitigation measures themselves since the LPFB document is a high-level policy document.

Mitigation

4.24 Once the appropriate assessment has been completed there may be a requirement for mitigation. This is most likely to consist of amendments to policy wording of the LPFB, or the identification of strategic mitigation solutions for smaller sites unlikely to be able to deliver their own mitigation. The purpose is to ensure an adequate framework exists to protect European sites from any identified adverse effects.

4.25 Consideration should be given to the role of any new legal requirements that may emerge during the Local Plan process. For example, delivering land to achieve Biodiversity Net Gain could potentially be co-located with mitigation solutions for recreational pressure on Chilterns Beechwoods SAC by increasing the amount of available recreational greenspace and delivering significant biodiversity enhancements. For example, a country park could be zoned in order to provide both considerable biodiversity benefits and significant natural recreational benefits Moreover, any large area of biodiversity net gain is likely to be informally used for recreation unless steps are taken to physically exclude the general public. To do this any site for co-location would need to be large and meet requirements for performing as a SANG or other new natural recreational greenspace, such as those originally devised for the Thames Basin Heaths[10].

4.26 There would be value in building a strong network of new greenspaces, large parks and accessible Green/ Blue Infrastructure corridors into the LPFB from the start, located appropriately to draw new residents away from sensitive international sites and to deliver multiple benefits. This would probably be in addition to working with landowners and managers of internationally designated sites to address the direct effects of increased recreational pressure within the designated site themselves. For other European sites at which recreational pressure is a concern this latter is often done through creating a Strategic Access Management & Monitoring (SAMM) Strategy, although landowner involvement is essential.

4.27 The Department for Levelling Up, Housing & Communities (DLUHC) and Ministry of Housing, Communities and Local Government (MHCLG) guidance[11] makes it clear that when implementing HRA of land-use plans, the Appropriate Assessment (AA) should be undertaken at a level of detail that is appropriate and proportional to the level of detail provided within the plan itself:

- "The comprehensiveness of the [Appropriate] assessment work undertaken should be proportionate to the geographical scope of the option and the nature and extent of any effects identified. An AA need not be done in any more detail, or using more resources, than is useful for its purpose. It would be inappropriate and impracticable to assess the effects [of a strategic land use plan] in the degree of detail that would normally be required for the Environmental Impact Assessment (EIA) of a project."
- The Court of Appeal[12] ruled that providing the Council (competent authority) was duly satisfied that proposed mitigation could be 'achieved in practice' to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Local Plan)[13]. In that case the High Court ruled that for *'a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Regulation 102 of the Habitats Regulations*'.

[10] https://www.woking2027.info/allocations/sadpdexam/neguidelinessang
[11] Department for Levelling up, housing and communities 2019. Guidance on Appropriate assessment https://www.gov.uk/government/organisations/department-for-levelling-up-housing-and-communities https://www.gov.uk/guidance/appropriate-assessment [accessed 17/11/2022]
[12] No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015
[13] High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

- The same principle has also been applied in Buckinghamshire with regard to the former Wycombe District Local Plan. In paragraph 175 of his ruling in case [2020] EWHC 1984 (Admin), 2020 WL 04248573 (Keep Bourne End Green v Buckinghamshire Council (formerly Wycombe District Council), The Secretary of State for Housing, Communities and Local Government v Catesby Estates Plc, Leopold Noe) when a policy in this plan was challenged for being insufficiently detailed regarding mitigation for European sites, Mr Justice Holgate noted that '*I accept the Council's submission that, as a matter of law, the wording of Policy BE2 did not need to go further* [and provide full details regarding the mitigation for impacts on a European site that would be required]. *It was appropriate for the Plan as a development plan forming part of a multi-stage decision-making process, which includes a more detailed application for the grant of a development consent and a further HRA at that point. It was sufficient for the examination and adoption of the Plan that there was sufficient information before the Council enabling it to be satisfied, as it was, that the proposed mitigation could be achieved in practice… The requirement of s.106 contributions to a "suitable natural alternative green space" ("SANG") is a well-established form of mitigation under the 2017 Regulations for dealing with recreational pressure on a European protected site. The wording of Policy BE2, understood within the multi-stage nature of the statutory scheme, complies with the requirements of the Habitats Directive'*.

4.28 In other words, there is an acceptance that AA can be tiered and that all impacts are not necessarily appropriate for consideration to the same degree of detail at all tiers. The fullest level of detail is required at the reserved matters or full planning application stage that it 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'*, as per Cooperatie Mobilisation [2019] Env LR (CSFG§97).

4.29 Similarly, in any Local Plan, there are numerous policies for which there is a limit to the degree of assessment that is possible at the plan level. This is because either:

- The policy in question does not contain any specifics as to what will be delivered so literally cannot be assessed in detail at the plan level. In these cases, the appropriate assessment would focus on precautionary mitigation that can be included in the plan to ensure that whatever proposals come forward will not result in adverse effects on integrity; or
- The nature of the potential impacts (notably lighting, noise and visual disturbance during construction, or loss of functionally-linked land) are very closely related to exactly how the development will be designed and constructed or require detailed development site-specific bird survey data. They therefore cannot be assessed in detail at the plan level. In these instances, the appropriate assessment focusses on the available mitigation measures, the extent to which such measures would be achievable and effective and whether an adequate protective framework exists to ensure that the policy would not lead to an adverse effect on the integrity of any internationally designated sites.

4.30 On these occasions the advice of Advocate-General Kokott[14] is worth considering. She commented that: *'It would …hardly be proper to require a greater level of detail in preceding plans* [rather than planning applications] *or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure* ***to the extent possible on the basis of the precision of the plan***. ***This assessment is to be updated with increasing specificity in subsequent stages of the procedure'*** [emphasis added]. This is the approach taken in the HRA and is in line with the Department for Levelling Up Housing and Communities guidance referenced in paragraph 4.27, and Court rulings that regarding level of detail of the assessment which is appropriate at each stage of the planning process.

Assessment 'in combination'

4.31 It is a requirement of the Regulations that the impacts and effects of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question. In practice, 'in combination assessment' is of greatest importance when the policy would otherwise be screened out because the individual contribution is not significant. When undertaking in combination assessment for specific development sites, it is important to avoid double-counting since housing and employment projects that deliver growth in Buckinghamshire will usually

[14] Opinion of Advocate General Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland, paragraph 49
http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN

themselves be part of the individual Local Plans for the county (either legacy Buckinghamshire Local Plans or the new LPFB) through site allocations. In these instances, the development of a planning application essentially provides further detail on those aspects of Local Plan growth rather than presenting a new project.

4.32 Similarly, where growth is being delivered in surrounding authorities this is captured in the 'in combination' assessment through consideration of the relevant Local Plan that sets out the total amount of growth that will be delivered across that authority during its plan period.

Geographical Scope of the HRA

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

5. Internationally Designated Sites

5.1 In the case of Buckinghamshire Council, it was determined that for the initial coarse screen international sites within the BC boundary and within 10 km of the boundary (Table 1) required consideration.

5.2 The locations of the below internationally designated sites are illustrated in **Appendix A, Figure A1**.

Table 2 Internationally Designated Sites for Consideration and their Location in Relation to the Buckinghamshire Council Boundary

Internationally Designated Site	Location
Chilterns Beechwoods Special Area of Conservation (SAC)	This SAC is fragmented, consisting of Ashridge Commons and Woods SSSI, Aston Rowant Woods SSSI, Bisham Woods SSSI, Bradenham Woods, Park Wood & The Coppice SSSI, Ellesborough and Kimble Warrens SSSI, Hollowhill and Pullingshill Woods SSSI, Naphill Common SSSI, Tring Woodlands SSSI and Windsor Hill SSSI. Most fragments are in Buckinghamshire, although the largest fragment (Ashridge Commons and Woods) is split between Buckinghamshire and Dacorum.
Aston Rowant SAC	Located partly within the BC boundary. Located on the south-west of the authority border approximately half the SAC is within the authoritative boundary.
Burnham Beeches SAC	Located within the BC boundary.
Windsor Forest and Great Park SAC	Located 2 km south of BC boundary.
South West London Waterbodies SPA	Main body located 2.5 km south of the BC authority. This site is fragmented into nine areas.
South West London Waterbodies Ramsar	Main body located 2.5 km south of the BC authority. This site is fragmented into nine areas.

Chilterns Beechwoods SAC

Introduction

5.1 The Chilterns Beechwoods represent a very extensive tract of ancient semi-natural beech *Fagus sylvatica* forests in the centre of the habitat's UK range. The woodland is an important part of a mosaic with species-rich chalk grassland and scrub.

5.2 The large population of trees on the site, in combination with the historical continuity of the woodland cover, is the reason for this SAC being listed as the most important site in the UK for fauna associated with decaying timber. A distinctive feature in the woodland flora is the occurrence of the rare coralroot bittercress *Cardamine bulbifera*. Standing and fallen dead timber provide habitat for dead-wood (saproxylic) invertebrates, including stag beetle *Lucanus cervus*.

Qualifying Features[15]

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

- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)

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

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

5.5 Annex II species that are a qualifying feature, but not a primary reason for selection of this site:

[15] Available at: Chilterns Beechwoods - Special Areas of Conservation (jncc.gov.uk) Available at: European Site Conservation Objectives for Chilterns Beechwoods SAC - UK0012724 (naturalengland.org.uk) [Accessed on the 17/11/2022]

- Stag beetle *Lucanus cervus*

Conservation Objectives[16]

5.6 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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

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

Threats / Pressures to Site Integrity[17]

5.8 The following threats and pressures to the site integrity of the Chilterns Beechwoods SAC have been identified in Natural England's Site Improvement Plan and the Supplementary Advice on the Conservation Objectives[13]:

- Forestry and woodland management
- Deer
- Changes in species distributions
- Invasive species
- Disease
- Public access/disturbance; and,
- Air pollution: Impact of atmospheric nitrogen deposition.

Aston Rowant SAC

Introduction

5.9 Aston Rowant is one of the largest surviving complexes of beech woodland, mixed scrub, juniper and chalk grassland in the Chilterns. The woodland is dominated by beech, together with pedunculate oak *Quercus robur*, wild cherry *Prunus avium*, common whitebeam *Sorbus aria*, ash *Fraxinus excelsior*, hazel *Corylus avellana* and holly *Ilex aquifolium*, particularly on the deeper soils of the plateau.

5.10 The ground flora includes sanicle *Sanicula europaea*, dog's mercury *Mercurialis perennis*, sweet woodruff *Galium odoratum*, wood dog-violet *Viola riviniana*, yellow archangel *Lamiastrum galeobdolon* and bramble *Rubus fruticosus agg*. in the open areas. The woods also contain a number of uncommon plants characteristic of the Chilterns beechwoods including violet helleborine *Epipactis purpurata*, white helleborine *Cephalanthera damasonium* and wood barley *Hordelymus europaeus*.

5.11 In the dry coombes there are stands of open scrub dominated by juniper *Juniperus communis*, intermixed with grassland. Mixed scrub of elder *Sambucus nigra*, privet *Ligustrum vulgare*, hawthorn *Crataegus monogyna*, wayfaring-tree *Viburnum lantana*, buckthorn *Rhamnus cathartica*, yew *Taxus baccata*, whitebeam, dogwood *Cornus sanguinea* and bramble is present on Beacon Hill and on the margins of the

[16] Available at: European Site Conservation Objectives for Chilterns Beechwoods SAC - UK0012724 (naturalengland.org.uk) [Accessed on the 17/11/2022]
[17] Available at: SIP150304FINALv1.0 Chilterns Beechwoods (1).pdf [Accessed on the 17/11/2022]

juniper scrub. The scrub also contains heavily rabbit grazed areas with bare ground colonised by wild candytuft *Iberis amara*, a species with a British distribution centred on the Chilterns.

