Habitats Regulations Assessment of the Elmbridge Local Plan

Regulation 19

Elmbridge Borough Council

Project number: 60593085

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Quality information

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Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	March 2022	Initial draft HRA for client comment	JR	Dr James Riley	Technical Director
1	April 2022	Revision of HRA in response to client comments	JR	Dr James Riley	Technical Director
2	June 2022	Updated in response to amended LAA	JR	Dr James Riley	Technical Director

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Table of Contents

Figures

Tables

1. Introduction

1.1 Elmbridge Borough Council (EBC) has appointed AECOM to undertake a Habitats Regulations Assessment (HRA) on the Regulation 19 version of the Elmbridge Local Plan. The objective of this assessment is to identify Local Plan policies and site allocations with the potential to result in Likely Significant Effects (LSEs) and, where relevant, adverse effects on the integrity of European sites (collectively known as the National Site Network), including Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar sites, possible SACs (pSACs) and potential SPAs (pSPAs). The potential impacts of a development plan must not only be considered in isolation but also in combination with other plans and projects. Under the Conservation of Habitats and Species Regulations 2017 (as amended), an Appropriate Assessment of impact pathways is required, where a plan or project is likely to have a Likely Significant Effect (LSE) upon a European Site, either individually or 'in combination' with other plans and projects. Furthermore, HRAs are also to advise on appropriate policy mechanisms for delivering mitigation where adverse impacts are identified.

1.2 The work in this HRA builds on previous work that AECOM undertook on the Regulation 18 version of the Local Plan, which proposed five development options for Elmbridge Borough that differed in the quanta and geographic distribution of growth. EBC has since elected to pursue a 'brownfield' approach, which seeks to make the best use of previously developed land. According to the Plan document, '*reusing brownfield land and ensuring the efficient use of it will increase the capacity for new development in the borough, whilst balancing this with the need to continue to conserve and enhance the qualities and characteristics that make our existing communities attractive places to live, work and spend leisure time.*' Notably, the chosen approach will also inevitably benefit European sites by preserving Green Belt land (and thus recreational space) and preventing further encroachment of dwellings on the Thames Basin Heaths SPA.

1.3 Elmbridge's Local Plan is to provide a significant boost to the delivery of new homes over the plan period between 2021 to 2037. **Policies SS3 (Scale and Location of Growth) and HOU1 (Housing Delivery)** stipulate that a minimum of 6,785 dwellings will be delivered during this period. Furthermore, the Plan also contains several policies supporting sustainable economic development, including the retention and expansion in Strategic Employment Sites, although no specific quantum of employment space is provided.

1.4 Elmbridge Borough lies in south-east England in a geographic area of the country that is under pressure from significant current and projected future population growth. In turn this urban development is increasing pressure on European sites, including the South West London Waterbodies SPA / Ramsar and, most notably, the Thames Basin Heaths SPA. The latter SPA encompasses an extensive complex of lowland heathland fragments that are protected for their internationally significant breeding bird populations. Being located amidst dense housing development, the site is an important recreational resource for local residents and this has led to concerns regarding disturbance to birds, particularly from dog walkers. Mitigation mechanisms have been put in place by the Thames Basin Heaths Partnership in the form of a SPA Delivery Framework, resulting in Avoidance and Mitigation Strategies being adopted by Local Planning Authorities (LPAs). Due regard to this impact pathway and relevant statutory requirements will be given in this HRA.

Legislation

1.5 The UK left the European Union (EU) on 31 January 2020 under the terms set out in the European Union (Withdrawal Agreement) Act 2020 ("the Withdrawal Act"). While the UK is no longer a member of the EU, the requirement for Habitats Regulations Assessment will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019[1]. Figure 1 below sets out the legislative basis for Appropriate Assessments.

[1] these don't replace the 2017 Regulations but are just another set of amendments

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*".

Figure 1: The legislative basis for Appropriate Assessment

1.6 The HRA process applies the 'Precautionary Principle'[2] 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 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. To ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

1.7 Over time the phrase 'Habitats Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Regulations 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'.

1.8 In spring 2018 the 'Sweetman' European Court of Justice ruling[3] 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. This HRA has been cognisant of that ruling.

Scope of the Project

1.9 There is no pre-defined guidance that dictates the physical scope of an HRA of a Plan document. Current guidance suggests that the following European sites should be included in the scope of an HRA assessment:

- All European sites within the boundary of Elmbridge Borough; and,
- Other European sites within 10km shown to be linked to development in Elmbridge through a known 'impact pathway' (discussed below).

1.10 Generally, it is uncommon for development plans to be deemed to have a Likely Significant Effect (LSE) on European sites situated more than 10km from areas of growth. For example, most core recreational catchments (except for some coastal sites) are under 10km in size, there are few wintering waterfowl and waders that make extensive use of functionally linked habitats located more than 10km from their core areas, and the average vehicle commuting distance of a UK resident is approx. 10km. It should be noted that the presence of a conceivable impact pathway linking a Plan to a European site does not mean that LSEs will occur.

1.11 In some cases, development impacts can extend beyond 10km, particularly where hydrological pathways are involved, which is why the source-pathway-receptor concept is also used to help determine whether there is are potential pathways connecting development to European sites.

[2] 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"*.
[3] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

This takes site-specific sensitivities into account, including issues such as nutrient neutrality or water levels, quantity and flow.

1.12 Briefly defined, impact pathways are routes by which the implementation of a policy within a Local Plan document can lead to an effect upon a European designated site. An example of this would be new residential development resulting in an increased population and thus additional recreational pressure, which could then affect European sites by, for example, disturbance to non-breeding or breeding birds.

1.13 Guidance from the Ministry of Housing, Communities and Local Government (now the Department for Levelling Up, Housing and Communities (DLUHC)) states that the HRA should be '*proportionate to the geographical scope of the* [plan policy]' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (MHCLG, 2006, p.6). This basic principle has also been reflected in court rulings. The Court of Appeal[4] has ruled that providing the Council (competent authority) was duly satisfied that proposed mitigation could be 'achieved in practice' to satisfy that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Core Strategy document)[5]. In this case the High Court ruled that for '*a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of Reg 61 of the Habitats Regulations'*.

1.14 Given an initial assessment of the relevant European sites and the impact pathways present, and referring to the HRA work that was undertaken for the Reg.18 stage of the Plan, this HRA will discuss (at least as far as the 'Background to Impact Pathways' section) the following European sites:

- Thames Basin Heaths SPA (a composite heathland site, of which only a very small proportion lies in the south-west of Elmbridge Borough, part of the Ockham and Wisley Commons SSSI);
- South West London Waterbodies SPA / Ramsar (a composite site encompassing man-made and semi-natural reservoirs and former gravel pits, of which only the Knight & Bessborough Reservoirs SSSI lies in the northern part of the borough);
- Thursley, Ash, Pirbright & Chobham SAC (a composite site that largely overlaps with the Thames Basin Heaths SPA);
- Mole Gap to Reigate Escarpment SAC;
- Windsor Forest & Great Park SAC;
- Wimbledon Common SAC; and
- Richmond Park SAC.

1.15 The views of relevant statutory nature conservation advisors, namely Natural England, will be sought as part of the consultation process on the scope of the European sites assessed.

1.16 The distribution of the above European sites in relation to Elmbridge Borough is shown in Appendix A. An introduction to, the qualifying features (species and habitats), Conservation Objectives, and threats and pressures to the integrity of these European sites are set out in Chapter 3 of this HRA.

1.17 In order to fully inform the LSEs and AA stages, and assess potential impacts of the Local Plan, several studies and online information databases have been consulted:

- HRA produced for the Reg.18 Elmbridge Local Plan;

[4]No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015
[5]High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

- Future development proposed (and, where available, HRAs) for the adjoining authorities of Spelthorne, Richmond upon Thames, Kingston upon Thames, Mole Valley, Guildford, Woking, Runnymede;
- Original visitor survey undertaken in the Thames Basin Heaths SPA to assess access patterns within the site[6] and a repeat survey to monitor the effectiveness of SANG / SAMM interventions[7];
- Background evidence provided in the Thames Basin Heaths Special Protection Area Delivery Framework[8];
- The UK Air Pollution Information System (www.apis.ac.uk);
- Road traffic statistics from the Department for Transport (https://roadtraffic.dft.gov.uk);
- Journey-to-work data from the Population Census 2011 (https://www.nomisweb.co.uk/census/2011/WU03UK);
- Air quality modelling undertaken on the Urban Growth Strategy by Cambridge Environmental Research Consultants (CERC)[9];
- Site Improvement Plans and Supplementary Conservation Advice Notes for relevant European sites; and
- Multi Agency Geographic Information for the Countryside (MAGIC) and its links to SSSI citations and the JNCC website (www.magic.gov.uk).

Quality Assurance

1.18 This report was undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2008 and 14001:2004 and BS OHSAS 18001:2007. In addition, our IMS requires careful selection and monitoring of the performance of all sub-consultants and contractors.

1.19 All AECOM Ecologists working on this project are members (at the appropriate level) of the Chartered Institute of Ecology and Environmental Management (CIEEM) and follow their code of professional conduct (CIEEM, 2022).

[6] Liley, D., Jackson, D. & Underhill-Day, J. (2005). Visitor Access Patterns on the Thames Basin Heaths. English Nature Research Report. English Nature, Peterborough. 51pp.
[7] Fearnley, H. & Liley, D. (2013). Results of the 2012/13 visitor survey on the Thames Basin Heaths Special Protection Area (SPA). Natural England Commissioned Reports, Number 136. 107pp.
[8] Thames Basin Heaths Joint Strategic Partnership Board. (2009). Thames Basin Heaths Special Protection Area Delivery Framework. 14pp.
[9] Cambridge Environmental Research Consultants. (2022). Air quality modelling to support the Elmbridge Local Plan – future scenarios (2037). 81pp.

2. Methodology

Introduction

2.1 The HRA has been carried out with reference to the general EC guidance on HRA[10] and general guidance on HRA published by government in February 2021[11]: AECOM has also been mindful of the implications of European case law in 2018, notably the Holohan ruling and the People over Wind ruling, both discussed below.