Qualifying Features[18]

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

- Juniperus communis formations on heaths or calcareous grasslands. (Juniper on heaths or calcareous grasslands)

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

- *Asperulo-Fagetum* beech forests. (Beech forests on neutral to rich soils)

Conservation Objectives[19]

5.14 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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

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

Threats / Pressures to Site Integrity[20]

5.16 The following threats and pressures to the site integrity of the Aston Rowant SAC have been identified in Natural England's Site Improvement Plan and the Supplementary Advice on the Conservation Objectives[16]:

- Unsustainable on-site population or habitat
- Changes in species distributions
- Deer
- Conflicting Conservation objectives
- Disease; and,
- Air pollution: Impact of atmospheric nitrogen deposition

Burnham Beeches SAC

Introduction

5.17 Burnham Beeches occupies an extensive area of the Burnham Plateau where Thames gravels and underlying Reading Beds give rise to acid soils, supporting mature and developing woodland, old coppice, scrub and heath. Burnham Beeches is an example of Atlantic acidophilous beech forests in central southern England. Surveys have shown that it is one of the richest sites for *saproxylic* invertebrates in the UK, including 14 Red Data Book species. It also retains nationally important epiphytic communities (lichens and byophytes growing on other plants), including the moss *Zygodon forsteri*.

5.18 Holly and honeysuckle *Lonicera periclymenum* are the main components of the shrub layer of the woodlands, and bracken *Pteridium aquilinum* and brambles frequently dominate the ground flora. However, in places these are lacking and the woodland floor may bear no more than scattered patches of wavy hair-grass *Deschampsia flexuosa* and cushions of the distinctive moss *Leucobryum glaucum*. The site also

[18] Available at: Aston Rowant - Special Areas of Conservation (jncc.gov.uk) [Accessed on the 17/11/2022]
[19] Available at: European Site Conservation Objectives for Aston Rowant SAC - UK0030082 (naturalengland.org.uk) [Accessed on the 17/11/2022]
[20] Available at: Site Improvement Plan: Aston Rowant - SIP007 (naturalengland.org.uk) [Accessed on the 17/11/2022]

supports an extensive area of acid mire with several locally uncommon plants including bog pimpernel *Anagallis tenella*, marsh St. John's wort *Hypericum elodes* and royal fern *Osmunda regalis*.

Qualifying Features[21]

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

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

Conservation Objectives[22]

5.20 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

5.21 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
- The supporting processes on which qualifying natural habitats rely

Threats / Pressures to Site Integrity[23]

5.22 The following threats and pressures to the site integrity of the Burnham Beeches SAC have been identified in Natural England's Site Improvement Plan and the Supplementary Advice on the Conservation Objectives[19]:

- Air pollution: Impact of atmospheric nitrogen deposition
- Public access/disturbance
- Habitat fragmentation
- Hydrological impacts
- Deer
- Species decline; and,
- Invasive species

Windsor Forest & Great Park SAC

Introduction

5.23 The Windsor Forest & Great Park SAC comprises old acidophilous oak woods in its south-east part of its range. It harbours the largest number of veteran oaks (*Quercus* spp.) in Britain, primarily a consequence of its management as wood pasture.

5.24 Furthermore, it is of importance for its diversity of saproxylic (dead wood eating) invertebrates, including many rare species (e.g. the beetle *Lacon querceus*) that are only known from this site. Windsor Forest and Great Park SAC is also recognised as being extraordinarily rich in fungal assemblages.

5.25 The large population of trees on the site, in combination with the historical continuity of the woodland cover, is the reason for this SAC being listed as the most important site in the UK for fauna associated with

[21] Available at: Burnham Beeches - Special Areas of Conservation (jncc.gov.uk) [Accessed on the 17/11/2022]
[22] Available at: European Site Conservation Objectives for Burnham Beeches SAC - UK0030034 (naturalengland.org.uk) [Accessed on the 17/11/2022]
[23] Available at: Site Improvement Plan: Burnham Beeches - SIP032 (naturalengland.org.uk) [Accessed on the 17/11/2022]

decaying timber. For example, the site supports the largest of the known populations of the violet click beetle (*Limoniscus violaceus*).

Qualifying Features[24]

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

- Old acidophilous oak woods with *Quercus robur* on sandy plains

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

- Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer

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

- Violet click beetle *Limoniscus violaceus*:

Conservation Objectives[25]

5.29 With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed below), and subject to natural change;

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

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

Threats / Pressures to Site Integrity[26]

5.31 The following threats and pressures to the site integrity of the Windsor Forest & Great Park SAC have been identified in Natural England's Site Improvement Plan and the Supplementary Advice on the Conservation Objectives[21]:

- Forestry and woodland management
- Invasive species
- Disease; and,
- Air pollution: Impact of atmospheric nitrogen deposition.

Southwest London Waterbodies SPA / Ramsar

Introduction

5.32 The South-West London Water Bodies SPA / Ramsar comprises a series of embanked water supply reservoirs and former gravel pits that provide a range of man-made and semi-natural open water habitats. The reservoirs and gravel pits function as important feeding and roosting sites for wintering wildfowl, in particular gadwall (*Anas Strepera*) and shoveler (*Anas clypeata*), both of which occur in numbers of European importance.

[24] Available at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0012586 [Accessed on the 17/11/2022]
[25] Available at: http://publications.naturalengland.org.uk/publication/5175000009015296 [Accessed on the 17/11/2022]
[26] Available at: http://publications.naturalengland.org.uk/publication/6221375450644480 [Accessed on the 17/11/2022]

SPA Qualifying Features[27]

5.33 The South West London Waterbodies SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed in Annex I of the Directive:

Over-winter:

- Gadwall Anas strepera - 2.6% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)
- Northern Shoveler Anas clypeata - 2.7% of the wintering Northwestern / Central Europe population (5 year peak mean 1991/2 - 1995/6)

Ramsar Qualifying Features[28]

5.34 The South West London Water Bodies are designated as a Ramsar site for the following criteria:

5.35 Criterion 6:

Species / populations occurring at levels of international importance.
Qualifying species / populations (as identified at designation):
Species with peak counts in spring / autumn

- Northern shoveler *Anas clypeata*, NW & C Europe: 397 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter

- Gadwall *Anas Strepera*, NW Europe: 487 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9-2002/3)

Conservation Objectives[29]

5.36 With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features' listed below), and subject to natural change;

5.37 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.

Threats / Pressures to Site Integrity[30]

5.38 The following threats and pressures to the site integrity of the South West London Waterbodies SPA have been identified in Natural England's Site Improvement Plan and the Supplementary Advice on the Conservation Objectives[26]:

- Public access / Disturbance
- Changes in species distributions
- Invasive species
- Natural changes to site conditions

[27] Available at: http://jncc.defra.gov.uk/page-2051-theme=default [Accessed on the 17/11/2022]
[28] Available at: http://jncc.defra.gov.uk/pdf/RIS/UK11065.pdf [Accessed on the 17/11/2022]
[29] Available at: http://publications.naturalengland.org.uk/publication/4901473695563776 [Accessed on the 17/11/2022]
[30] Available at: http://publications.naturalengland.org.uk/publication/6662064386867200 [Accessed on the 17/11/2022]

- Fisheries: Fish stocking; and,
- Inappropriate weed control.

6. Impact Pathways for Consideration

6.1 This section discusses potential impact pathways that could potentially link the Local Plan for Buckinghamshire (LPFB) to an international designated site (as identified in **Chapter 3**). These are briefly identified in Table 3. Where existing evidence exists in relation to a specific impact pathway or an internationally designated site, further discussion is undertaken in the subsequent section.

Table 3 Potential Impact Pathways that Could Link the LPFB to an Internationally Designated Site

Internationally Designated Site	Potential Linking Impact Pathways
Chilterns Beechwoods Special Area of Conservation (SAC)	• Air quality: impact of ammonia, NOx and the resulting atmospheric nitrogen deposition • Any impact on stag beetle functionally linked habitat • Public access (recreation) / disturbance including adventure sports, soil compaction/loss, digging and creating mountain bike jumps, increased fire risk, dog fouling/eutrophication, gathering mushrooms, dead wood removal, introduction of invasive species such as holly etc.
Aston Rowant SAC	• Loss of, and disturbance to, functionally linked habitat (including inappropriate land management) • Air quality: impact of atmospheric nitrogen deposition
Burnham Beeches SAC	• Air quality: impact of atmospheric nitrogen deposition • Loss of, and disturbance to, functionally linked habitat (including inappropriate land management) • Public access (recreation) / disturbance including adventure sports, soil compaction/loss, digging and creating mountain bike jumps, dog fouling/eutrophication, gathering mushrooms, holly etc. • Water quantity: impact of development, abstraction and pollution[31]
Windsor Forest and Great Park SAC	• Public access / disturbance • Air quality: impact of atmospheric nitrogen deposition
South West London Waterbodies SPA/Ramsar	• Water quality and water quantity: impact of nutrient deposition, abstraction and pollution[28] • Loss of, and disturbance to, functionally linked habitat (including avian sites) • Public access (recreation) / disturbance particularly water sports

6.2 It should be noted that all the above internationally designated sites will be included within the Habitats Regulations Assessment. However, it is likely that the focus will be on the Chilterns Beechwoods SAC, Aston Rowant SAC and Burnham Beeches SAC as it is these internationally designated sites that are considered most likely to be affected by development in Buckinghamshire at this stage due to their location within the Authority boundary.

[31] In March 2022 Natural England published a list of SACs and SPAs which were failing their conservation objectives due to nitrogen and/or phosphorus pollution from surface water associated with treated sewage effluent and agriculture. All of these are wetland sites and no European sites in Buckinghamshire or connected to Buckinghamshire are included in the list. South West London Waterbodies is also not included in the list. Burnham Beeches SAC is, however, sensitive to hydrological (water quantity, levels and flow) changes in the immediate surrounding catchment and studies have been undertaken into this issue.

7. Key Evidence

7.1 Where present, current and relevant, existing evidence and stakeholder knowledge will be drawn upon to inform the Habitats Regulations Assessment of the Local Plan for Buckinghamshire (LPFB). The following discussion identifies existing evidence and includes a summary of its relevance to the LPFB HRA.

7.2 Since leaving the EU (and thus the EUs network of internationally important wildlife sites, Natura 2000) the government has focussed greater attention on the fact that the UKs internationally important wildlife sites are also part of the Bern Convention Emerald Network. All English and Welsh Emerald Network Sites (SPA and SAC sites), have Site Improvement Plans produced for them by Natural England/ Natural Resources Wales. These documents identify existing pressures and threats to a designated site and have been used as a basis for this scoping report. At the same time, some of the Site Improvement Plans are several years old and therefore more recent Supplementary Advice for conservation objectives has also been used where available.

Recreational Pressure

7.3 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfil conservation objectives while also providing recreational opportunity. Various research reports have provided compelling links between changes in housing and access levels[32], and impacts on European protected sites[33] [34]. This applies to any habitat, but recreational pressure from housing growth is of particular significance for European sites. Different European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex. HRAs of planning documents tend to focus on recreational sources of disturbance due to new residents[35]. Housing developments within the LPFB will need to strongly consider their impact on Emerald Network sites. Mitigation already in consideration for a number of the European sites listed in section 3 of this report is discussed further in section 6.

Trampling Damage, Nutrient Enrichment and Wildfires

7.4 Most terrestrial habitats (especially heathland, woodland and dune systems) can be affected by trampling and other mechanical damage. This dislodges individual plants, leads to soil compaction and erosion. The following studies have assessed the impact of trampling associated with different recreational activities in different habitats:

- Wilson & Seney)[36] examined the degree of track erosion caused by hikers, motorcyclists, horse riders and cyclists in 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, it was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.
- Cole et al[37] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & grassland communities (each trampled between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphology

[32] Weitowitz D.C., Panter C., Hoskin R. & Liley D. (2019). The effect of urban development on visitor numbers to nearby protected nature conservation sites. *Journal of Urban Ecology* **5**. https://doi.org/10.1093/jue/juz019
[33] Liley D, Clarke R.T., Mallord J.W., Bullock J.M. (2006a). The effect of urban development and human disturbance on the distribution and abundance of nightjars on the Thames Basin and Dorset Heaths. Natural England / Footprint Ecology.
[34] Liley D., Clarke R.T., Underhill-Day J., Tyldesley D.T. (2006b). Evidence to support the appropriate Assessment of development plans and projects in south-east Dorset. Footprint Ecology / Dorset County Council.
[35] The RTPI report 'Planning for an Ageing Population' (2004) which states that 'From being a marginalised group in society, the elderly are now a force to be reckoned with and increasingly seen as a market to be wooed by the leisure and tourist industries. There are more of them and generally they have more time and more money.' It also states that 'Participation in most physical activities shows a significant decline after the age of 50. The exceptions to this are walking, golf, bowls and sailing, where participation rates hold up well into the 70s'.
[36] Wilson, J.P. & J.P. Seney. (1994). Erosional impact of hikers, horses, motorcycles and off-road bicycles on mountain trails in Montana. *Mountain Research and Development* **14**:77-88
[37] Cole, D.N. (1995a). Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* **32**: 203-214
Cole, D.N. (1995b). Experimental trampling of vegetation. II. Predictors of resistance and resilience. *Journal of Applied Ecology* **32**: 215-224

(structure) was found to explain more variation in response than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. The cover of hemicryptophytes (plants with buds at or near the soil surface) and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year. These were therefore considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.