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

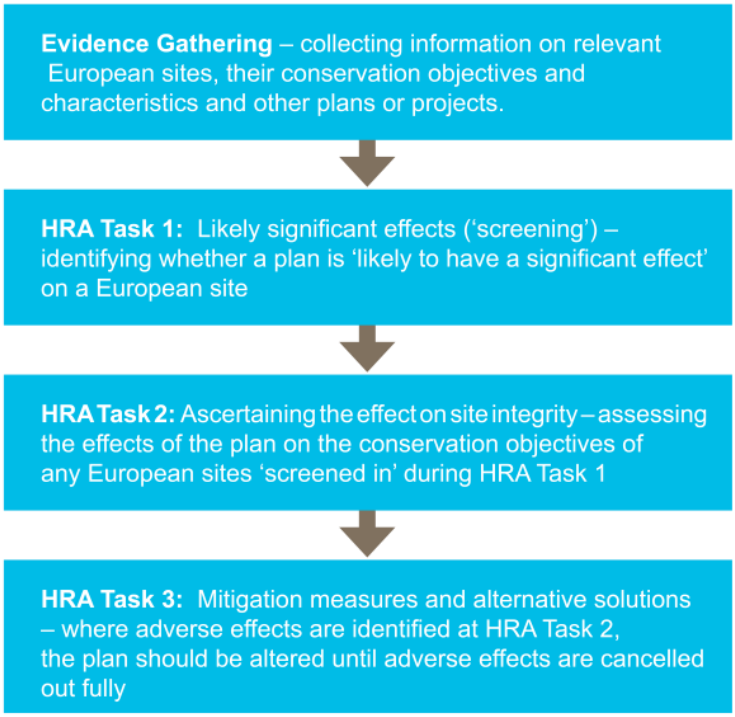


Figure 2: Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001[1].

Description of HRA Tasks

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

2.3 Following evidence gathering, the first stage of any Habitats Regulations Assessment is a screening for Likely Significant Effects (LSEs) - essentially a 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?"

2.4 The objective is to filter out those plans and projects that, without any detailed appraisal, are unlikely to result in impacts upon European sites, usually because there is no mechanism for an

[10] 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.
[11] https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

adverse interaction with European sites. This stage is undertaken in Chapter 5 of this report and in Appendix B.

HRA Task 2 – Appropriate Assessment (AA)

2.5 Where it is determined that a conclusion of 'no Likely Significant Effect (LSE)' cannot be drawn, the analysis proceeds to the next stage of HRA known as Appropriate Assessment (AA). 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 AA in contrast to the LSEs screening stage.

2.6 By virtue of the fact that it follows screening, there is a clear implication that the analysis will be more detailed than undertaken at the previous stage. One of the key considerations during AA is whether there is available mitigation that would entirely address the potential effect. In practice, the AA would take any policies or allocations that could not be dismissed following the high-level LSEs screening and assess the potential for an effect in more detail, with a view to concluding whether there would be a potential for an adverse effect on site integrity (in other words, disruption of the coherent structure and function of the European site(s)). A decision by the European Court of Justice[12] concluded that measures intended to avoid or reduce the harmful effects of a proposed plan or project on a European site may no longer be considered by competent authorities at the LSEs stage of HRA. That ruling has been taken into account in producing this HRA.

2.7 Also. in 2018 the Holohan ruling[13] was handed down by the European Court of Justice. Among other provisions paragraph 39 of the ruling states 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]. Due account to this decision has been given in this HRA, particularly regarding waterbodies beyond the South West London Waterbodies SPA / Ramsar that are used by designated gadwall and shoveler. The qualifying species of the Thames Basin Heaths SPA do not breed in functionally linked habitats beyond the designated site boundaries.

HRA Task 3 – Avoidance and Mitigation

2.8 Where necessary, measures are recommended for incorporation into the Plan in order to mitigate and / or avoid adverse effects on European sites. There is considerable precedent concerning the level of detail that a Local Plan document needs to contain regarding mitigation of impact pathways on European sites (e.g. regarding recreational pressure). The implication of this precedent is that it is not necessary for all measures to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.

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

2.10 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 or where, and so cannot be assessed in detail at the plan level. In these cases, the Appropriate Assessment focusses 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 potential impacts (e.g. loss of functionally linked habitat) is related to how the development will be designed and constructed, detail which is typically not available

[12] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)
[13] Case C-461/17

at the plan level. In these instances, the Appropriate Assessment focusses on 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 European sites.

2.11 In this regard, the advice of Advocate-General Kokott[14] is also worth mentioning. 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].

[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 49http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN

3. Relevant European Sites

Thames Basin Heaths SPA

Introduction

3.1 The Thames Basin Heaths SPA is a composite site that is located across the counties of Surrey, Hampshire and Berkshire. It consists mainly of open heathland habitats, which overlie sand and gravel sediments. These give rise to sandy or peaty acidic soils that sustain dry heathy vegetation on well-drained slopes, wet heath on shallow slopes and bogs in valleys.

3.2 The site encompasses a mosaic of heathland, scrub and woodland, which is now fragmented by roads, urban development and farmland. Generally, less open habitats such as scrub, acidic woodland and conifer plantations dominate, with interspersed subordinate areas of open heath and mire.

3.3 Important breeding populations of several specialised lowland heathland bird species, including the ground-nesting species nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea* are found here. Furthermore, the Dartford warbler *Sylvia undata* nests in gorse *Ulex* species. Scattered trees and scrub are used for roosting.

Qualifying Features[15]

3.4 The Thames Basin Heaths SPA qualifies under Article 4.1 of the Birds Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

During the breeding season:

- Dartford warbler *Sylvia undata*, 445 pairs representing at least 27.8% of the breeding population in Great Britain (Count as at 1999)
- European nightjar *Caprimulgus europaeus*, 264 pairs representing at least 7.8% of the breeding population in Great Britain (Count mean 1998-99)
- Woodlark *Lullula arborea*, 149 pairs representing at least 9.9% of the breeding population in Great Britain (Count as at 19997)

Conservation Objectives[16]

3.5 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;

3.6 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.

[15] Available at: http://jncc.defra.gov.uk/default.aspx?page=2050 [Accessed on the 04/03/2022]
[16] Available at: http://publications.naturalengland.org.uk/publication/4952859267301376 [Accessed on the 04/03/2022]

Threats / Pressures to Site Integrity[17]

3.7 The following threats and pressures to the site integrity of the Thames Basin Heaths SPA have been identified in the Natural England's Site Improvement Plan:

- Public access / Disturbance
- Undergrazing
- Forestry and woodland management
- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Military
- Habitat fragmentation

Thursley, Ash, Pirbright & Chobham SAC

Introduction

3.8 The Thursley, Ash, Pirbright & Chobham SAC encompasses several commons with existing public access. Thursley Common consists of lowland northern Atlantic wet heaths located in south-east England. The wet heath at Thursley has been defined as NVC type M16 with *Erica tetralix – Sphagnum compactum* and contains several rare plants, such as the bog orchid *Hammarbya paludosa* and brown beak-sedge *Rhynchospora fusca*. Furthermore, the site is nationally important for invertebrates, such as the white-faced darter *Leuccorhinia dubia*.

3.9 It also contains a series of large fragments of dry heathland, identified as NVC type H2 with *Calluna vulgaris – Ulex minor*. There are transitions to wet heath, valley mire, scrub, woodland and acid grassland. This habitat supports an internationally important assemblage of numerous rare bird species, such as European nightjar *Caprimulgus europaeus* and Dartford warbler *Sylvia undata* (see its designation as the Thames Basin Heaths SPA), invertebrate species such as sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*.

Qualifying Features[18]

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

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

Conservation Objectives[19]

3.11 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;

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

[17] Available at: http://publications.naturalengland.org.uk/publication/6249258780983296 [Accessed on the 04/03/2022]
[18] Available at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0012793 [Accessed on the 04/03/2022]
[19] Available at: http://publications.naturalengland.org.uk/publication/5141075941392384 [Accessed on the 04/03/2022]

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

Threats / Pressures to Site Integrity[20]

3.13 The following threats and pressures to the site integrity of the Thursley, Ash, Pirbright & Chobham SAC have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Undergrazing
- Forestry and woodland management
- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Military
- Habitat fragmentation

South West London Waterbodies SPA / Ramsar

Introduction

3.14 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.

3.15 One component part of the SPA / Ramsar (Knight & Bessborough Reservoirs SSSI), lies in the northern part of Elmbridge Borough. In addition to these formally designated reservoirs there are other waterbodies / complexes that lie in Elmbridge, which have been identified to be functionally linked with the SPA / Ramsar. The appraisal of potential impacts associated with the Elmbridge Local Plan, such as recreational pressure, must also consider these functionally linked waterbodies.

SPA Qualifying Features[21]

3.16 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)

[20] Available at: http://publications.naturalengland.org.uk/publication/6249258780983296 {Accessed on the 04/03/2022]
[21] Available at: http://jncc.defra.gov.uk/page-2051-theme=default [Accessed on the 04/03/2022]

Ramsar Qualifying Features[22]

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

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[23]

3.18 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;

3.19 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[24]

3.20 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:

- Public access / Disturbance
- Changes in species distributions
- Invasive species
- Natural changes to site conditions
- Fisheries: Fish stocking
- Inappropriate weed control

Richmond Park SAC

Introduction

3.21 The Richmond Park SAC is located in Richmond upon Thames and the park is also designated as a National Nature Reserve and SSSI. The bounds of the park provide an important refuge for a variety of wildlife, including stag beetles (qualifying feature), woodpeckers, frogs, toads and various insects.

[22] Available at: http://jncc.defra.gov.uk/pdf/RIS/UK11065.pdf [Accessed on the 04/03/2022]
[23] Available at: http://publications.naturalengland.org.uk/publication/4901473695563776 [Accessed on the 04/03/2022]
[24] Available at: http://publications.naturalengland.org.uk/publication/6662064386867200 [Accessed on the 04/03/2022]

3.22 Richmond Park also harbours various aquatic habitats, including about 30 ponds. Some of these have been created to drain land for other uses or to provide water for livestock. The Pen Ponds were initially created to drain an area of boggy land and to extract gravel for building purposes, and they now receive water from streams inflowing from higher ground.

3.23 Most notably, Richmond Park harbours significant numbers of ancient trees supplying decaying wood. This enables the site to support an internationally important population of stag beetles *Lucanus cervus* and be of national importance for the conservation of fauna associated with ancient trees.

Qualifying Features[25]

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

- Stag beetle *Lucanus cervus*

Conservation Objectives[26]

3.25 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;

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

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

Threats / Pressures to Site Integrity[27]

3.27 Natural England's Site Improvement Plan identifies no current threats and pressures to the site integrity of the Richmond Park SAC.