- Cole[38] conducted a follow-up study (across four vegetation types) in which shoe type (trainers or walking boots) and trampling weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier tramplers caused a greater reduction in vegetation height than lighter tramplers, but there was no differential impact on vegetation cover.
- Cole & Spildie[39] experimentally compared the effects of off-track trampling by hikers and horse riders (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse trampling was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance but recovered rapidly. Generally, it was shown that higher trampling intensities caused more disturbance.

7.5 A major concern for nutrient-poor terrestrial habitats (e.g. heathlands, sand dunes, bogs and fens) is nutrient enrichment associated with dog fouling (addressed in various reviews[40]). It is estimated that dogs will defecate within 10 minutes of starting a walk and therefore most nutrient enrichment arising from dog faeces will occur within 400m of a site entrance. In contrast, dogs will urinate at frequent intervals during a walk, resulting in a more spread out distribution of urine. For example, in Burnham Beeches National Nature Reserve it is estimated that 30,000 litres of urine and 60 tonnes of dog faeces are deposited annually[41]. While there is limited information on the chemical constituents of dog faeces, nitrogen is one of the main components[42]. Nutrient availability is the major determinant of plant community composition and the effect of dog defecation in sensitive habitats is comparable to a high-level application of fertiliser, potentially resulting in a shift towards plant communities that are more typical of improved grasslands.

Bird Disturbance

7.6 Human activity can affect birds either directly (e.g. by eliciting flight responses) or indirectly (e.g. by damaging habitat or reducing bird fitness in less obvious ways such as through inducing stress responses). The most obvious direct effect is that of immediate mortality such as death by shooting. Human activity can also lead to much subtler behavioural (e.g. alterations in feeding behaviour, avoidance of certain areas and use of sub optimal areas etc.) and physiological changes (e.g. an increase in heart rate). While such changes are less noticeable, they might result in major population-level changes by altering the balance between immigration / birth and emigration / death[43].

7.7 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and time spent responding to disturbance is time that is not spent feeding[44]. Disturbance therefore increases energetic expenditure while reducing energetic intake, which can adversely affect the 'condition' and ultimately survival of birds. Additionally, displacement of birds from one feeding site to another can increase the pressure on the resources available within alternative foraging sites, which must sustain a greater number of birds[45]. Moreover, the higher proportion of time a breeding bird spends away from its nest, the more likely it is that eggs will cool and the more vulnerable they, or any nestlings, are to

[38] Cole, D.N. (1995c). Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.
[39] Cole, D.N., Spildie, D.R. (1998). Hiker, horse and llama trampling effects on native vegetation in Montana, USA. *Journal of Environmental Management* **53**: 61-71
[40] Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. (2005). Dogs, access and nature conservation. English Nature Research Report, Peterborough.
[41] Barnard A. (2003). Getting the facts – Dog walking and visitor number surveys at Burnham Beeches and their implications for the management process. *Countryside Recreation* **11**:16-19.
[42] Taylor K., Anderson P., Liley D. & Underhill-Day J.C. (2006). Promoting positive access management to sites of nature conservation value: A guide to good practice. English Nature / Countryside Agency, Peterborough and Cheltenham.
[43] Riley, J. (2003). Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[44] Riddington, R. *et al*. (1996). The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* **43**:269-279.
[45] Gill, J.A., Sutherland, W.J. & Norris, K. (1998). The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* **12**: 67-72.

predators. Recreational effects on ground-nesting birds are particularly severe, with many studies concluding that urban sites support lower densities of key species, such as stone curlew and nightjar[46] [47].

7.8 Several factors (e.g. seasonality, type of recreational activity) may have pronounced impacts on the nature of bird disturbance. Disturbance in winter may be more impactful because food shortages make birds more vulnerable at this time of the year. In contrast, this may be counterbalanced by fewer recreational users in the winter months and lower overall sensitivity of birds outside the breeding season. Evidence in the literature suggests that the magnitude of disturbance clearly differs between different types of recreational activities. For example, dog walking leads to a significantly higher reduction in bird diversity and abundance compared to hiking[48]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[49]. Furthermore, differences in on-site route lengths and usage patterns likely imply that key spatial and temporal parameters (such as the area of a site potentially impacted and the frequency of disturbance) will also differ between recreational activities. This suggests that activity type is a factor that ought to be taken into account in HRAs.

Summary

7.9 Several European sites relevant to Buckinghamshire Local Plan Area are designated for habitats and species that are sensitive to recreational pressure. This includes the Chilterns Beechwoods SAC, Burnham Beeches SAC, Windsor Forest and Great Park SAC and the South West London Waterbodies SPA / Ramsar. A likely increase in residential development across Buckinghamshire will lead to an increase in the local population and demand for access to outdoor spaces. The HRA process needs to adequately assess potential recreational pressure effects of the Plan on these European sites.

7.10 Overall, the following European sites within 10km of the Buckinghamshire Council boundary and are sensitive to increased recreational access, and therefore could be affected by the allocation of residential development in the Local:

- Chilterns Beechwoods SAC (maximum core catchment for recreational pressure to this SAC is 12.6km, see section 6 for further details)
- Burnham Beeches SAC
- Windsor Forest and Great Park SAC
- South West London Waterbodies SPA/Ramsar

Functionally Linked Habitat

7.11 The following organisations' web-sites will be reviewed for publicly available information that they may be able to provide on functionally linked habitat:

- British Trust for Ornithology - South West London Waterbodies SPA Wildfowl Population Analysis[50]
- Birdlife International Data Zone – South-West London Waterbodies[51]; and
- London Wildlife Trust.

7.12 Natural England Impact Risk Zones for each SSSI and guidance that underlies those zones will be utilised. The main document of reference is:

- Natural England (2019). Impact Risk Zones Guidance Summary Sites of Special Scientific Interest Notified for Birds. Version 1.1

[46] Clarke R.T., Liley D., Sharp J.M., Green R.E. (2013). Building development and roads: Implications for the distribution of stone curlews across the Brecks. *PLOS ONE*. https://doi:10.1371/journal.pone.0072984.
[47] Liley D. & Clarke R.T. (2003). The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. Biological Conservation **114**: 219-230.
[48] Banks P.B., Bryant J.Y. (2007). Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* **3**: 14pp.
[49] Miller S.G., Knight R.L., Miller C.K. (2001). Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* **29**: 124-132.
[50] BTO 2004. South West London Waterbodies SPA Wildfowl Population Analysis https://www.bto.org/sites/default/files/shared_documents/publications/research-reports/2004/rr361.pdf [Accessed 19/11/2022]
[51] BirdLife International (2022) Important Bird Areas factsheet: South-west London Waterbodies. http://www.birdlife.org [Accessed on 19/11/2022].

7.13 This identifies the typical distances that wintering waterfowl will travel from their SPAs to forage. Relevant Impact Risk Zones are identified as follows:

Table 4 Natural England Impact Risk Zones (IRZ) for Designated Bird Features

Bird Assemblage	Impact Risk Zone (foraging distance)
Wintering birds (except wintering waders and grazing wildfowl; wigeon and geese)	Up to 500m
Dabbling ducks such as teal, mallard and gadwall	Home ranges could extend beyond site boundaries at coastal sites, but less likely to do so at inland water bodies.
Wintering waders (except golden plover and lapwing), brent goose & wigeon	Maximum foraging distance is 500m
Wintering lapwing and golden plover	Maximum foraging distance is 15-20km. Golden plover can forage up to 15km from a roost site within a protected site. Lapwing can also forage similar distances. Both species use lowland farmland in winter and it is difficult to distinguish between designated populations and those present within the wider environment. Developments affecting functionally linked land more than 10km from the site are unlikely to impact significantly on designated populations.
Wintering white-fronted goose, greylag goose, Bewick's swan, whooper swan, pink-footed goose & wintering bean goose	Maximum foraging distance is 10km although studies have shown that pink-footed geese will fly 20km from their roosting site to feed[52]. A bespoke functional land IRZ has replaced the individual Birds 6/7 IRZs for sites supporting the following goose and swan species: pink-footed geese, barnacle goose, Bewick's swan, white-fronted goose and whooper swan. The IRZ is based on GIS distribution records of feeding pink-footed geese from a study undertaken for Natural England by the Wildfowl & Wetlands Trust and the results of work undertaken by the British Trust for Ornithology to identify functionally connected habitat used by barnacle goose, Bewick's swan, white-fronted goose and whooper swan based on WeBS site and BirdTrack data and focuses on only the areas of land that we know are being used as functional habitat by designated populations

7.14 Two European sites relevant to Buckinghamshire Local Plan Area is designated for habitats and species that can utilise functionally linked sites: these are the South West London Waterbodies SPA / Ramsar and Chilterns Beechwoods SAC.

7.15 Chilterns Beechwoods SAC is designated for its population of stag beetle. Adult stag beetles do not feed and die shortly after mating, so colony persistence is associated with continued presence of larval dead wood habitat. Colonization of new nest sites is dependent on both reproductive female presence and availability of deadwood habitat for the larvae. In radio-telemetry studies of stag beetle dispersal, the maximum female dispersal distance for an adult female was 727 m from her point of emergence. However, once they have mated, female stag beetles generally return to the spot where they emerged to lay their eggs[53]. This behaviour limits stag beetle dispersal and means stag beetle populations from an SAC will be largely restricted to that SAC.

7.16 Overall, the following European sites within 10km of the Buckinghamshire Council boundary and are therefore considered sensitive to degradation in functional linkage:

- South West London Waterbodies SPA/Ramsar

7.17 The IRZ data in Table 3 indicate that for wintering birds generally (such as the gadwall and shoveler for which the SPA/Ramsar is designated) functionally-linked habitat of importance to maintaining the population of the SPA is typically located within 500m of the site. Buckinghamshire is well beyond that distance. Moreover, functionally-linked habitat for gadwall and shoveler will generally consist of other waterbodies

[52] https://monitoring.wwt.org.uk/wp-content/uploads/2018/12/Mapping-feeding-Pinkfeet-in-England-Final-report-vFinal.Jan15-2.pdf [accessed 14/04/2021]
[53] https://ptes.org/campaigns/stag-beetles/stag-beetle-facts/

(e.g. gravel pits). The functionally-linked waterbodies around the SPA are fairly well understood thanks to research including a PhD thesis[54]. All identified functionally-linked waterbodies are south of the M4. Therefore, it is considered probable that effects on functionally-linked land associated with the SPA/Ramsar site from the LPFB can probably be screened out.

Atmospheric Pollution (Nitrogen and Ammonia Deposition)

7.18 The main pollutants of concern for European sites are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2), and these are summarised in Table 4. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges[55]. NOx can also be toxic at very high concentrations (far above the annual average Critical Level). NOx and NH_3 both contribute to the total N deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in nitrogen deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication. This often has adverse effects on community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats[56] [57].

Table 5: Main sources and effects of air pollutants on habitats and species[58]

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO_2)	The main sources of SO_2 are electricity generation, and industrial and domestic fuel combustion. However, total SO_2 emissions in the UK have decreased substantially since the 1980's. Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO_2 have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO_2 emissions in the UK.	Wet and dry deposition of SO_2 acidifies soils and freshwater, and may alter the composition of plant and animal communities. The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species. However, SO_2 background levels have fallen considerably since the 1970's and are now not regarded a threat to plant communities. For example, decreases in Sulphur dioxide concentrations have been linked to returning lichen species and improved tree health in London.
Acid deposition	Leads to acidification of soils and freshwater via atmospheric deposition of SO_2, NOx, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels.	Gaseous precursors (e.g. SO_2) can cause direct damage to sensitive vegetation, such as lichen, upon deposition. Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants. Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.
Ammonia (NH_3)	Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock. It is also emitted from some vehicles.	The negative effect of NH_4+ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation. Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in

[54] Briggs, B. Wolfson College, 2007. The use of waterbodies in South-West London by Gadwall and Shoveler; implications for nature conservation. Unpublished PhD dissertation, University of Oxford.
[55] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.
[56] Wolseley, P. A.; James, P. W.; Theobald, M. R.; Sutton, M. A. (2006). Detecting changes in epiphytic lichen communities at sites affected by atmospheric ammonia from agricultural sources. *Lichenologist* **38**: 161-176.
[57] Dijk, N. (2011). Dry deposition of ammonia gas drives species change faster than wet deposition of ammonium ions: evidence from a long-term field manipulation. *Global Change Biology* **17**: 3589-3607.
[58] Information summarised from the Air Pollution Information System (http://www.apis.ac.uk/).