Wimbledon Common SAC

Introduction

3.28 The Wimbledon Common SAC consists of several distinctive habitats, including heathland, acid grassland, woodlands, riverine areas and ponds. There are also several important micro-habitats, such as wayside verges, small sections of wet and boggy areas, and woodland glades.

3.29 The woodland on the Wimbledon Common SAC is largely semi-natural and established itself through natural regeneration. Tree planting has been restricted to rings or avenues of specimen trees. The main tree species that make up the woodland include English oak, lime, beech and silver birch. The large tracts of mature woodland provide decaying wood for the increasingly rare stag beetle.

3.30 Together with Putney Heath, the Common also harbours about 50% of the remaining heathland found in Greater London, a priority habitat within the London Basin Natural Area. Heathland is regarded as one of the most important semi-natural landscapes for wildlife conservation, as it

[25] Available at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030246 [Accessed on the 04/03/2022]
[26] Available at: http://publications.naturalengland.org.uk/publication/5279688851193856 [Accessed on the 04/03/2022]
[27] Available at: http://publications.naturalengland.org.uk/publication/6625232836100096 [Accessed on the 04/03/2022]

contains a specialised community of plants adapted to extremely impoverished soils. This lowland heath supports a rich variety of wildlife, including birds, reptiles and invertebrates.

Qualifying Features[28]

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

- Stag beetle *Lucanus cervus*

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

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

Conservation Objectives[29]

3.33 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;

3.34 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 on which qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Threats / Pressures to Site Integrity[30]

3.35 The following threats and pressures to the site integrity of the Wimbledon Common SAC have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Habitat fragmentation
- Invasive species
- Air pollution: Impact of atmospheric nitrogen deposition

Mole Gap to Reigate Escarpment SAC

Introduction

3.36 The Mole Gap to Reigate Escarpment SAC contains the only area of stable box scrub in the UK. This has formed on the Mole Gap where the river Mole has cut into the North Downs escarpment and natural erosion maintains the open conditions required for the survival of this habitat.

3.37 The fragmented site also supports a wide range of calcareous grassland types on steep slopes, including *Festuca ovina*, *Bromus erectus*, *Brachypodium pinnatum* and *Avenula pubescens*. The SAC has a wide range of structural conditions ranging from short turf to scrub margins and is

[28] Available at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030301 [Accessed on the 04/03/2022]
[29] Available at: http://publications.naturalengland.org.uk/publication/5706571287887872 [Accessed on the 04/03/2022]
[30] Available at: http://publications.naturalengland.org.uk/publication/5638512552443904 [Accessed on the 04/03/2022]

particularly important for rare vascular plants such as orchids. Furthermore, the escarpment exhibits habitat transitions from scarce scrub, woodland through to dry heaths.

3.38 The site harbours a significant proportion of yew (*Taxus baccata*) woodland, which was formed from the invasion of chalk grassland and destruction of the beech (*Fagus sylvatica*) overstorey. The yew occurs in extensive stands with an occasional understorey of native box (*Buxus sempervirens*).

Qualifying Features[31]

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

- Stable xerothermophilous formations with *Buxus sempervirens* on rock slopes
- Semit-natural dry grasslands and scrubland facies on calcareous substrates (important orchid sites)
- *Taxus baccata* woods of the British Isles

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

- European dry heaths
- *Asperulo-Fagetum* beech forests

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

- Great-crested newt *Triturus cristatus*
- Bechstein's bat *Myotis bechsteinii*

Conservation Objectives[32]

3.42 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;

3.43 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[33]

3.44 The following threats and pressures to the site integrity of the Mole Gap to Reigate Escarpment SAC have been identified in Natural England's Site Improvement Plan:

- Disease
- Inappropriate scrub control
- Change in land management

[31] Available at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0012804 [Accessed on the 04/03/2022]
[32] Available at: http://publications.naturalengland.org.uk/publication/4911739200077824 [Accessed on the 04/03/2022]
[33] Available at: http://publications.naturalengland.org.uk/publication/5966636066537472 [Accessed on the 04/03/2022]

- Public access / disturbance
- Air pollution: Risk of atmospheric nitrogen deposition

Windsor Forest & Great Park SAC

Introduction

3.45 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.

3.46 Furthermore, it is of importance for its diversity of saproxylic 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.

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

Qualifying Features[34]

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

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

3.49 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

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

- Violet click beetle *Limoniscus violaceus*:

Conservation Objectives[35]

3.51 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;

3.52 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.

[34] Available at: http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0012586 [Accessed on the 04/03/2022]
[35] Available at: http://publications.naturalengland.org.uk/publication/5175000009015296 [Accessed on the 04/03/2022]

Threats / Pressures to Site Integrity[36]

3.53 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:

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

[36] Available at: http://publications.naturalengland.org.uk/publication/6221375450644480 [Accessed on the 04/03/2022]

4. Background to Impact Pathways

Recreational Pressure

4.1 There is concern over the cumulative impacts of recreation on key nature conservation sites in the UK, as most sites must fulfill conservation objectives while also providing recreational opportunity. Various research reports have provided compelling links between changes in housing and access levels[37], and impacts on European protected sites[38] [39]. This applies to any habitat, but recreational pressure from housing growth is of particular significance for European sites designated for their bird interest. 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[40].

Trampling Damage, Nutrient Enrichment and Wildfires

4.2 Most terrestrial habitats (especially heathland, woodland and dune systems) can be affected by trampling and other mechanical damage, which 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)[41] 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[42] 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 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 and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks but had recovered well after one year and as such these were 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.

[37] 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
[38] 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.
[39] 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.
[40] 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'.
[41] 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
[42] 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

- Cole [43] 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[44] 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.

4.3 In heathland sites, trampling damage can affect the value of a site to wildlife. For example, heavy use of sandy tracks loosens and continuously disturbs sand particles, reducing the habitat's suitability for invertebrates[45]. Species that burrow into flat surfaces such as the centres of paths, are likely to be particularly vulnerable, as the loose sediment can no longer maintain their burrow. In some instances, nature conservation bodies and local authorities resort to hardening paths to prevent further erosion. However, this is concomitant with the loss of habitat used by wildlife, such as sand lizards and burrowing invertebrates.

4.4 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, e.g.[46]). 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[47]. While there is limited information on the chemical constituents of dog faeces, nitrogen is one of the main components[48]. 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

4.5 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, but 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[49].

4.6 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[50]. Disturbance therefore increases energetic expenditure while reducing energetic intake, which

[43] 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.
[44] 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
[45] 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.
[46] Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. (2005). Dogs, access and nature conservation. English Nature Research Report, Peterborough.
[47] 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.
[48] 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.
[49] Riley, J. (2003). Review of Recreational Disturbance Research on Selected Wildlife in Scotland. Scottish Natural Heritage.
[50] Riddington, R. *et al*. (1996). The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* **43**:269-279.

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[51]. 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 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[52] [53].

4.7 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[54]. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers[55]. 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

4.8 Several European sites relevant to Elmbridge Borough are designated for habitats and species that are sensitive to recreational pressure, including, but not limited to, the Thames Basin Heaths SPA (supports nightjar, Dartford warbler and woodlark), Thursley, Ash, Pirbright & Chobham SAC (supports parcels of dry and wet heathland) and the South West London Waterbodies SPA / Ramsar. The increase in residential development allocated in the Elmbridge Local Plan 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.

4.9 Overall, the following European sites within 10km of the Elmbridge Borough boundary are sensitive to increased recreational access, and therefore could be affected by the allocation of residential development in the Local Plan (sites in **bold** are taken forward into the following HRA chapters, whereas sites not in bold are excluded from further assessment – see explanation below):

- **Thames Basin Heaths SPA** (one SSSI component part of the SPA, the Ockham and Wisley Commons SSSI, straddles the Elmbridge Borough boundary, with remaining parts of the site being considerably further distant)
- **Thursley, Ash, Pirbright & Chobham SAC** (the closest component SSSI, the Chobham Common SSSI, lies approx. 6.3km to the west of Elmbridge Borough in the authority of Surrey Heath)
- **South West London Waterbodies SPA / Ramsar** (one component part of the SPA / Ramsar, the Knight & Bessborough Reservoirs SSSI, lies in the northern part of Elmbridge Borough)
- **Mole Gap to Reigate Escarpment SAC** (the closest part of this composite SAC lies approx. 3.8km to the south of Elmbridge Borough in the authority of Mole Valley)

[51] Gill, J.A., Sutherland, W.J. & Norris, K. (1998). The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* **12**: 67-72.
[52] 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.
[53] 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.
[54] Banks P.B., Bryant J.Y. (2007). Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* **3**: 14pp.
[55] Miller S.G., Knight R.L., Miller C.K. (2001). Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* **29**: 124-132.

- **Windsor Forest & Great Park SAC** (the closest part of the SAC lies approx. 10.1km to the north-west of Elmbridge Borough in the authority of Runnymede)
- Richmond Park SAC (the SAC lies approx. 3.7km to the north-east of Elmbridge Borough, entirely within the adjoining authority of Richmond-upon-Thames)
- Wimbledon Common SAC (the closest part of the SAC lies approx. 5.6km north-east of Elmbridge Borough in the authority of Merton)

4.10 Richmond Park SAC is designated for its internationally important stag beetle population. Stag beetles depend on a sufficient supply of decaying timber and deadwood, particularly apple *Malus* spp., elm *Ulmus* spp., beech *Fagus sylvatica* and oak *Quercus* spp. Such timber is an essential feature for conservation of structure and function of habitat for this species. Over time the continued removal of deadwood from the SAC could reduce the available resource for stag beetle larvae. However, this is a very specific action as a result of the personal decision of some visitors and cannot be attributed to growth generally in the same manner as dog-related disturbance or trampling disturbance of vegetation where there is a direct correlation between the number of visitors and the resulting impact. Therefore, the Richmond Park SAC is not considered further in the context of recreational pressure.

4.11 The Wimbledon Common SAC is designated for stag beetles, as well as two habitats, including European dry heaths and Northern Atlantic wet heaths. Stag beetles are not directly sensitive to recreational pressure but could be affected indirectly through impacts on habitat availability. Natural England's Site Improvement Plan for the SAC identifies that public access is the main pressure on the site, with removal of fallen timber being the specific concern. However, as highlighted in relation to the Richmond Park SAC, removal of deadwood is not a direct corollary of the number of people on site but is related to the personal decision of some individuals to collect wood. Such visitor behaviour is not a direct consequence of residential growth and can be addressed in the context of the existing site management plan[56]. Overall, the Wimbledon Common SAC is not considered further in relation to this impact pathway.

4.12 The heathlands of the Wimbledon Common SAC are theoretically vulnerable to recreational pressure. However, according to habitat mapping on MAGIC (www.magic.gov.uk) the heathland is only found in the northern portion of the SAC. The Natural England condition assessment for the SAC states that most of the heath fails to meet key targets for quality (although the actual extent of the heathland is increasing due to a programme of tree and scrub removal). However, the assessment also concludes that there are no indications of significant damaging impacts to the heathland arising from non-native species, drainage, trampling, burning or disturbance. Therefore, although the heathland does not yet meet its key targets this does not appear to be attributable to recreational trampling and is more to do with a historic lack of traditional management. That has been extensively addressed in recent years with the result that *'there has certainly been no loss of heathland, removal of invasive trees and scrub has been carried out, a mosaic of age and structure for heather and gorse has been achieved, pernicious weeds have been kept under control and many areas of the Commons' heathland and acid grassland are now much improved from the condition they were in 10 years ago'*[57]. The main hotspots of recreational usage at Wimbledon Common SAC are not the heathland areas but the grassland areas, which do not encompass SAC features.

4.13 According to Natural England's Countryside Stewardship Negotiation Schedule, the aim of the management of Lowland Heath is '*to provide a mosaic of vegetation which allows all heathland features to flourish, including pioneer heath and bare ground which benefits rarer invertebrates, birds, reptiles and plants'.* In response to this, some of the management prescriptions included in the Wimbledon and Putney Commons conservation report for 2016/17 include:

- The creation of bare ground sites through the scraping back of turves.
- The maintenance of a full range of age classes of gorse by cutting and removing arisings.

[56] A Strategy for Wimbledon and Putney Commons. Approved June 2017. Available at: https://www.wpcc.org.uk/downloads/publications/commons-strategy-2017-to-2019.pdf [Accessed on the 07/03/2022]
[57] Ibid

- The management of dense bracken stands and deep bracken litter layers by rotational cutting, bruising or spraying.

4.14 While clearly such measures to open up the sward can be taken to excess, the extent of historic scrub encroachment on the heathland, and these management prescriptions, suggests that in general a *lack* of physical disturbance and trampling (which would help to retard such encroachment), from both people and grazing animals, is more of a concern for the heathland areas than excessive footfall. This site is therefore scoped out of the HRA.

Atmospheric Pollution (Nitrogen and Ammonia Deposition)

4.1 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 1. Ammonia can have a directly toxic effect upon vegetation, particularly at close distances to the source such as near road verges[58]. 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[59] [60].

Table 1: Main sources and effects of air pollutants on habitats and species[61]

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,

[58] http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.
[59] 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.
[60] 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.
[61] Information summarised from the Air Pollution Information System (http://www.apis.ac.uk/).

Pollutant	Source	Effects on habitats and species
		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. 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.	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 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'	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

Pollutant	Source	Effects on habitats and species
	or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	and altered species composition in semi-natural plant communities.

4.2 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[62]. As such, it can be excluded that material increases in SO_2 emissions will not be associated with the Elmbridge Local Plan. 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[63]. 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 due to the Plan, compared to a situation without the plan, primarily due to an increase in the volume of commuter traffic associated with housing growth.

4.3 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} and the threshold for sulphur dioxide is 20 μgm^{-3}. Additionally, ecological studies have determined 'Critical Loads'[64] of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH_3).

4.4 According to the Department of Transport's Transport Analysis Guidance, beyond 200m, the contribution of vehicle emissions from the roads to local pollution levels is insignificant (Figure 3 and [65]). 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.

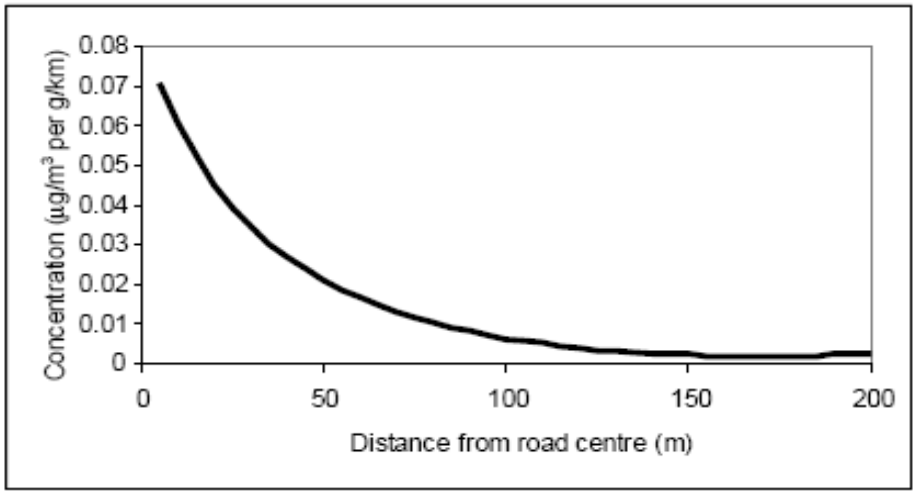


Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT[66])

4.5 Overall, the following European sites within 10km of the Elmbridge Borough boundary are sensitive to an increase in atmospheric pollution, primarily as a result of an increased number of commuter journeys due to development allocated in the Elmbridge Local Plan (sites in **bold** are

[62] http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.
[63] 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]
[64] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.
[65] Available at: http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013 [Accessed on the 21/10/2021]
[66] Available at: http://www.dft.gov.uk/ha/standards/dmrb/vol11/section3/ha20707.pdf [Accessed on the 21/10/2021]

taken forward into the following HRA chapters, whereas sites not in bold are excluded from further assessment – see explanation below):

- **Thames Basin Heaths SPA** (one SSSI component part of the SPA, the Ockham and Wisley Commons SSSI, straddles the Elmbridge Borough boundary, with remaining parts of the site being considerably further distant)
- **Thursley, Ash, Pirbright & Chobham SAC** (the closest component SSSI, the Chobham Common SSSI, lies approx. 6.3km to the west of Elmbridge Borough in the authority of Surrey Heath)
- **Mole Gap to Reigate Escarpment SAC** (the closest part of this composite SAC lies approx. 3.8km to the south of Elmbridge Borough in the authority of Mole Valley)
- **Wimbledon Common SAC** (the closest part of the SAC lies approx. 5.6km north-east of Elmbridge Borough in the authority of Merton)
- **Windsor Forest & Great Park SAC** (the closest part of the SAC lies approx. 10.1km to the north-west of Elmbridge Borough in the authority of Runnymede)
- South West London Waterbodies SPA / Ramsar (one component part of the SPA / Ramsar, the Knight & Bessborough Reservoirs SSSI, lies in the northern part of Elmbridge Borough)

4.6 The Knight & Bessborough Reservoirs SSSI, component part of the South West London Waterbodies SPA / Ramsar, is situated in the northern part of Elmbridge Borough, directly adjacent to the A3050. It is reasonable to expect that the stretch of road adjacent to these reservoirs will experience an increase in commuter traffic due to the Local Plan. However, the interest features of the SPA and Ramsar site (non-breeding gadwall and shoveler ducks) depend on open water and 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, meaning that the growth of negative macrophytes and algae primarily depends on the availability of phosphate[67]. Since emissions from Local Plan traffic 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. 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 stating that '*No Critical Load has been assigned to the EUNIS classes for meso/eutrophic systems. These systems are often phosphorus limited; therefore, decisions should be taken at a site specific level*'. Therefore, the SPA / Ramsar is excluded from further assessment in relation to this impact pathway.

Water Quality

4.7 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, 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,

[67] http://www.apis.ac.uk/node/983

augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing bioavailable nitrogen.

- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

4.8 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 Elmbridge Borough over the Plan period will increase wastewater production. Wastewater from within the borough is treated predominantly at two Wastewater Treatment Works (WwTWs), Weybridge WwTW and Esher WwTW. Sewage effluent from these works is discharged into waterbodies that are potentially hydrologically linked to the South West London Waterbodies SPA / Ramsar.

4.9 Overall, the following European site within 10km of the Elmbridge Borough boundary is 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 borough (the site in **bold** is taken forward into the following HRA chapters):

- **South West London Waterbodies SPA / Ramsar** (one component part of the SPA / Ramsar, the Knight & Bessborough Reservoirs SSSI, lies in the northern part of Elmbridge Borough)

Water Quantity, Level and Flow

4.10 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.

4.11 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.

4.12 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.

4.13 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.

4.14 Elmbridge Borough does not lie sufficiently close to European sites that are sensitive to flooding. Therefore, surface water runoff from impermeable urban surfaces is not considered further in this HRA. However, one site, the South West London Waterbodies SPA / Ramsar, partly within the northern part of the borough, is sensitive to significant reductions in water levels. The Elmbridge Local Plan would mediate such impacts primarily through the increased demand and supply of potable water to new residential and employment development, and this impact pathway requires further consideration in this HRA.

4.15 Overall, the following European site within 10km of the Elmbridge Borough boundary is sensitive to changes in water quantity, level and flow, specifically the maintenance of water levels above critical thresholds (the site in **bold** is taken forward into the following HRA chapters):

- **South West London Waterbodies SPA / Ramsar** (one component part of the SPA / Ramsar, the Knight & Bessborough Reservoirs SSSI, lies in the northern part of Elmbridge Borough)

5. Screening for Likely Significant Effects (LSEs)

Recreational Pressure

Thames Basin Heaths SPA

5.1 The designated bird species in the Thames Basin Heaths SPA that nest on (nightjar, woodlark) or close (Dartford warbler) to the ground are sensitive to recreational disturbance, particularly from visitors that walk their dogs off-lead. Disturbance can lead to reduced time spent incubating eggs, provisioning for chicks, increased energy expenditure and, in the case of prolonged disturbance, abandonment of eggs. Recreational trampling can also lead to the destruction of eggs, killing of chicks and damage to SAC vegetation upon which qualifying birds rely. Furthermore, adults, chicks and eggs are at high risk of predation by free-roaming dogs that are not under control by their owners.