Pollutant	Source	Effects on habitats and species
	Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_4+) - containing aerosol. Due to its significantly longer lifetime, NH_4+ may be transferred much longer distances (and can therefore be a significant trans-boundary issue). While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.	dominance from heath species (lichens, mosses) to grasses is often seen. As emissions mostly occur at ground level in the rural environment and NH_3 is rapidly deposited, some of the most acute problems of NH_3 deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides (NO_x)	Nitrogen oxides are mostly produced in combustion processes. Half of NO_X emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes. In contrast to the steep decline in Sulphur dioxide emissions, nitrogen oxides are falling slowly due to control strategies being offset by increasing numbers of vehicles.	Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NOx for all vegetation types has been set to 30 ug/m3. Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification. In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.
Nitrogen deposition	The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_X) or reduced (e.g. NH_3) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices. The N pollutants together are a large contributor to acidification (see above).	All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally. Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O_3)	A secondary pollutant generated by photochemical reactions involving NOx, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above). Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O_3 above 40 ppb can be toxic to both humans and wildlife, and can affect buildings. High O_3 concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.

7.19 Sulphur dioxide emissions overwhelmingly derive from power stations and industrial processes that require the combustion of coal and oil, as well as (particularly on a local scale) shipping[59]. As such, it can be excluded that material increases in SO_2 emissions will not be associated with the LPFB. In contrast, NOx emissions are dominated by the output of vehicle exhausts (more than half of all emissions). A 'typical' housing development will contribute by far the largest portion of its overall NOx footprint (92%) through associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison[60]. Emissions of ammonia can also be linked to traffic although vehicles are not the major source. Therefore, emissions of NOx and ammonia can reasonably be expected to increase primarily due to an increase in the volume of commuter traffic associated with housing growth.

7.20 The World Health Organisation has the following critical thresholds for plant communities: The critical NOx concentration (also known as the Critical Level) for the protection of vegetation is 30 μgm^{-3}, that for vascular plans for ammonia is 3 μgm^{-3} and the threshold for sulphur dioxide is 20 μgm^{-3}. Additionally, ecological

[59] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[60] Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. http://www.airquality.co.uk/archive/index.php [Accessed on the 21/10/2021]

studies have determined 'Critical Loads'[61] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH3). Natural England has published guidance regarding the early stages of air quality impact assessment[62].

7.21 According to Design Manual for Roads and Bridges Volume LA105 (Air Quality)[63], beyond 200m, the contribution of vehicle emissions from the roads to local pollution levels is insignificant. Therefore, this distance has been used throughout this HRA to determine whether Likely Significant Effects (LSEs) on sensitive European sites may arise due to implementation of the Plan.

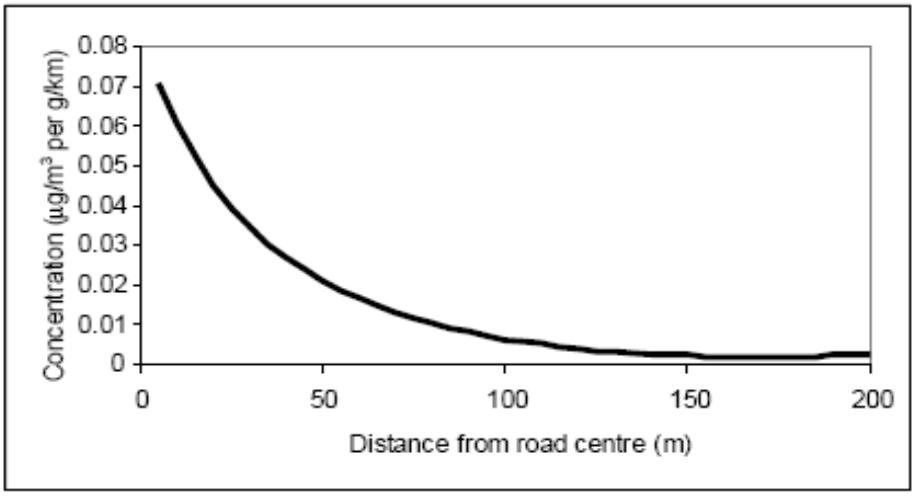

Figure 3 Schematic representation of the reduction in traffic contribution to concentrations of pollutants at different distances from a road

7.22 Overall, the following European sites within 10km of the BC boundary are sensitive to an increase in atmospheric pollution, primarily as a result of an increased number of commuter journeys due to residential development:

- Chilterns Beechwoods SAC
- Aston Rowant SAC
- Burnham Beeches SAC
- Windsor Forest and Great Park SAC

7.23 The Knight & Bessborough Reservoirs SSSI, a component part of the South West London Waterbodies SPA / Ramsar, is directly adjacent to the A3050 and Wraysbury Reservoir is adjacent to the M25. The interest features of the SPA and Ramsar site (non-breeding gadwall and shoveler ducks) depend on open water. Therefore, their ability to use the site will not be affected by NOx or ammonia in atmosphere. With regard to acid deposition, the Air Pollution Information System states '*No expected negative impact on the species due to impacts on the species' broad habitat*'. Like most lowland open freshwater environments, the reservoirs and gravel pits are a phosphate limited system rather than a nitrogen limited system. This means that the growth of negative macrophytes and algae primarily depends on the availability of phosphate[64]. Since emissions will not affect phosphate availability within any of the component waterbodies (as this does not derive from atmosphere), no likely significant effects will arise through atmospheric pollution either alone or in combination with other projects and plans.

7.24 This conclusion is supported in the Air Pollution Information System (APIS), which highlights that the susceptibility of the SPA to atmospheric pollution depends on whether it is nitrogen or phosphate limited. APIS does not provide a nitrogen Critical Level for open, standing water, which is the habitat present in the South West London Waterbodies SPA / Ramsar. Instead it states that '*No Critical Load has been assigned to the EUNIS classes for meso/eutrophic systems. These systems are often phosphorus limited; therefore,*

[61] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.
[62] Natural England's approach to advising competent authorities on the assessment of road traffic emissions under the Habitats Regulations - NEA001
[63] https://www.standardsforhighways.co.uk/prod/attachments/10191621-07df-44a3-892e-c1d5c7a28d90?inline=true [Accessed 23/01/23)
[64] http://www.apis.ac.uk/node/983

decisions should be taken at a site specific level'. Therefore, the SPA / Ramsar should be excluded from further assessment in relation to this impact pathway.

Water Quality

7.25 The quality of the water that feeds European sites is an important determinant of the condition of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects, even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
- Eutrophication is the enrichment of water with nutrients, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further. This augments the oxygen depleting effects of eutrophication.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine (hormone) system, possibly having negative effects on the reproduction and development of aquatic life.

7.26 The primary concern in relation to freshwater and freshwater-dependent sites is the discharge of phosphorus in treated sewage effluent into European sites themselves or hydrologically connected waterbodies. Development in Buckinghamshire over the Plan period will cause an increase in wastewater production. Treated wastewater and sewage effluent from these works may be discharged into waterbodies that are potentially hydrologically linked to the South West London Waterbodies SPA / Ramsar.

7.27 Overall, the following European site within 10km of the BC boundary is potentially sensitive to negative changes in water quality, primarily due to an increase in the discharge of treated sewage effluent from Wastewater Treatment Works (WwTWs) serving development in the county, depending on where that development is located:

- South West London Waterbodies SPA / Ramsar

Water Quantity, Level and Flow

7.28 The water level, its flow rates and the mixing conditions are important determinants of the condition of European sites and associated qualifying features. Hydrological processes are critical in influencing habitat characteristics in wetlands, terrestrial systems that have hydrological associations (e.g. wet heath) and coastal waters, including current velocity, water depth, dissolved oxygen levels, salinity and water temperature. In turn these parameters determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition.

7.29 A widely cited review paper summarised the ecological effects of reduced flow in rivers and connected water-dependent ecosystems. Droughts (ranging in their magnitude from flow reduction to a complete loss of surface water) have both direct and indirect effects on dependent floral and faunal communities. For example, the unique nature of wetlands combines shallow water and conditions that are ideal for the growth of organisms at the basal level of food webs, which feed many species of birds, mammals, fish and amphibians.

7.30 Maintaining a steady water supply is of critical importance for many hydrologically dependent SPAs, SACs and Ramsars. For example, in many freshwater bodies and wetlands the hydrological regime is essential for sustaining a variety of foraging habitats for SPA / Ramsar waterfowl species. However, different species vary in their requirements for specific water levels. Splash and / or shallow flooding is required to provide suitable feeding areas and roosting sites for ducks and waders. In contrast, deeper flooding is essential to provide foraging and loafing habitats for Bewick's swans and whooper swans.

7.31 Wetland habitats rely on hydrological connections with other surface waters, such as rivers, streams and lakes. A constant supply of water is fundamental to maintaining the ecological integrity of sites. However, while the natural fluctuation of water levels within narrow limits is desirable, excess or too little water supply might cause the water level to be outside of the required range for qualifying birds, invertebrate or plant

species. This might lead to the loss of the structure and functioning of wetland habitats. There are two mechanisms through which urban development might negatively affect the water level in European sites:

- The supply of new housing with potable water may require increased abstraction of water from surface water and groundwater bodies. Depending on the level of water stress in the geographic region, this may reduce water levels in European sites sharing the same catchment as the abstraction sources.
- The proliferation of impermeable surfaces in urban areas may increase the volume and speed of surface water runoff. As traditional drainage systems often cannot cope with the volume of stormwater, sewer overflows are designed to discharge excess water directly into watercourses. Often this pluvial flooding results in downstream inundation of watercourses and the potential flooding of wetland habitats.

7.32 Two European sites relevant to the Buckinghamshire Local Plan Area are designated for habitats and species that are sensitive to hydrological change. These are Burnham Beeches SAC and the South West London Waterbodies SPA / Ramsar. Burnham Beeches SAC specifically notes sensitivity to hydrological change in the 2013 Burnham Beeches Hydrology Study[65]. This applies to the Withy Stream catchment area, and that of three other watercourses, which are important for the mire and pond systems in the SAC. The catchment area is shown in the Development Management Guidance Note: Hydrology in Burnham Beeches, produced by the former South Bucks Council. The LPFB will likely include an increase in residential development across BC, therefore surface water runoff from impermeable urban surfaces within the four catchments will need to be considered further with regards to Burnham Beeches SAC if any net new development is proposed within this water catchment.

7.33 Overall, the following European sites within 10km of the BC authority boundary are sensitive to changes in water quantity, level and flow, specifically the maintenance of water levels above critical thresholds

- Burnham Beeches SAC
- South West London Waterbodies SPA/Ramsar

7.34 Unlike Burnham Beeches, South West London Waterbodies SPA/Ramsar is not hydrologically connected to Buckinghamshire, except in as much as the River Colne (forming the eastern county boundary) drains to the River Thames which is a source of water for the Thames Water reservoirs that make up part of the SPA.

[65] South Bucks District Council 2013 Burnham Beeches Hydrology Study

8. Existing Strategic Mitigation Solutions and Future Opportunities

Chilterns Beechwoods SAC

8.1 The 12.6 km recreational catchment around Chilterns Beechwoods SAC encompasses the following local authorities: Dacorum, Buckinghamshire, Central Bedfordshire, St Albans, Three Rivers District and Luton.