5.2 With respect to heathland birds specifically, Liley and Clarke[68,69] found that the density of European nightjar *Caprimulgus europaeus* was directly related to the amount of surrounding development, with sites surrounded by higher levels of development supporting fewer nightjars. The species' breeding success appears to be much higher at less visited sites[70], with path proximity correlating strongly with nest failure, up to 225m from the path edge. Similarly, woodlark *Lullula arborea* and Dartford warbler *Sylvia undata* are also affected significantly by disturbance. Mallord estimated that, for 16 sites in southern England, 34% more woodlark chicks would be raised if all sites were free from disturbance[71,72]. Although Dartford warblers do not appear to be as sensitive to human disturbance (possibly as they are not ground-nesting), their breeding parameters are still affected by disturbance levels from humans and their pets[73].

5.3 Natural England's Site Improvement Plan (SIP) identifies public access as the most important pressure / threat to the site, potentially impacting breeding birds. The SIP states that '*Parts of the Thames Basin Heaths… are subject to high levels of recreational use… This is likely to be affecting the distribution and overall numbers of ground-nesting Annex 1 birds (and breeding success)… There is also concern at the growing use of parts of the complex by commercial dog walkers and desire to control this.*'

5.4 One component SSSI of the Thames Basin Heaths SPA straddles the boundary of Elmbridge Borough, the Ockham and Wisley Commons SSSI. Given the SPA's popularity as a recreational resource, it is reasonable to expect that new housing delivered in Elmbridge Borough, particularly in the settlements of Cobham and Stoke d'Abernon, will lead to an increase in visitor numbers to the site. While Natural England's SSSI site condition assessment indicates that these sites are achieving their Conservation Objectives (the commons are classified as 'favourable' and 'unfavourable recovering'), due account must be given to the impact potential of cumulative housing growth in the wider region.

5.5 **The available evidence base highlights that recreational pressure is a significant concern for the Thames Basin Heaths SPA, with visitor numbers expected to increase as a consequence of housing growth allocated in the Elmbridge Local Plan and development**

[68] 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.
[69] Liley, D. & Clarke, R.T. (2002) The impact of human disturbance and human development on key heathland bird species in Dorset. Sixth National Conference (eds Underhill, J.C. & Liley, D.). RSPB, Bournemouth.
[70] Murison, G. (2002). The Impact of Human Disturbance on the Breeding Success of the Nightjar *Caprimulgus europaeus* on Heathlands in South Dorset, England. English Nature.
[71] Mallord, J. (2005). Predicting the consequences of human disturbance, urbanisation and fragmentation for a woodlark *Lullula arborea* population. PhD Thesis, University of East Anglia, Norwich, UK.
[72] Liley, D. (2005). A summary of the evidence base for disturbance effects to Annex 1 bird species on the Thames Basin Heaths & research on human access patterns to heathlands in southern England. Footprint Ecology report for English Nature.
[73] Murison, G.C. (2007). The impact of human disturbance, urbanisation and habitat type on a Dartford warbler *Sylvia undata* population. PhD thesis, University of East Anglia.

plans of adjoining authorities. Therefore, LSEs of the Plan on the Thames Basin Heaths SPA regarding recreational pressure cannot be excluded and the site is screened in for Appropriate Assessment.

Thursley, Ash, Pirbright & Chobham SAC

5.6 The Thursley, Ash, Pirbright and Chobham SAC is designated for two habitats that are sensitive to recreational pressure, including Northern Atlantic wet heaths with *Erica tetralix* and European dry heaths. One main mechanism through which recreation can have negative impacts on these habitats is via direct trampling damage, effectively the direct damage to individual plants by visitors that venture off footpaths. However, various other mechanisms can also threaten the integrity of SAC habitats, such as continual path widening and erosion. Furthermore, one of the main processes adversely affecting heathland habitats is nutrient enrichment, which arises from dog fouling and, to a much lesser extent, horse riding. Because dog walking is an extremely popular activity, the cumulative input of nutrients to heaths, habitats uniquely adapted to low nutrient conditions, can equate to a strong fertiliser input.

5.7 Large sections of the Thursley, Ash, Pirbright and Chobham SAC overlap with the Thames Basin Heaths SPA, and thus have a similar distribution in relation to Elmbridge Borough. The closest component part of the SAC is the Chobham Common SSSI, approx. 6.3km to the west of Elmbridge Borough. Natural England's SSSI condition assessment classifies the relevant units of the SSSI being in 'favourable' and 'unfavourable recovering' condition, indicating that they are currently achieving their Conservation Objectives. It is to be noted that Elmbridge Borough lies beyond the 5km core recreational catchment identified for the SAC. A small part of the borough does lie within the wider 5-7km mitigation zone for larger housing developments (50+ dwellings). However, these small parts of the borough are open countryside or (in the case of the former Brooklands Airfield) employment rather than residential areas and will therefore not be subject to large residential sites as part of the Local Plan.

5.8 It can therefore be concluded that likely significant effects on the integrity of Thursley, Ash, Pirbright and Chobham SAC will not arise from recreational pressure, either alone or in combination with other plans and projects.

South West London Waterbodies SPA / Ramsar

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

5.10 The only component SSSI of the South West London Waterbodies SPA / Ramsar in Elmbridge Borough is the Knight and Bessborough Reservoirs SSSI in the northern part of Elmbridge, sandwiched between the settlements of Walton-on-Thames and East Molesey. Natural England's site condition assessment 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. Furthermore, several functionally linked waterbodies also lie in the northern part of Elmbridge and could be subject to increased levels of disturbance as a result of the Elmbridge Local Plan. 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 level of public access to and types of recreational activities undertaken in the different component parts of the SPA / Ramsar will be further explored in the AA.

5.11 **Overall, LSEs of the Elmbridge Local Plan on the SPA / Ramsar regarding recreational pressure, both alone and in combination, cannot be excluded and the site is screened in for Appropriate Assessment.**

Mole Gap to Reigate Escarpment SAC

5.12 Natural England's Site Improvement Plan for the SAC lists public access and recreational disturbance as a threat to the site, particularly the qualifying feature dry grasslands and scrublands. Orchids are important components of these chalk grasslands and are highly sensitive to trampling damage. Furthermore, repeated recreational disturbance of great-crested newt ponds and Bechstein's bat hibernacula (both these Annex II species are qualifying features) poses a potential risk to the long-term viability of these species.

5.13 At 3.8km distance, Elmbridge Borough lies well within the core recreational catchment established for most terrestrial inland sites. Indeed, visitor work undertaken in the SAC by Bournemouth University, indicates that the site has a regional draw rather than a local one, especially certain honey pot sites including Box Hill, Headley Heath and Reigate Hill & Gatton Park. However, the Site Improvement Plan has not been updated since 2014. Recreational access is not discussed in the site's Conservation Objectives Supplementary Advice which dates from 2019. Natural England's standing advice given to authorities adjoining the SAC regarding recreational pressure is that this impact pathway can be screened out[74]. This advice is based primarily on the fact that there is currently no evidence of significant off-track recreational damage in the different management units of the SAC and there is an adequate management plan for the site. Therefore, LSEs of the Elmbridge Local Plan on the Mole Gap to Reigate Escarpment SAC regarding recreational pressure can be screened out. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Windsor Forest & Great Park SAC

5.14 The Windsor Forest and Great Park SAC is designated for habitats that are directly sensitive to recreational trampling pressure, if significant off-track activity is involved, including old acidophilous oak woods and Atlantic acidophilous beech forests. 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.

5.15 However, the SAC lies approx. 10.1km to the north-west of Elmbridge Borough, well beyond the typical 5km core recreational catchment that is established for inland terrestrial European sites. Furthermore, 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. The HRA of the Windsor & Maidenhead Local Plan established that the SAC is resilient to recreational disturbance and concluded that no LSEs 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. Overall, it is concluded that LSEs of the Elmbridge Local Plan on the Windsor Forest & Great Park SAC regarding recreational pressure can be excluded, both alone and in-combination. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Screening of Plan Policies

5.16 The following policies contained within the Elmbridge Local Plan are screened in regarding recreational pressure:

- Policy SS3 (Scale and location of growth) – identifies the spatial strategy for Elmbridge Borough, including the geographic location of growth and a minimum target of 6,785 homes
- Policy HOU1 (Housing Delivery) – confirms the housing requirement for Elmbridge Borough in the Plan period as 6,785 homes

[74] See Appendix 3 of the HRA for the Tandridge Local Plan. Tandridge District Council. (2019).

Atmospheric Pollution

Thames Basin Heaths SPA

5.17 The Thames Basin Heaths SPA is designated for breeding birds that depend on dwarf shrub heath, primarily for nesting and foraging. As such, the quality of these habitats is directly linked to the SPA meeting its Conservation Objectives. The Air Pollution Information System (APIS) identifies nitrogen Critical Loads for both dwarf shrub heath (10-20 kg N/ha/yr) and coniferous woodland (5-15 kg N/ha/yr). Based on APIS, an exceedance of the CL for dwarf shrub heath can lead to transitions in heather to grass dominance, decline in lichens, changes in plant biochemistry and increased sensitivity to abiotic stress. APIS concludes that atmospheric pollution effects are associated with potential negative impacts on the qualifying species due to effects on the species' supporting habitats.

5.18 The potential for LSEs associated with development plans primarily depends on the presence of potential major commuter routes within 200m of sensitive qualifying habitats. Habitat mapping on MAGIC indicates that lowland heathland lies within this distance of at least one strategic commuter route relevant to Elmbridge Borough, specifically the M25 / A3 junction south of Byfleet (which is within 200m of the Ockham and Wisley Common SSSI). Department for Transport's road traffic data indicates that the M25 corridor is subject to high travel flows. At manual count point 73655, Annual Average Daily Traffic (AADT) of 59,495 cars, 23,295 light good vehicles and 13.022 heavy goods vehicles was recorded in 2020[75].

5.19 **Overall, given the location of air quality-sensitive heathland adjacent to these roads, LSEs of the Elmbridge Local Plan on the Thames Basin Heaths SPA regarding atmospheric pollution cannot be excluded. The site is screened in for Appropriate Assessment.**

Thursley, Ash, Pirbright & Chobham SAC

5.20 The Thursley, Ash, Pirbright and Chobham SAC is designated for Northern Atlantic wet heaths and European dry heaths, two habitats which APIS identifies as being sensitive to atmospheric nitrogen deposition, primarily in the form of a potential fertiliser effect due to excessive atmospheric nitrogen deposition (see section above). However, the closest component SSSI of the SAC is the Chobham Common SSSI approx. 6.3km to the west of Elmbridge Borough in the authority of Surrey Heath. Review of Census 2011 journey-to-work data shows that Surrey Heath is not a major contributor and / or recipient of commuter traffic associated with Elmbridge Borough. Surrey Heath is a minor work destination for Elmbridge Borough residents. In the 2011 Census only 204 persons commuted from Elmbridge to Surrey Heath by driving a car, van or motorcycle, which is considerably less than 1% of all commuter journeys out of Elmbridge.

5.21 Therefore, it can be concluded that the M3 past Chobham Common is not a significant journey to work route for future Elmbridge residents and any net new journeys from Elmbridge would fall well within the normal variation in daily traffic flows. LSEs of the Elmbridge Local Plan on the Thursley, Ash, Pirbright & Chobham SAC regarding atmospheric pollution can be excluded, both alone and in-combination. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Mole Gap to Reigate Escarpment SAC

5.22 The woodland, calcareous grassland and heathland of the SAC are sensitive to atmospheric pollution. However, only 3% of commuters from Elmbridge travel to Mole Valley District by driving a car, van or motorcycle according to 2011 Census data (1,004 individuals) and the majority of those are likely to go no further than Fetcham, Ashtead and Leatherhead, which does not involve traversing the SAC. Therefore, it can be concluded that the A24 past Mole Gap to Reigate Escarpment SAC is not a significant journey to work route for future Elmbridge residents and any net new journeys from Elmbridge would fall well within the normal variation in daily traffic flows. LSEs of the Elmbridge Local Plan on the Mole Gap to Reigate Escarpment SAC regarding

[75] Data summarised on https://roadtraffic.dft.gov.uk/manualcountpoints/73655 [Accessed on the 07/03/2022]

atmospheric pollution can be excluded, both alone and in-combination. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Wimbledon Common SAC

5.23 The two qualifying habitats in the Wimbledon Common SAC, European dry heaths and Northern Atlantic wet heaths, are both sensitive to atmospheric pollution (see earlier sections for ecological impacts and nitrogen Critical Loads). The SAC extends along the A3 in the authorities of Merton and Wandsworth, approx. 5.6km from Elmbridge Borough. Review of habitat mapping on MAGIC indicates that parcels of lowland heathland lie directly adjacent to the A3 in the north-east part of the SAC opposite Putney Heath. However, commuter trips to Kingston upon Thames, Richmond upon Thames, Hounslow, Hillingdon and Merton, which are quantitatively the most important London Boroughs regarding commuter flows by car, van and motorcycle, will not involve journeys past the Wimbledon Common SAC. 2011 Census data indicates that 514 out-commuters from Elmbridge travel to Wandsworth by driving a car, van or motorcycle, which is approx. 1% of all outward commuter journeys from the borough.

5.24 Therefore, it is concluded that the A3 past the heathland of Wimbledon Common is not a significant journey to work route for future Elmbridge residents and any net new journeys from Elmbridge would fall well within the normal variation in daily traffic flows. LSEs of the Elmbridge Local Plan on the Wimbledon Common SAC regarding atmospheric pollution can be excluded, both alone and in-combination. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Windsor Forest & Great Park SAC

5.25 The Windsor Forest & Great Park SAC, 10.1km north-west of Elmbridge Borough, was included in this HRA as a precautionary measure, although the site lies just beyond the usual 10km scoping distance for European sites. Both acidophilous oak woods and Atlantic acidophilous beech forests are sensitive to atmospheric nitrogen deposition and elevated ammonia concentrations. APIS identifies nitrogen Critical Loads of 10-15 kg N/ha/yr and 10-20 kg N/ha/yr for these habitats respectively. Exceedance impacts in these habitats include changes in ground vegetation, decreases in mycorrhiza, and loss of epiphytic bryophytes and lichens.

5.26 However, while it is noted that there are various tracts of sensitive woodland within 200m of major roads (e.g. the A332 and B383), these roads will not constitute journey to work routes for residents from Elmbridge Borough. A total of 217 Elmbridge residents commuted to Windsor & Maidenhead by driving a car, van or motorbike according to the 2011 census, which is well below 1% of the total commuter outflow of Elmbridge. Furthermore, reaching the main settlements (Windsor and Maidenhead) in that authority would not involve traversing the SAC. Overall, LSEs of the Elmbridge Local Plan on the Windsor Forest & Great Park SAC regarding atmospheric pollution can be excluded, both alone and in-combination. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Screening of Plan Policies

5.27 The following policies contained within the Elmbridge Local Plan are screened in regarding atmospheric pollution:

- Policy SS3 (Scale and location of growth) – identifies the spatial strategy for Elmbridge Borough, including the geographic location of growth and a minimum target of 6,785 homes
- Policy HOU1 (Housing Delivery) – confirms the housing requirement for Elmbridge Borough in the Plan period as 6,785 homes
- Policy ECO1 (Supporting the Economy) – stipulates the aim of maintaining and intensifying existing employment floorspace, particularly in Strategic Employment Land (SEL)
- Policy ECO2 (Strategic Employment Land) – safeguards SEL across Elmbridge Borough and endorses opportunities for future employment development in a range of use classes

- Policy ECO3 (Supporting our Town, District and Local Centres) – while the policy does not propose a quantum of employment development, it supports the provision of a range of employment uses across the borough's Town, District and Local Centres

Water Quality

South West London Waterbodies SPA / Ramsar

5.28 Several studies have demonstrated that high levels of phosphorus lead to a loss of diversity in aquatic macrophytes[76] [77]. The Elmbridge Local Plan, through pollutants in treated sewage effluent, may potentially affect the water quality prevailing in the South West London Waterbodies SPA / Ramsar.

5.29 Sewage from Elmbridge Borough will be treated in several Wastewater Treatment Works (WwTWs), including Weybridge (Seven Arches) WwTW and Esher Farm Road WwTW. An initial review of these WwTWs on the European Commission urban wastewater website highlights that both works are hydrologically connected to component waterbodies of the SPA / Ramsar and / or functionally linked reservoirs. For example, Esher WwTW discharges to the River Mole and R. Ember just upstream of Island Barn Reservoir. The Environment Agency (EA) Catchment Data Explorer indicates that Island Barn Reservoir has 'Moderate' ecological status, partly due to a 'Bad' classification for total phosphorus. Intermittent pojnt-source pollution from WwTWs is provided as one of the main Reasons for Not Achieving Good status (referred to as RNAG).

5.30 Weybridge WwTW discharges to the R. Wey that is a tributary to the R. Thames upstream from the Knight and Bessborough Reservoirs (both part of the SPA / Ramsar designation), both of which are filled with water from the non-tidal section of the Thames upstream from Teddington Weir. The Catchment Data Explorer indicates that this area falls into the Thames (Egham to Teddington) Water body, which has 'Poor' ecological status and 'Moderate' phosphorus levels. Of importance in relation to Weybridge WwTW is the in-combination element, in that numerous smaller WwTWs upstream (e.g. Bentley, Elstead, Shamley Green and Selbourne) in authorities other than Elmbridge contribute significantly to the phosphorus loading in the R. Wey (and, ultimatately, the R. Thames). Many of these WwTWs currently have no limits imposed for phosphorus discharges.

5.31 AECOM undertook a Water Cycle Study for Elmbridge Borough in 2018[78], with one objective being to identify potential constraints imposed by the remaining headroom at WwTWs and discharge consents on future growth scenarios. Two WwTWs were identified as processing 99% of the sewage produced in the borough and likely to be the recipient of additional sewage volumes due to future development. Importantly, the WCS determined that both Esher WwTW and Weybridge WwTW would have remaining headroom under all growth scenarios to 2035, specifically 20,617 dwellings at Esher WwTW and 9,893 dwellings at Weybridge WwTW. It was noted that Scenario 1 in particular (effectively focussing on urban intensification), would lead to a significant increase in treated flow volume (by 9.6%) at Esher WwTW, compared to current treated flows.

5.32 It should be noted that the qualifying species of the South West London Waterbodies SPA / Ramsar are somewhat resilient to nutrient input and, within limits, may benefit from phosphorus in treated sewage effluent. For example, gadwalls inhabit highly productive, eutrophic lakes. Their diet is almost entirely plant-based, mainly consisting of submerged or emergent macrophytes[79]. Gadwalls rely on the consumption of large amounts of poor-quality food sources and are thus likely to be of lesser sensitivity to phosphorus input from treated sewage effluent. This species also relies on short grassland surrounding reservoirs, where present, which will be unaffected by treated sewage effluent.

[76] Lambert & Davy. 2010. Water quality as a threat to aquatic plants: discriminating between the effects of nitrate, phosphate, boron and heavy metals on charophytes. *New Phytologist* 189: 1051-1059.
[77] Roelofs et al. 1984. Impact of acidification and eutrophication on macrophyte communities in soft waters. II. Experimental studies. *Aquatic Botany* 18: 389-411.
[78] AECOM. 2018. Elmbridge Water Cycle Study: Phase 1 Scoping (Draft Report). Report for Elmbridge Borough Council.
[79] Fox. (2005). Gadwall. In Ducks, Geese and Swans; Volume 2: Species accounts (ed J.)
Kear), pp. 491-94. Oxford University Press, Oxford.

5.33 Shovelers have morphological traits that facilitate a different feeding ecology to gadwall. Their specialised bill enables these ducks to filter out zooplankton, their main food source, which are caught mainly in productive habitats bordered by vegetation[80]. Although shoveler are not directly dependent on macrophytes, zooplankton (their main food) depend on macrophytes as a source of food and microhabitats[81]. For both species food biomass is more important than species diversity, hence their reliance on eutrophic (high nutrient) systems. Indeed, Briggs (2007)[82] noted in his PhD thesis that the extensive algal growth around the water edge was what made many of the waterbodies particularly suitable for foraging gadwall.

5.34 Therefore, even if there was hydrological connectivity between waterbodies receiving treated sewage effluent from the Esher and Weybridge WwTWs and the South West London Waterbodies SPA / Ramsar, the Outline WCS for Elmbridge Borough has shown that the anticipated growth in the borough can be accommodated within the headroom of relevant WwTWs. Additionally, both gadwall and shoveler are species of eutrophic high prey biomass waterbodies. Overall, LSEs of the Elmbridge Local Plan on the South West London Waterbodies SPA / Ramsar regarding water quality can be excluded. The site is screened out from Appropriate Assessment in relation to this impact pathway.