8.2 Dacorum Borough Council commissioned a Topic Paper for the Chilterns Beechwoods SAC[66]. A significant number of further surveys were undertaken at two fragments of the SAC: Ashridge Commons and Woods SSSI and Tring Woodlands SSSI. This included further Ecological surveys, Visitor Survey and Identification of Potential Impacts of Recreation and Conservation/Management/Mitigation Plans. These concluded that recreation has a range of impacts on the SAC qualifying features, particularly at Ashridge Commons and Woods. The National Trust have instigated a range of measures at the site already including logs to minimise and control levels of verge parking along the public highway, path edging and dead hedging to contain access and demarcation of parking bays along Monument Drive. The Topic paper and mitigation strategy concluded that despite these measures, impacts are widespread and recreation pressure is impacting the integrity of Ashridge Commons and Woods. On the basis of the evidence as summarised in the reports, housing growth will result in further damage to this part of the Chilterns Beechwoods SAC. For this reason, avoidance or mitigation measures are required for new residential development and some other forms of development within a Zone of Influence (ZoI) around the Chilterns Beechwoods SAC at Ashridge Commons and Woods SSSI.

8.3 At a meeting held on 15 November 2022, Dacorum Council's Cabinet approved the Chilterns Beechwoods Special Area of Conservation Mitigation Strategy which is targeted specifically at Ashridge Commons & Woods SSSI. This is the most heavily recreationally used part of the SAC based on current survey data. Dacorum Council also approved two Suitable Alternative Natural Greenspace (SANG) Management Plans in Dacorum District for Bunkers Park and Chipperfield Common[67]. This process set the background against which other local authorities within the affected area around Chilterns Beechwoods SAC will address the issue. In addition to SANG, the Dacorum Mitigation Strategy sets out targeted measures to protect the site. This will enable it to accommodate the predicted pressures associated with future growth within the 12.6 km recreational catchment zone that extends around Ashridge Commons and Woods SSSI. These measures will be delivered through a range of projects by the National Trust over a period of around 80 years (to 2102-2103)[68]. The National Trust has also confirmed that these Strategic Access Management and Monitoring (SAMMS) measures will cost a total of £18.2 million. This cost will be shared across all of the affected local authorities.

8.4 To help to reduce recreational pressure on Ashridge Commons and Woods SSSI, alternative green spaces therefore need to be identified in Buckinghamshire as well as Hertfordshire. All new developments within the Zone of Influence will need to make provision for a new Suitable Alternative Natural Greenspace (SANG), or alternatively contribute towards the maintenance of a suitable SANG project elsewhere. Larger developments (10 or more new homes) must be located close to a suitable SANG. Smaller developments could contribute towards an existing SANG. Developers that are unable to provide a suitable new SANG would be required to make a payment towards the long-term management and maintenance of strategic SANG sites, per new home.

8.5 Buckinghamshire Council has so far published the document Chiltern Beechwoods SAC FAQs[69] that refers to Buckinghamshire Council agreeing the SAMM mitigation solution and outlining the current approach to be taken on SANGs. A consultant's report on sites is due winter 2022/23, with the first SANGs in place 2023. Recreational pressure should be scoped into any further HRA reporting and should be strongly considered

[66] Dacorum Borough Council 2020. Topic Paper for the Chilterns Beechwoods SAC – A Summary/overview of available evidence. https://www.dacorum.gov.uk/docs/default-source/strategic-planning/topic-paper-for-the-chilterns-beechwoods-sac---summary-of-evidence.pdf?sfvrsn=d9da0c9e_4 [accessed 20/11/2022]
[67] Dacorum Borough Council 2022 https://www.dacorum.gov.uk/home/planning-development/planning-strategic-planning/new-single-local-plan/chilterns-beechwoods-special-area-of-conservation [accessed 19/11/2022]
[68] Dacorum Borough Council; Buckinghamshire Council; Central Bedfordshire Council; St. Albans City and District Council 2022. Chilterns Beechwoods Special Area of Conservation Mitigation Strategy for Ashridge Commons and Woods Site of Special Scientific Interest.
[69] Chiltern Beechwoods SAC FAQs (buckinghamshire-gov-uk.s3.amazonaws.com)

as part of the Local Plan for Buckinghamshire (LPFB). The extension of the further survey work including visitor survey is strongly recommended to the remaining sections of the Chilterns Beechwoods SAC given the variety of recreational catchments already identified by visitor survey.

8.6 There is no strategic mitigation solution for the Tring Woodlands SSSI component of the SAC and in any event its catchment lies entirely within the catchment for Ashridge Commons and Woods SSSI. Moreover, the small core catchment and the entirely rural nature of the area of Buckinghamshire within that catchment (Tring itself is in Hertfordshire and is by far the largest settlement within the catchment) means that the Local Plan for Buckinghamshire would be unlikely to affect this part of the SAC.

Aston Rowant SAC

8.7 No specific recreational pressure mitigation strategy is in place for the Aston Rowant SAC. Due to the steep nature of the site limiting off-track activity and the nearby presence of the M40, it is not anticipated that recreational pressure and public disturbance is likely to be an impact pathway for consideration.

Burnham Beeches SAC

8.8 Burnham Beeches SAC lies entirely within BC boundary, specifically within the existing Chiltern and South Bucks District Councils Local Plan area. Neighbouring local authorities include Slough Borough Council, Wycombe District Council and the Royal Borough of Windsor and Maidenhead.

8.9 A report, commissioned from Footprint Ecology, provides conclusions on the Impacts of Urban Development at Burnham Beeches SAC[70]. To date there have been a number of further surveys including visitor studies, work summarising the pressures from local housing, and work summarising management of recreation at Burnham Beeches. Recreational pressure as an impact pathway of likely significance from increasing levels of urban development are varied and have long been a concern. Growing levels of urban development will increase these recreational pressures and mean increasing challenges to maintain the conservation interest of what is a relatively small, isolated and vulnerable SAC.

8.10 Due to the differing local plan timescales, a strategic over-arching approach to the Burnham Beeches SAC Mitigation Strategy has not been pursued. Each planning authority is developing its own independent mitigation strategy aided by strategic guidance from Natural England. Taken together, these mitigation strategies will seek to avoid adverse impacts on site integrity at Burnham Beeches SAC as a result of increased public access and disturbance. The published Buckinghamshire mitigation strategy[71] is intended to address the requirement to avoid, or mitigate, adverse impacts on the integrity of Burnham Beeches SAC from local plan led development as originally set out in the (now withdrawn) Chiltern and South Bucks Local Plan. The strategy seeks to provide mitigation for the duration of the impact (in perpetuity, taken as 80 years). Throughout this period, regular strategic reviews will take place every five years, or more frequently if changes to legislation, housing numbers within a defined zone of influence or evidence necessitate.

8.11 The Burnham Beeches SAC Mitigation Strategy originally developed for the Chiltern and South Bucks Local Plan is comprised of two components: Presumption against development with 500m of Burnham Beeches SAC; and financial contributions from all net new development within a defined zone of influence (500m – 5.6km) towards a Strategic Access Management and Monitoring Strategy (SAMMS) at Burnham Beeches SAC.

8.12 New housing that is directly adjacent to the SAC will pose particular risks and recreational use of Burnham Beeches is particularly high from those who live in close proximity to the SAC. Recreational pressure should be scoped into any further HRA reporting and should be strongly considered as part of the LPFB.

8.13 In addition to the emerging recreation mitigation strategy, Wallingford HydroSolutions (WHS) produced the Burnham Beeches Hydrology study[60]. The study investigates the hydrological functioning of the Burnham Beeches SAC and evaluates the sensitivity of the site to the potential hydrological impacts associated with development within the catchments for streams draining into the Beeches. There is potential for such developments to have an adverse impact on the qualifying interests within the Beeches SAC through

[70] Liley, D. (2019). Impacts of urban development at Burnham Beeches SAC: Updates of evidence and potential housing growth, 2019. Unpublish report by Footprint Ecology for Chiltern and South Bucks Councils.
[71] Chiltern District 2020. Burnham Beeches Mitigation Strategy – Public Access and Disturbance file:///C:/Users/GardnerG/Downloads/Burnham_Beeches_Mitigation_Strategy_Version_1_120320-draft8%20(1).pdf [accessed 19/11/2022]

reductions in water quantity and quality. As a result of the likely significant impact of development within 500m of the SAC, South Bucks District Council referred all developments within the 500m exclusion zone discussed above to the City of London (as site owners) and Natural England for their comments, although this has since been refined to net new development within the four stream catchments feeding the SAC.

8.14 The potential hydrological effects of urbanisation within the streams draining into Burnham Beeches are associated within the alteration of water balance and reduced water quality. These potential impacts, including alteration of water balance and reduced water quality. A small proportion of the designated features, the beech trees, are situated within close proximity to the stream network and hence sensitive to changes in water balance and water quality. The report includes guidance for prospective developers, guidance on surface water management and construction best practice, as well as detailed investigations into how urbanisation will alter runoff.

8.15 From this the hydrological study, South Buckinghamshire District Council produced the Development Management Guidance Note: Hydrology in Burnham Beeches[72]. The purpose of this guidance is to take on the advice of the WHS report[60] and ensure that future development does not result in further reductions in natural runoff within the catchments draining to the SAC and that the water quality of that runoff is not reduced.

8.16 The overall aim of the aforementioned reports is to minimise or negate any adverse impacts to the SAC arising from alterations to the hydrology caused by new development and help maintain the natural hydrological functioning within the Burnham Beeches SAC. Hydrological impacts should be scoped into any further HRA reporting and should be strongly considered as part of the LPFB.

Windsor Forest and Great Park SAC

8.17 The Windsor Forest and Great Park SAC is designated for habitats that are directly sensitive to recreational trampling pressure. The site supports a high number of ancient and veteran trees, the root zones of which are particularly sensitive to soil compaction and hydrological changes that arise from trampling damage and this is referenced in the Supplementary Advice on the Conservation Objectives. Furthermore, the violet click beetle, Annex II species of the SAC, is dependent on a sufficient supply of decaying timber, the removal of which could adversely impact its population abundance.

8.18 The SAC lies approximately 2km south of Buckinghamshire Council boundary, well within the typical 5km core recreational catchment that is established for inland terrestrial European sites. However, for this SAC there is a very well-established path network and relevant ancient trees are thus sufficiently protected from the main areas of recreational focus to prevent damage to the root systems. Due to its extensive management Windsor & Maidenhead Local Plan established that the SAC is resilient to recreational disturbance and concluded that no likely significant effects from this impact pathway will arise. Regarding the violet click beetle, it is generally not possible to relate development plans to relatively rare, isolated behaviours. For example, only a very small proportion of visitors will remove deadwood or decaying timber from within the SAC, which is not expected to significantly decrease the habitat available to the beetle.

8.19 Windsor Forest and Great Park is a well-established visitor spot, providing an attractive and well-maintained destination for well over five million visitors a year. The Crown Estate Management team has significant management capacity for the protection of the SAC defining features[73]. The management plans and level of public access to and types of recreational activities undertaken in the different component parts of the SAC should be considered as part of the emerging LPFB.

South West London Waterbodies SPA/Ramsar

8.20 The qualifying species of the South West London Waterbodies SPA / Ramsar include two overwintering waterfowl species, namely gadwall and shoveler. These ducks make use of seven discrete SSSI waterbodies that collectively make up the SPA / Ramsar. Recreational disturbance has the potential to affect the natural foraging and resting behaviours of the ducks, with potential implications for the distribution of individuals across the component sites. Importantly, the qualifying ducks also use functionally linked

[72] South Bucks District Council 2014 Development Management Guidance Note: Hydrology in Burnham Beeches
[73] Windsor Great Park (The Crown Estate) 2022. Environment and Conservation. https://www.windsorgreatpark.co.uk/en/environment/conservation-stewardship [accessed 20/11/2022]

waterbodies outside the SPA boundary, which may also be subject to recreational pressure and must be considered in HRAs.

8.21 The South West London Water Bodies are popular sites for angling and water sports. These recreational activities can pose a threat to the integrity of the sites due to disturbance caused to protected wintering bird populations. The potential for disturbance may be less in winter than in summer, in that there are often a smaller number of recreational users. In addition, the consequences of disturbance at a population level may be reduced because birds are not breeding. However, winter activity can still cause important disturbance, especially as birds are particularly vulnerable at this time of year due to food shortages, such that disturbance which results in abandonment of suitable feeding areas through disturbance can have severe consequences. Several empirical studies have, through correlative analysis, demonstrated that out-of-season (October-March) recreational activity can result in quantifiable disturbance:

- Underhill et al[74] counted waterfowl and all disturbance events on 54 water bodies within the South West London Water bodies Special Protection Area and clearly correlated disturbance with a decrease in bird numbers at weekends in smaller sites and with the movement of birds within larger sites from disturbed to less disturbed areas.

8.22 Natural England's site condition assessment[28] [29] highlights that this SSSI is in 'favourable' condition, with shoveler abundances exceeding the SSSI target and gadwall occurring in good numbers. Regardless, due to the site being integrated in the dense urban fabric, the potential of a population increase to result in disturbance to SPA / Ramsar waterfowl must be considered. Sensitivity to disturbance in the aforementioned waterbodies is primarily determined by access arrangements, with some waterbodies (e.g. some of the reservoirs in operation by Thames Water) being inaccessible to the public, while others having limited (e.g. those used by watersports clubs) or uncontrolled access. The parts of the SPA/Ramsar closest to Buckinghamshire are water supply reservoirs with controlled access. The management plans and level of public access to and types of recreational activities undertaken in the different component parts of the SPA / Ramsar will be considered as part of the emerging LPFB HRA.

Opportunities for the LPFB

8.23 There are several ways in which the LPFB can take advantage of the opportunities presented by the information presented in this report, either by using it to inform the spatial distribution of development, or by combining European site mitigation solutions with other biodiversity and multifunctional greenspace improvements:

- As part of shaping the Local Plan it will be necessary during the plan development process to consider, not only whether there is an existing problem (as is currently identified for Burnham Beeches SAC and Ashridge Commons and Woods SSSI) but also whether delivering growth where there is no current problem may cause issues in the future. This cannot be done at this initial stage but will be required later in the HRA process as specific site allocations and growth amounts are identified as options. This may trigger the need for mitigation measures or mitigation catchments to be identified around other parts of the Chilterns Beechwoods SAC as the plan development proceeds.
- It would make sense in reducing the mitigation need for the LPFB if decisions over the quantum and distribution of development when developing plan options took into account that the lower the amount of net new housing within the mitigation catchments of Ashridge Commons and Woods SSSI and Burnham Beeches SAC, the less of a mitigation burden is required in the form of SANG or an equivalent. This would be relevant to considerations over the amount of net new housing to be delivered in Amersham and Chesham, east of Aylesbury and in Beaconsfield and Gerrards Cross.
- Consideration should be given to the role of any new legal requirements that may emerge during the Local Plan process. For example, delivering land to achieve Biodiversity Net Gain could potentially be co-located with mitigation solutions for recreational pressure on Chilterns Beechwoods SAC by increasing the amount of available recreational greenspace and delivering significant biodiversity enhancements. For example, a country park could be zoned in order to provide both considerable biodiversity benefits and significant natural recreational benefits Moreover, any large area of biodiversity net gain is likely to be informally used for recreation unless steps are taken to physically exclude the general public. To do this any site for co-location would need to be large and meet

[74] Underhill, M.C. et al. 1993. Use of Waterbodies in South West London by Waterfowl. An Investigation of the Factors Affecting Distribution, Abundance and Community Structure. Report to Thames Water Utilities Ltd. and English Nature. Wetlands Advisory Service, Slimbridge

requirements for performing as a SANG or other new natural recreational greenspace, such as those originally devised for the Thames Basin Heaths[75].

[75] https://www.woking2027.info/allocations/sadpdexam/neguidelinessang

9. Other Plans and Projects

9.1 Other plans and projects that will be considered when undertaking the Habitats Regulations Assessment include[76]:

- Local Plan documents for immediately surrounding authorities:
  - South Northamptonshire Local Plan (Part 2) 2011-2029
  - The Adopted West Northamptonshire Joint Core Strategy (2014)
  - Adopted Cherwell Local Plan 2011-2031 (adopted 2015 and readopted 2016)
  - The South Oxfordshire Local Plan 2035 (adopted 2020)
  - Emerging South Oxfordshire and Vale of White Horse Joint Local Plan (in development)
  - Windsor and Maidenhead Adopted Borough Local Plan 2013-2033
  - Slough Local Plan (adopted March 2004)[77]
  - Runnymede 2023 Local Plan (adopted 2020)
  - Spelthorne Emerging Local Plan 2022-2037
  - Hillingdon Local Plan part 1 and 2 (adopted 2020)
  - Three Rivers District Council Local Plan (new plan in preparation)
  - Dacorum Local Plan (2020-2038)
  - Bedford Borough Local Plan 2030 (adopted 2020) – to be updated to Bedford Borough Local Plan 2040 Plan for Submission 2022
- Transport Plan documents for authorities within the Buckinghamshire Council Authority and immediately surrounding authorities:
  - Aylesbury Transport Strategy (ATS) 2016 – 2033
  - Chilterns Transport Planning: a proposed common approach (2020)
  - Buckinghamshire County Council Transport Strategy (2019)
  - The High Wycombe 2050 Transport Strategy (2022)
  - Oxfordshire Local Transport and Connectivity Plan (2022)
- Minerals and Waste Plan documents for authorities within the Buckinghamshire Council Authority:
  - Buckinghamshire Minerals and Waste Local Plan 2016-2036 (adopted 2019)
- Water Resource Management Plan for Buckinghamshire Council Authority:
  - Affinity Water – Water Resource Management Plan 2024
  - Thames Water – Water Resource Management Plan 2024.
- Individual Projects in Buckinghamshire Council Authority and immediately surrounding authorities:
  - Crossrail – rail improvements
  - High Speed Rail 2 (HS2): this high-speed railway, with more than 25 stations, will link up London, the Midlands, the North and Scotland.
  - Western Rail access to Heathrow
  - East West Rail – Linking Cambridge and Oxford
  - Aylesbury Grid Reinforcement

[76] Full detail of the documents to be drawn upon will be updated when the HRA itself is undertaken. This is because documents may change over time as consultation stages progress.
[77] The council is currently working on a new Local Plan.

- South East Aylesbury Link Road
- Stoke Mandeville Bypass
- Waterside North Exchange development
- Regeneration of Aylesbury

9.2 It should be noted that rather than undertaking HRA of the individual projects and plans listed above, the Local Plan for Buckinghamshire (LPFB) HRA will draw upon those HRAs of the projects and plans listed above in drawing its conclusions.

10. Next Steps

10.1 It was the intention of this document to present the initial scoping exercise, presenting stakeholder opinions and knowledge of various impact pathways of relevance to the Local Plan for Buckinghamshire (LPFB) and identifying existing evidence sources that can be drawn upon or the subsequent stages of the appropriate assessment.

10.2 At this stage we were interested in stakeholder comments on the proposed approach and other information presented, and of any further scoping details that require inclusion or mention in the subsequent appropriate assessment. Stakeholder comment was of particular interest with regard to the following:

- As part of shaping the Local Plan it will be necessary during the plan development process to consider, not only whether there is an existing problem (as is currently identified for Burnham Beeches SAC and Ashridge Commons and Woods SSSI) but also whether delivering growth where there is no current problem may cause issues in the future. This cannot be done at this initial stage but will be required later in the HRA process as specific site allocations and growth amounts are identified as options. This may trigger the need for mitigation measures or mitigation catchments to be identified around other parts of the Chilterns Beechwoods SAC as the plan development proceeds.
- A recreational mitigation zone of 5.6km is in place around Burnham Beeches SAC. A recreational mitigation zone of 12.6km is in place around parts of the Chilterns Beechwoods SAC associated with the Ashridge Commons and Woods SSSI. Consultees including Natural England confirmed that no mitigation buffer zones are currently identified as being necessary around other elements of Chilterns Beechwoods SAC.
- As significant investment has been placed in some fragments of the Chilterns Beechwoods SAC (Ashridge Commons and Woods SSSI and Tring Woodlands SSSI), including but not limited to further Ecological surveys (beyond those originally undertaken in May to August 2021), Visitor Survey and Identification of Potential Impacts of Recreation and Conservation/Management/Mitigation plans. A question was asked whether investigations into the recreational impact pathway into the remaining sections of the SAC should be undertaken and if so, what form should these take? Natural England commented that they have no evidence any parts of the SAC other than Ashridge Commons & Woods, would require recreational pressure mitigation. This currently indicates that none of these possible further studies should be needed.

Appendix A Figures

Figure A1 Internationally Designated Sites in relation to the Buckinghamshire Council Authority Area

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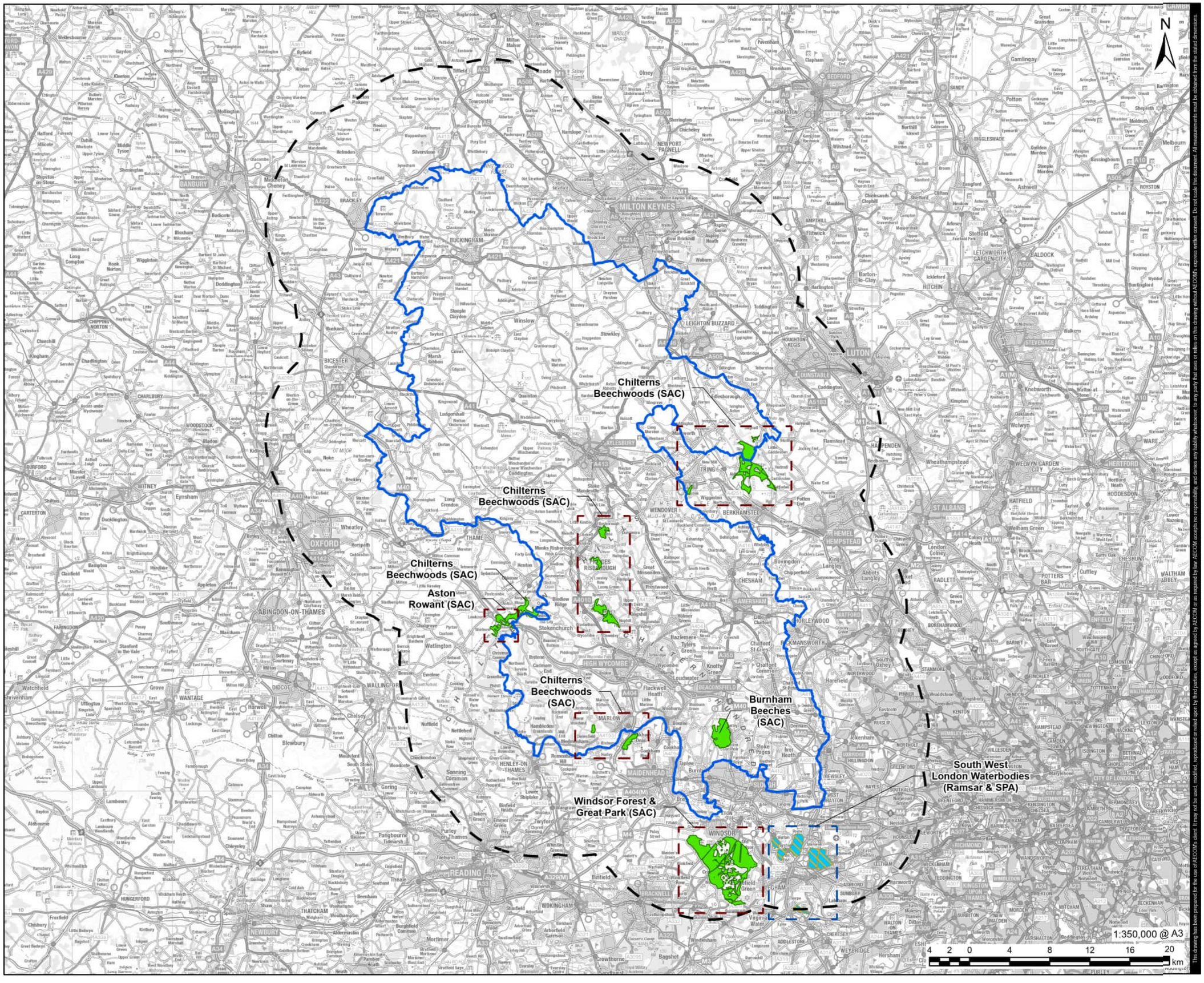

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LS11 9AR
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LEGEND

- Buckinghamshire County Boundary
- 10km Study Area
- Ramsar
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)