Water Quantity, Level and Flow

5.35 Gadwall are dabbling ducks that upend to grab submerged vegetation with their strong beaks, but they also consume seeds, invertebrates and small fish. Shoveler, also dabbling ducks, use their wide beaks to separate food items from water, including, seeds, plant fragments, crustaceans, molluscs and small fish. Most of these foraging resources rely on sufficient water levels, such that the ability of SPA / Ramsar waterfowl to feed adequately, could be impeded if water levels dropped below certain threshold levels.

5.36 Any freshwater body, whether natural or artificial, is likely to experience changes in water levels and flows as a result of seasonal (e.g. rainfall), climate and human-induced (e.g. abstraction) impacts. Notably, numerous component waterbodies of the South West London Waterbodies SPA / Ramsar are operational reservoirs that are likely to be subject to much greater water level changes than those normal for natural / semi-natural waterbodies. Overall, this hasn't impeded the ability of the SPA / Ramsar to support internationally significant gadwall and shoveler populations. Clearly, the qualifying species have the ability to accommodate significant variations in water levels without negatively impacting their ability to replenish nutrient reserves in the overwintering period. Both gadwall and shoveler depend on shallow marginal water, rather than requiring deep water so considerable water level reduction would be needed for the reservoirs or gravel pits to be unsuitable to support either species.

5.37 Potable water in Elmbridge Borough is provided by three service providers, Affinity Water, Thames Water and South East Water (each covering approx. one third of the borough). Water service providers periodically publish Water Resource Management Plans (WRMPs), which set out their future strategic approaches towards resource usage in the context of existing challenges, such as climate change and environmental protection. Part of the north-west of Elmbridge Borough (e.g. Weybridge) lies in Water Resource Zone (WRZ) 6 of Affinity Water. The company's WRMP projects that the baseline supply demand balance will experience a deficit of 108 Ml/d in 2045 and this shortfall will increase to 256 Ml/d by 2080 (partly fuelled by climate change). Affinity Water proposes a threefold approach to tackling this deficit, including demand management (e.g. reduction in household usage), reducing process losses (e.g. through leakage reduction) and supply management (e.g. delivering a series of smaller additional sources). Given that the main role of most SPA / Ramsar reservoirs is the storage of additional water deriving from these options, it is considered effectively impossible that Affinity Water's management options will result in a significant drop in water level. Indeed, given that the options deployed will result in the supply-demand balance remaining in surplus to 2079/80, this will also provide an

[80] Mitchell. (2005). Shoveler. In Ducks, Geese and Swans; Volume 2: Species accounts (ed J. Kear), pp. 560-64. Oxford University Press, Oxford.
[81] Choi et al. 2014. Role of macrophytes as microhabitats for zooplankton community in lentic freshwater ecosystems of South Korea. *Ecological Informatics* 24: 177-185.
[82] 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. www.environmentbank.com/docs/Brian-Briggs-DPhil.pdf [Accessed: 05/09/2021]

assurance that reservoir water storage levels won't fall below critical thresholds regarding their ability to support SPA / Ramsar bird populations.

5.38 The north and north-east part of Elmbridge Borough (e.g. Walton-on-Thames and Esher) is supplied with potable water by Thames Water. The company's WRMP indicates a significant deficit in the baseline supply-demand balance between the years 2019/20 to 2099/00. In summary, under dry year annual average conditions, a deficit of 362 Ml/d is predicted to occur by 2044, which will increase to 623 Ml/d by 2099. Without corrective actions, this deficit means that water supply for the London WRZ will not be secure. Therefore, the company proposed that demand management and resource options are needed to meet the increasing future demand in this water supply area. Several resource options have been explored as part of the Thames Water's Water Resource Feasibility Assessment, including direct abstraction from the River Lee (approx. 35 Ml/d) and exploration of several new / existing groundwater sources. However, AECOM concludes that there is no hydrological connectivity between any of these resource options with waterbodies that could be utilised to maintain the water levels in reservoirs that are component parts of the South West London Waterbodies SPA / Ramsar. This is in line with the HRA of Thames Water's WRMP, which did not identify potential hydrological interactions of the WRMP and the SPA / Ramsar.

5.39 SES Water supplies potable water to the southern part of Elmbridge Borough, including the settlements of Cobham and Oxshott. The company covers an area of approx. 835km2, delivering water to 707,000 customers in more than 286,000 properties. The majority of water supply comes from groundwater sources (85%), specifically four aquifer resource units in the North Downs Chalk, Confined Chalk, Mole Valley Chalk and Lower Greensand. Furthermore, the company operates one river abstraction from the River Eden, which is used to fill Bough Beech Reservoir in the autumn and winter months. SES Water's WRMP projects that the supply-demand balance will remain in surplus until 2048/49, beyond which it will fall into deficit rising to 22.7 Ml/d by 2080. Several supply-side options to address this shortfall were assessed by the company, with specific regard to licensing and WFD requirements. New groundwater abstractions were identified in the lower, middle and upper Mole. However, none of these options have the potential to impact water levels in the South West London Waterbodies SPA / Ramsar, because the Environment Agency has already consented the relevant water volumes as 'available for abstraction'.

5.40 AECOM's appraisal of Affinity Water's, Thames Water's and SES Water's future water provision strategies (set out in WRMPs) indicates that there is no scope for these plans to negatively impact the volume of water in component waterbodies of the SPA / Ramsar. This is mainly due to new resource options not being in hydrological connectivity with the European sites. Therefore, it is concluded that the Elmbridge Local Plan will not result in LSEs on the South West London Waterbodies SPA / Ramsar regarding water quantity, level and flow. The site is screened out from Appropriate Assessment in relation to this impact pathway.

6. Appropriate Assessment

Recreational Pressure

Thames Basin Heaths SPA

6.1 The Thames Basin Heaths SPA is sensitive to recreational pressure from housing growth as a result of direct disturbance to birds (particularly from dog walkers), as well as indirect effects on the habitats and vegetation that SPA birds depend on through nutrient enrichment and trampling damage. Recreational pressure in the Thames Basin Heaths SPA is a long-standing and well documented issue, with Local Planning Authorities (LPAs) being signatories to a tailored mitigation approach. The Thames Basin Heaths Partnership (TBHP) formally adopted the Thames Basin Heaths SPA Delivery Framework in 2009[83], which encompasses dual-pillar interventions in the form of Suitable Alternative Natural Greenspace (SANGs) provision and Strategic Access Management and Monitoring (SAMM). SANGs are publicly accessible natural greenspaces that must fulfil stringent Natural England criteria, including the provision of 2.5km circular routes, car parking and dog-off-lead areas. The goal of SANGs is to provide attractive and realistic alternative recreation destinations to local residents, with the beneficial effect of reducing the number of recreational visits to more sensitive European sites. As part of the Thames Basin Heaths Strategic Partnership programme, it has been established that all new housing developments within 5km and developments over 50 dwellings within a wider 5-7km buffer zone (assessed on a case-by-case basis) must provide SANGs and contribute to SAMM.

General Recreation Pattern

6.2 Given the sensitivity of the SPA, ongoing concerns regarding the achievement of Conservation Objectives and existing high levels of recreational access, several visitor surveys have been undertaken at key access points to these sites. In 2005, English Nature (predecessor of Natural England) commissioned a study of visitor access patterns[84] at 26 key access locations across the Thames Basin Heaths SPA to provide a baseline of recreational pressure.

6.3 In 2012/13 a repeat visitor survey[85] was undertaken, replicating the methodology and most access locations (including those that are likely to be particularly relevant to residents of Elmbridge Borough, based on travel distance):

- Survey Location 25 (East of Aberconway House – Wren's Nest car park)
- Survey Location 26 (Currie's Clump – Boldermere car park)
- Survey Location 40 (Pond car park; only assessed in the 2012/13 survey)

6.4 Overall, a total of 6,409 people and 4,314 dogs were recorded accessing the SPA in the survey periods May / June 2012 and August 2012/13. The above identified survey locations experienced intermediate levels of business, with 120 visitors and 111 visitors entering the SPA at survey points 25 and 26 respectively. Being distributed over several Local Planning Authorities (LPAs), it is useful to appraise in which LPA the recreational footprint on the SPA is highest. In Guildford Borough, which is most relevant to Elmbridge, 1,049 people entered the SPA, which is lower than at access points in the LPAs of Surrey Heath (1,630), Bracknell Forest (1,458) and Woking (1,340). Of particular importance is the high proportion of interviewees that contribute repeated recreational pressure throughout the year, with 929 out of 2,423 interviewees (38%) visiting daily

[83] Thames Basin Heaths Joint Strategic Partnership Board (JSPB). (2009). Thames Basin Heaths Special Protection Area Delivery Framework. 14pp. Available at: https://www.woking2027.info/allocations/sadpdexam/spadelivery.pdf [Accessed on the 21/02/2022]
[84] Liley D., Jackson D. & Underhill-Day J. (2005). Visitor Access Patterns on the Thames Basin Heaths. English Nature Research Report. English Nature, Peterborough. 51pp. Available at: https://www.footprint-ecology.co.uk/reports/Liley%20et%20al.%20-%202006%20-%20Visitor%20Access%20Patterns%20on%20the%20Thames%20Basin%20Heaths.pdf [Accessed on the 21/02/2022].
[85] Fearnley H. & Liley D. (2013). Results of the 2012/13 visitor survey on the Thames Basin Heaths Special Protection Area (SPA). Natural England Commissioned Reports, Number 136. 107pp. Available at: http://publications.naturalengland.org.uk/publication/4514481614880768 [Accessed on the 07/01/2022].

and 833 interviewees visiting more than once a week (34%). Dog walking is by far the most frequent activity (66%), followed by walking (21%), cycling (4%) and jogging (3%). A particularly high proportion of dog walkers was recorded at Wren's Nest car park, which is likely to encompass residents from the western part of Elmbridge Borough.

6.5 In the 2012 / 13 visitor survey, 2,177 mapped postcodes (94%) fell within the 5km core recreational catchment zone defined from data obtained in the initial 2005 survey, representing a small increase from 88%. Notwithstanding this, this pattern does highlight the continued, and perhaps increasing, recreational footprint in the SPA. There is no clear indication that suggests a statistically significant overall increase in recreational pressure across the SPA. It is noted that visitor counts (defined as the total number of visitors entering respective survey locations in August) has increased markedly at several survey locations across the SPA, including survey point 13 (Chobham Common, Staple Hill), which experienced a 79% increase in visitor numbers between 2005 and 2012/13. A 61% increase in visitors was recorded for survey point 15 (Sandpit Hill). However, visitor numbers have decreased at other locations, suggesting that these changes are due to location-specific and / or unquantifiable factors. One of the most striking differences between the 2005 and 2012 / 13 surveys was the emergence of professional dog walking services which was observed at 15 survey locations. A high level of concern has been raised about professional dog walkers by other site users, particularly about their inability to pick up after multiple dogs. Given the importance of the SPA to dog walkers, the Thames Basin Heaths SPA Delivery Framework (and mitigation measures proposed therein) should place strong focus on this user group.