NOTES

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60684933

FIGURE TITLE

Designated Sites

FIGURE NUMBER

Figure A1

Figure A2 Existing Exclusion Zones and Recreational Catchment Zones

Revision: 0 Drawn: AG Checked: LC Approved: JR Date: 2023-03-20

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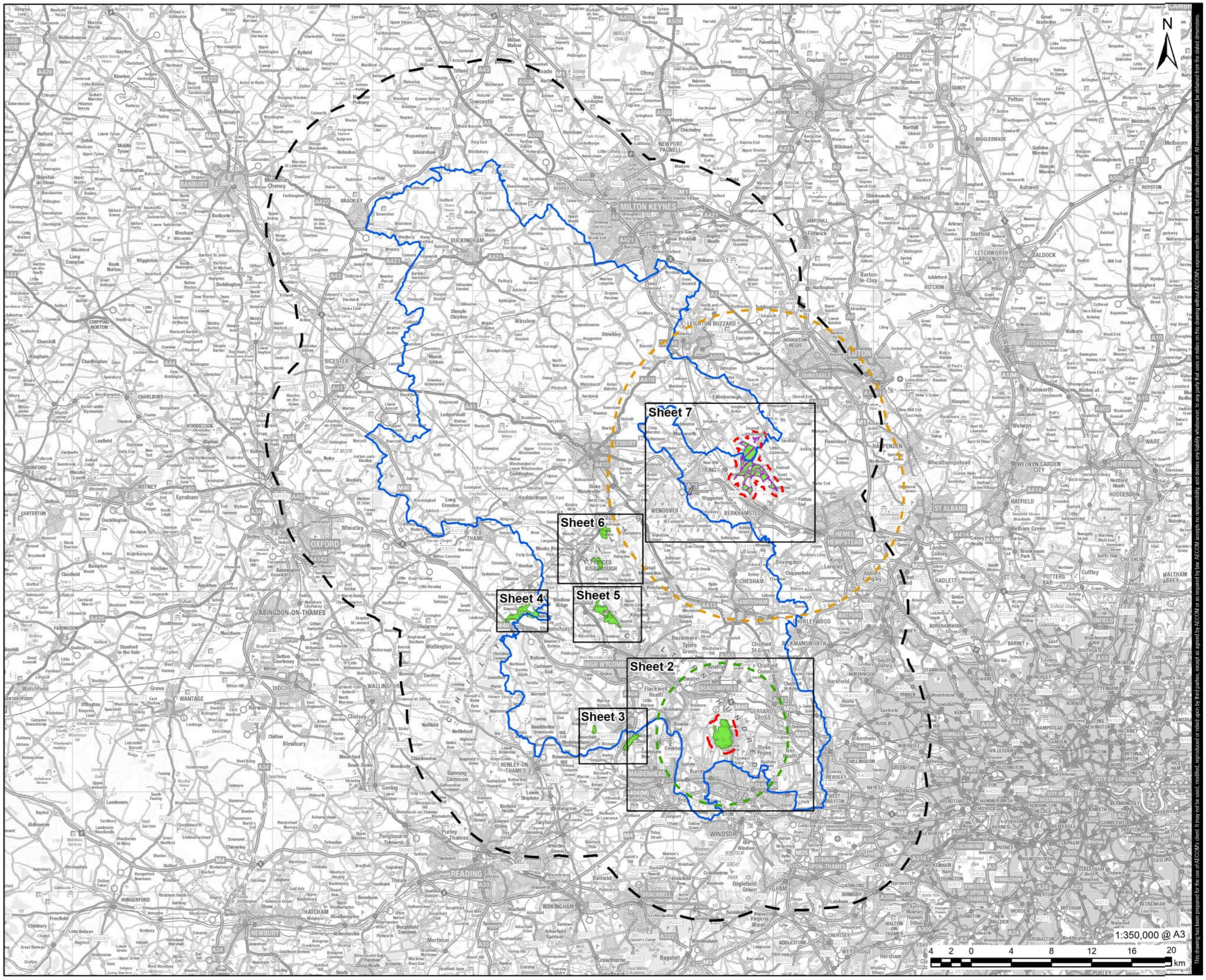

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LEGEND

- 10km Study Area
- Buckinghamshire County Boundary
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)

Ashridge Commons and Woods (SSSI)

- 12.6km Recreational Mitigation Zone

Chilterns Beechwoods (SAC)

- 500m Exclusion Zone

Burnham Beeches (SAC)

- 500m Exclusion Zone
- 5.6km Recreational Catchment Zone

NOTES

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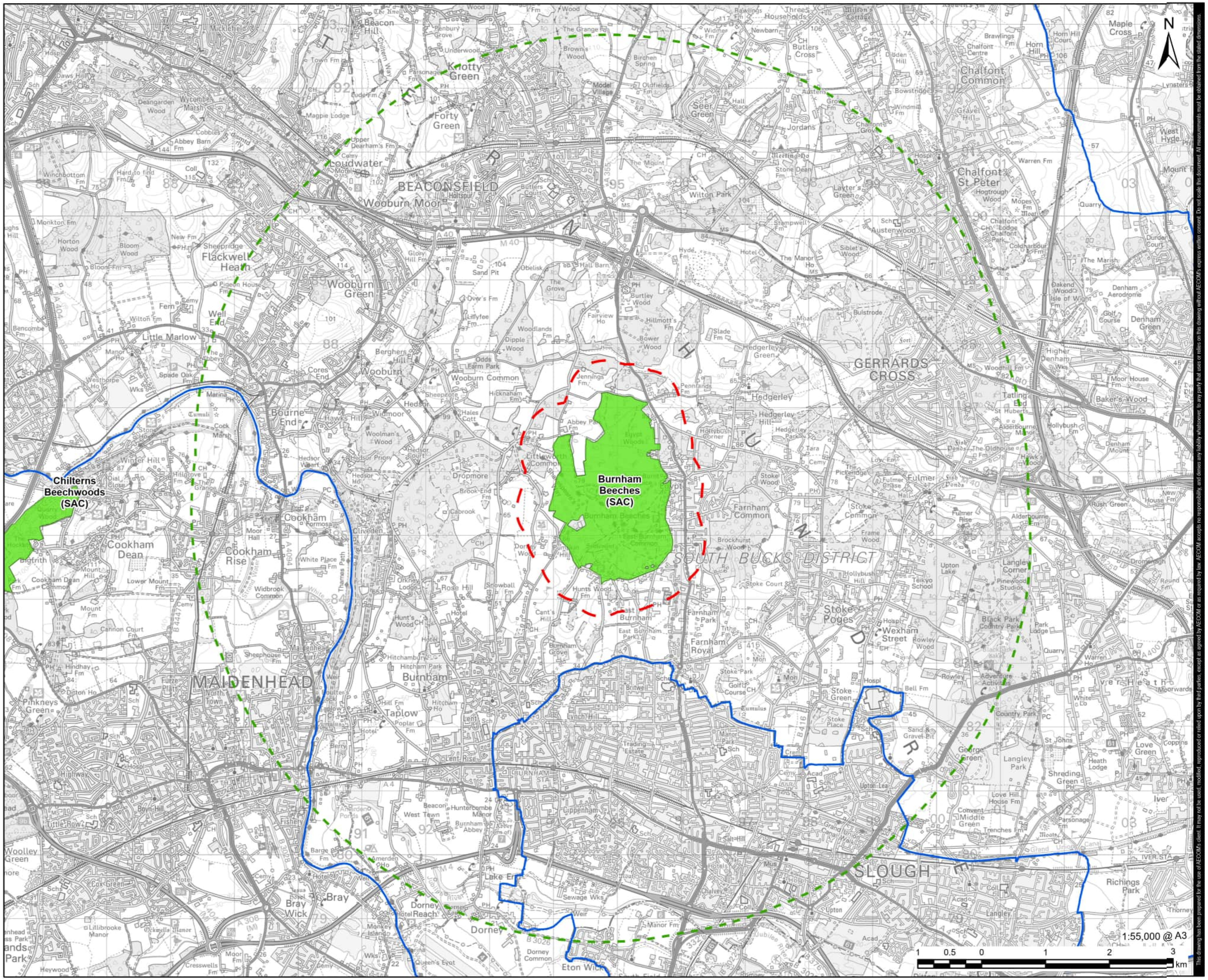
FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 1 of 7)

Revision: 0 Drawn: AG Checked: LC Approved: JR Date: 2023-03-20



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LEGEND

Buckinghamshire County Boundary
Special Area of Conservation (SAC)
Burnham Beeches (SAC)
500m Exclusion Zone
5.6km Recreational Catchment Zone

NOTES

ISSUE PURPOSE

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FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 2 of 7)

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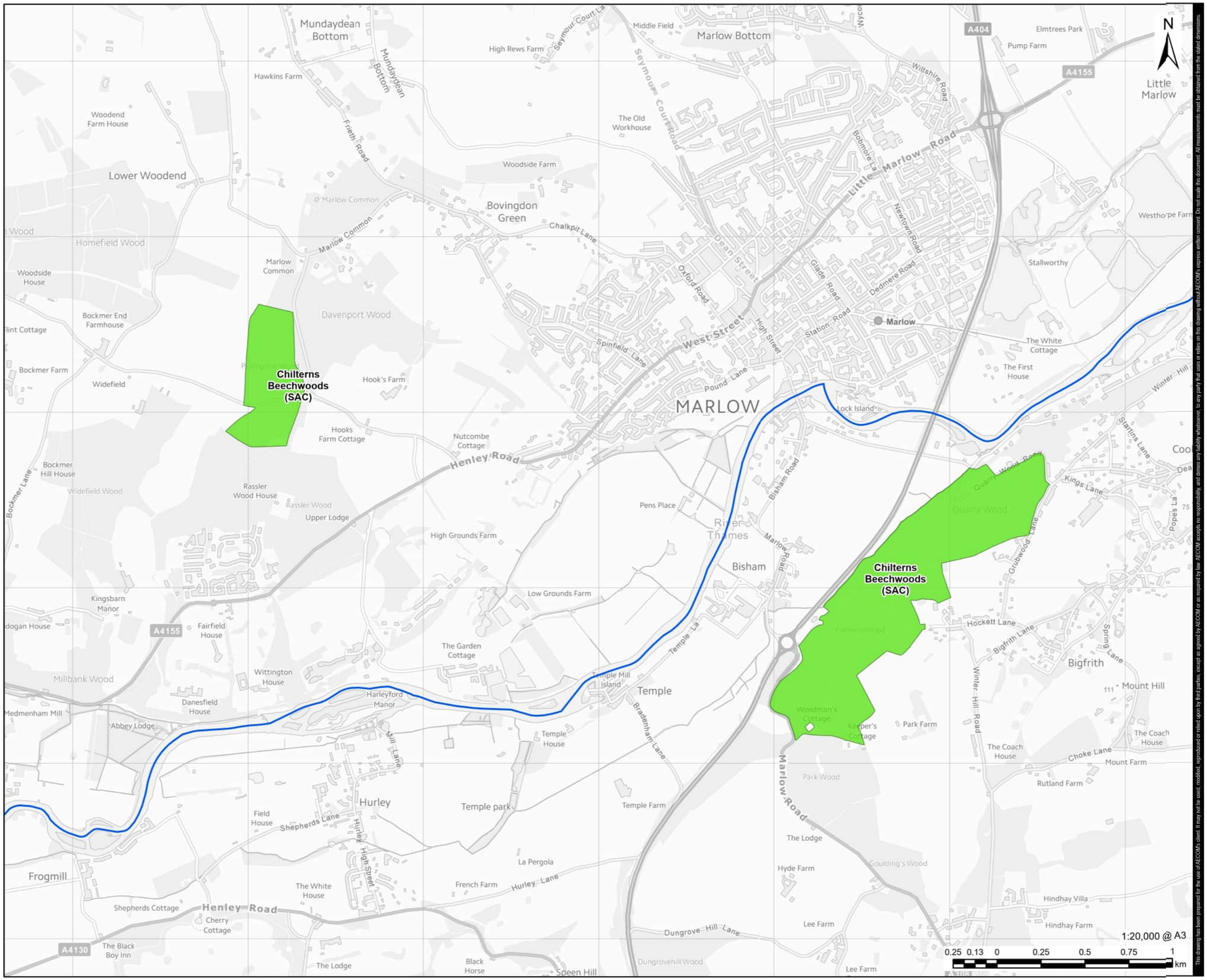

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LEGEND

- Buckinghamshire County Boundary
- Special Area of Conservation (SAC)

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FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 3 of 7)

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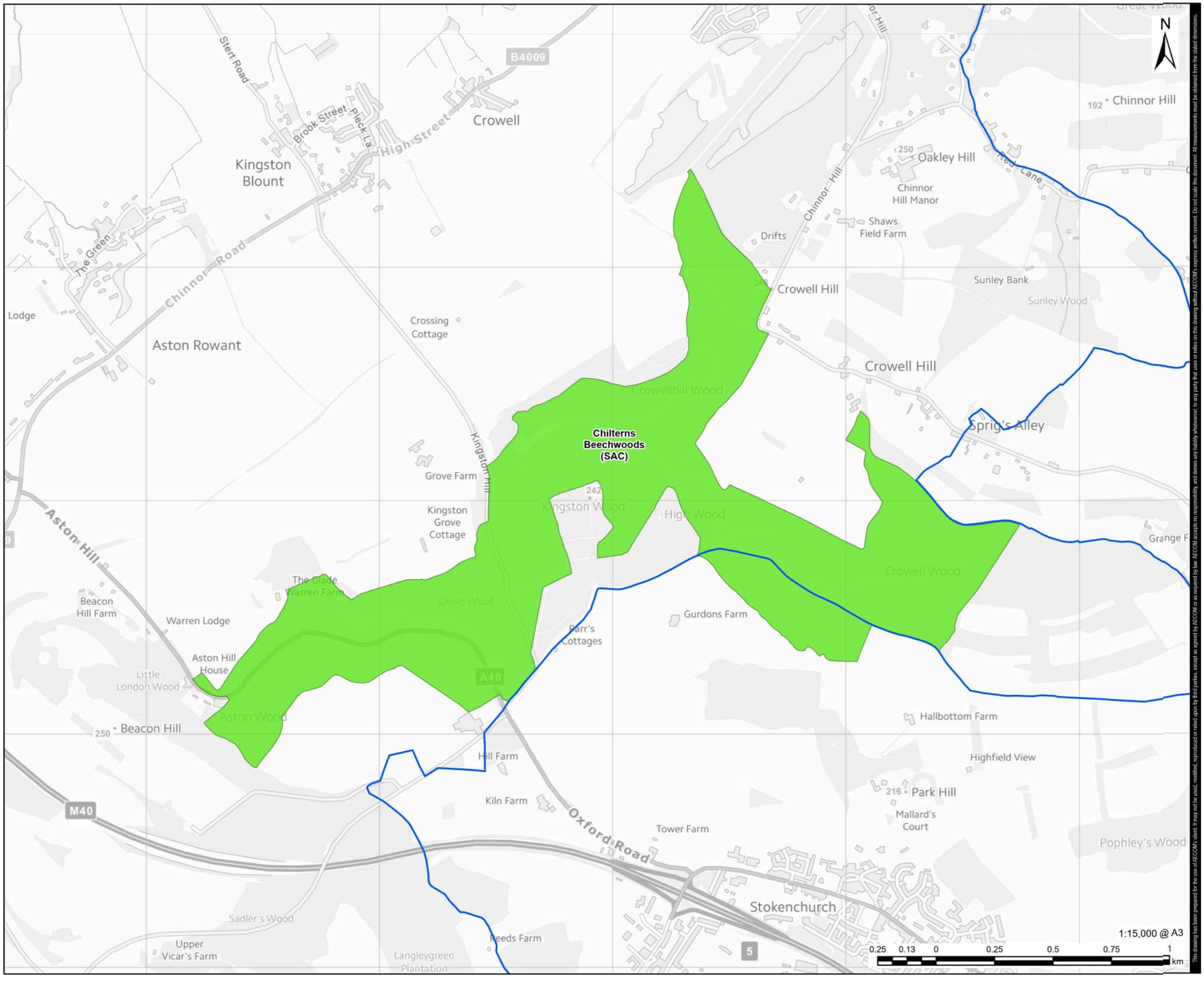

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LEGEND

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FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 4 of 7)

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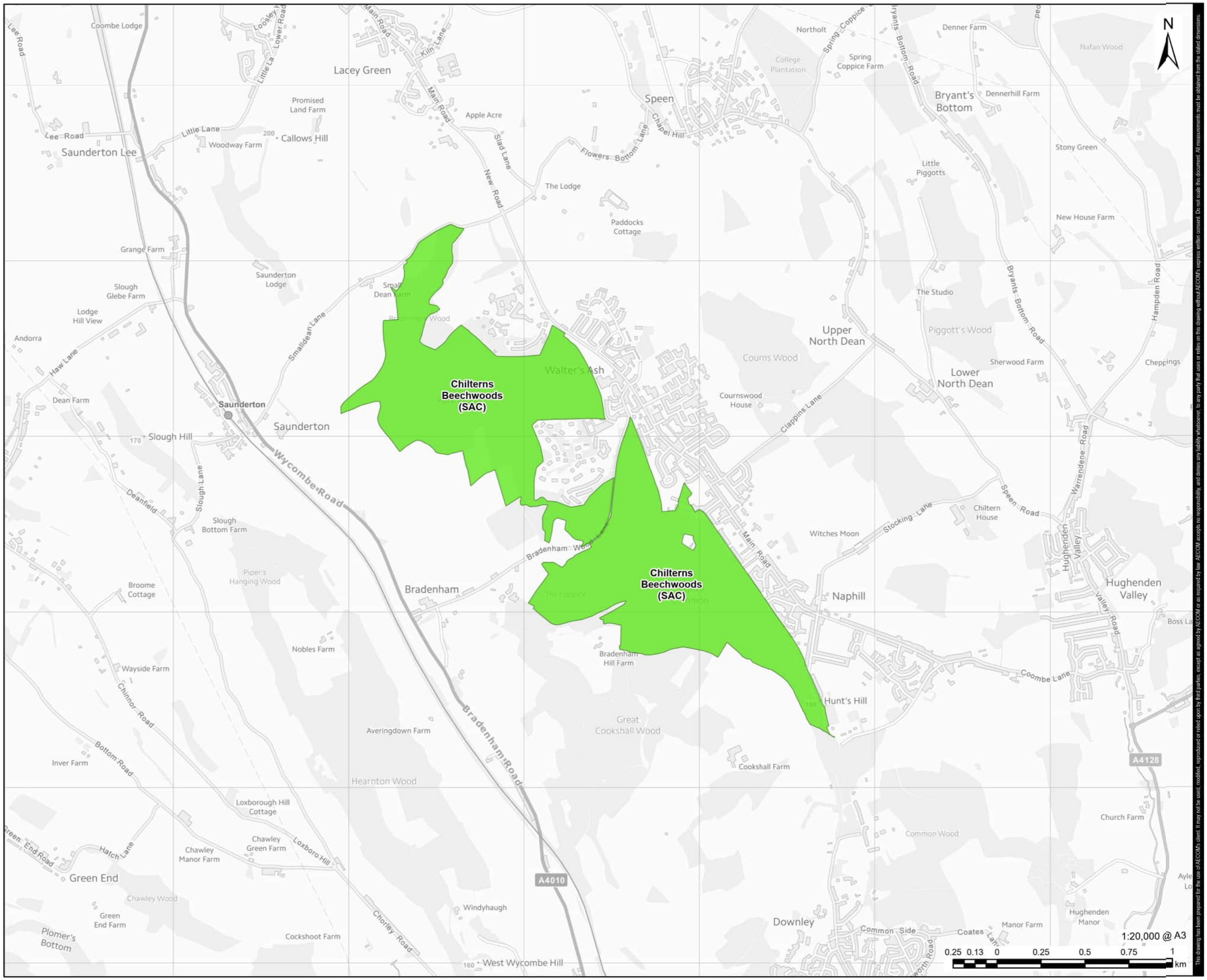

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FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 5 of 7)

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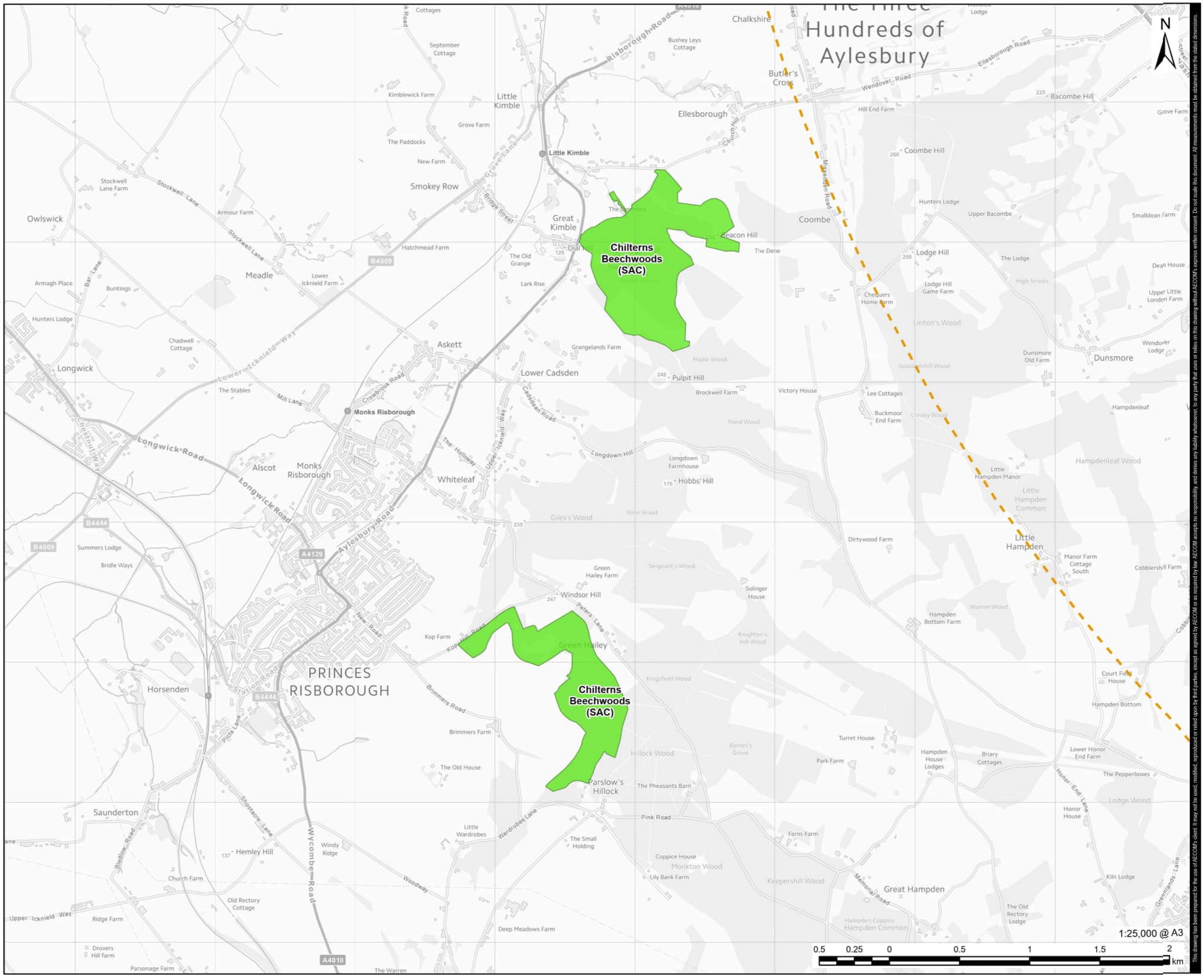

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LEGEND

- Buckinghamshire County Boundary
- Special Area of Conservation (SAC)
- Ashridge Commons and Woods (SSSI)
- 12.6km Recreational Mitigation Zone

NOTES

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PROJECT NUMBER

60684933

FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 6 of 7)

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Chilterns Beechwoods (SAC)
Ashridge Commons and Woods (SSSI)

Chilterns Beechwoods (SAC)

Chilterns Beechwoods (SAC)

Chilterns Beechwoods (SAC)
Ashridge Commons and Woods (SSSI)

Chilterns Beechwoods (SAC)

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Chilterns Beechwoods (SAC)

Chilterns Beechwoods (SAC)
Tring Woodlands (SSSI)

Chilterns Beechwoods (SAC)

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LEGEND

- Buckinghamshire County Boundary
- Special Area of Conservation (SAC)
- Site of Special Scientific Interest (SSSI)
- Ashridge Commons and Woods (SSSI)
- 12.6km Recreational Mitigation Zone
- Chilterns Beechwoods (SAC)
- 500m Exclusion Zone

NOTES

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FIGURE TITLE

Recreational Catchment Zones

FIGURE NUMBER

Figure A2 (Page 7 of 7)