6.6 In the 2012/13 survey, of the local car visitors, defined as people that are visiting on a day trip from home, 75% lived within 4.61km of the visited access point, indicating that the adopted 5km mitigation zone still represents an adequate area in which to apply mitigation requirements. The core catchment zones surrounding survey points 25 and 26 are 6.7km and 16.2km respectively, covering large areas of Elmbridge Borough. It is important to assess the individual contribution of a LPA to the in-combination recreational burden in European sites, in order to reach a representative conclusion on likely impacts. Given that proximity to home is a major determinant for the likelihood of visiting, and most component parts of the Thames Basin Heaths SPA being relatively distant from Elmbridge Borough, it is unsurprising that Elmbridge residents make up a very small proportion of interviewees (19 of 2,316 interviewees, 1%). Clearly, therefore, Elmbridge Borough's contribution to disturbance impacts on SPA birds is correspondingly small and this should be reflected in the relative burden placed on developers delivering growth in the authority.

6.7 It is clear that overall access to greenspaces has been increasing, with research showing that the population is spending more of its leisure time outdoors. This needs to be set into the context of increased housing development nationwide, and particularly around the Thames Basin Heaths SPA. For the 2005 visitor survey report, an appraisal of postcode data showed 288,109 properties within 5km of the SPA, which increased to 310,525 properties by 2011 (a 7.2% increase). Interestingly, despite this considerable housing growth, there is no evidence to suggest an increase in visitor numbers to the SPA. This anecdotal evidence may suggest that the Suitable Alternative Natural Greenspace (SANG) and Strategic Access Management and Monitoring (SAMM) measures deployed to protect the SPA since 2005 are having the desired impact. However, this assumption remains to be rigorously tested, such as through randomised surveys of SPA access points and monitoring of SANGs.

6.8 In line with the 5-yearly requirement for updated visitor monitoring, EPR undertook a visitor questionnaire survey in 2018[86] at all survey locations that were included in the 2012/13 study. The main purpose of this study was to reassess recreation patterns in the SPA and, ultimately, demonstrate whether the deployed mitigation measures are effective. Importantly, the data highlight that the number of entries per hour has dropped slightly from 6.8 to 6.3 between 2012/13 and 2018, despite the continued increase in housing around the SPA. The percentage change in hourly footfall (average of entries and exits) significantly differs between survey points, with some

[86] Southgate J., Brookbank R., Cammack K. & Mitchell J. (2018). Visitor Access Patterns on the Thames Basin Heaths SPA: Visitor Questionnaire Survey 2018. Natural England Commissioned Report. 82pp. Available at: https://surreyheath.moderngov.co.uk/documents/s16014/07di%20-%20SAMM%20Project%20Report%20Annex%20C%20Thames%20Basin%20Heaths%20Visitor%20Access%20Survey.pdf [Accessed on the 21/02/2022].

locations experiencing declines (e.g. Chobham Common, -64.1%) and considerable increases being observed at other access points (e.g. Lightwater Country Park, +432.7%). Compared to the survey years 2005 (59%) and 2012/13 (66%), there was a marked increase in the proportion of dog walkers (74.6%). Overall, it appears that the pressure by dog walkers on the bird interest of the SPA is increasing. Notwithstanding this, the report concludes that the implementation of the SANG is very likely to have contributed to the decline in visitor footfall that has been recorded between 2005 and 2018 at many locations in the SPA.

Contribution of the Elmbridge Local Plan

6.9 Based on their distance to the Thames Basin Heaths SPA and capacities, all housing sites allocated in the Elmbridge Local Plan were assessed for a potential requirement of SANG mitigation (Table 2).

Table 2: Allocated housing sites that fall within the 5km core buffer zone and the wider 5-7km wider mitigation zone (where over 50 dwellings) surrounding the Thames Basin Heaths SPA.

Site Allocation	Site Name	Settlement	Capacity
Between 400m and 5km			
US195	Cobham Village Hall and Centre for the Community, Lushington Drive, Cobham, KT11 2LU	Cobham	37
US431	Shell Petrol Filling Station 95 Brooklands Road Weybridge KT13 0RP	Weybridge	5
US189	Premier Service Station, 101 Portsmouth Road, Cobham, KT11 1JN	Cobham	7
US162	Site B Garages at Wyndham Avenue, Cobham	Cobham	4
US218	Coveham House, Downside Bridge Road and The Royal British Legion, Hollyhedge Road, Cobham	Cobham	14
US190	Shell Fairmile, 270 Portsmouth Road, Cobham KT11 1HU	Cobham	10
US217	68 Between Streets and 7-11 White Lion Gate, Cobham	Cobham	6
US214	Waitrose, 16-18 Between Streets, Cobham KT11 1AF	Cobham	20
US404	2-8 Princes Road Weybridge KT13 9BQ	Weybridge	10
US221	Garages and parking to the rear of Cobham Gate, Cobham	Cobham	8
US403	HFMC House, New Road and 51 Prince's Road Weybridge KT13 9BN	weybridge	6
US188	Ford Garage, 97 Portsmouth Road, Cobham, KT11 1JJ	Cobham	21
US406	179 Queens Road Weybridge KT13 0AH	Weybridge	9

Site Allocation	Site Name	Settlement	Capacity
US160	Garages at Bennett Close, Cobham	Cobham	3
US215	38 Copse Road, Cobham, KT11 2TW	Cobham	7
US194	Protech House, Copse Road, Cobham KT11 2TW	Cobham	28
US402	1 Princes Road Weybridge KT13 9TU	Weybridge	19
US7	20 Stoke Road, Cobham	Cobham, Oxshott and Stoke D'Abernon	8
US178	Sainsbury's car park, Bridge Way, Cobham, KT11 1HW	Cobham	58
US183	BMW Cobham, 18-22 Portsmouth Road, Cobham	Cobham	27
US93	Horizon Business Village	Weybridge	
US407	Foxholes, Weybridge KT13 0BN	Weybridge	
US186	78 Portsmouth Road, Cobham	Cobham, Oxshott and Stoke D'Abernon	30
US164	Cobham Health Centre and Garages off Tartar Road	Cobham	11
US193	Glenelm and 160 Anyard Road	Cobham, Oxshott and Stoke D'Abernon	34
US469	Heath Lodge, St George's Avenue	Weybridge	6
US92	GlaxoSmithKline, St. Georges Avenue	Weybridge	100
US492	Cedar House, Mill Road, Cobham, KT11 3AL	Cobham, Oxshott and Stoke D'Abernon	7
US497	Cedar Road Car Park, Cedar Road, Cobham, KT11 2AA	Cobham, Oxshott and Stoke D'Abernon	5
US191	73 Between Streets, Cobham, KT11 1AA	Cobham	40
US201	Tiltwood Care Home, Hogshill Lane, Cobham, KT11 2AQ	Cobham	24
US187	87 Portsmouth Road, Cobham, KT11 1JH	Cobham	10
US110	The Heights, Weybridge	Weybridge	
US159	Garages to the rear of 6-32 Lockhart Road, Cobham	Cobham	4
US530	Garage block, Middleton Road, Downside	Cobham, Oxshott and Stoke D'Abernon	3

Site Allocation	Site Name	Settlement	Capacity
US525	8 Sopwith Drive	Weybridge	
US523	Pine View, Fairmile Park Road, Cobham	Cobham, Oxshott and Stoke D'Abernon	6
US522	52 Fairmile Lane	Cobham, Oxshott and Stoke D'Abernon	7
US472	40 Fairmile Lane	Cobham, Oxshott and Stoke D'Abernon	13
			Total = 607 dwellings
Within 5km – 7km			
US287	15 Clare Hill Esher KT10 9NB	Esher	55
US356	Station Avenue Car Park, Station Avenue, Walton-on-Thames	Walton-on-Thames	50
US435	Car Park next to Waterloo Court	Hersham	62
US407	Foxholes, Weybridge KT13 0BN	Weybridge	78
US379	Hersham Shopping Centre, Molesey Road, Hersham	Hersham	200
			Total = 445 dwellings

6.10 Based on the sites included in the 2022 Land Availability Assessment (LAA), 607 dwellings will be delivered within the 400m – 5km core mitigation zone, with a further 445 dwellings being delivered on large development sites in the wider 5-7km mitigation zone. Furthermore, a windfall allowance of 14 dwellings per annum is assumed for the Local Plan period, based on windfall completions between 2016 and 2021. Elmbridge Borough's Thames Basin Heaths Avoidance Strategy identifies that a total of 12.5ha of SANG will be required to mitigate the population increase resulting from the Local Plan. Calculations undertaken by the Council indicate that there is a combined residual capacity of 267 dwellings in Elmbridge's strategic SANG (236 dwellings at Esher Common, 31 dwellings at Brooklands Community Park) amounting to 5ha of SANG capacity. Based on the anticipated housing delivery trajectory, it is expected that the borough's existing SANG capacity will be exhausted in the 11 to 15-year period, the latter stage, of the plan. Overall, an additional 7.5ha of, as of yet unidentified, SANG will therefore be required to cover residential growth through to the end of the Plan period.

Identifying Adequate Future SANG Provision

6.11 The existing SANG sites in Elmbridge Borough do not have sufficient capacity remaining to mitigate the entire amount of residential development coming forward during the plan period. Elmbridge Borough Council have therefore undertaken a comprehensive SANG Options Assessment to determine how the additional SANG demand may bet met, including potential availability in neighbouring authorities (under the Duty to Cooperate), extensions to existing SANGs in Elmbridge Borough, provision of SANG on land in public ownership and review of sites promoted in response to the Regulation 18 Call-for-Sites and a SANG-specific Call-for-Sites in August / September 2021. The assessment outcome on the suitability of each of these approaches is provided in the following.

6.12 The authorities of Runnymede, Guildford and Woking were contacted to explore remaining capacity in their SANGs, which fall within the zone of influence of the SPA and lie within 5km of the Elmbridge Borough boundary. However, most relevant SANGs have no remaining capacity (i.e. Chertsey Meads, Franklands Drive and Land south of Parvis Road) or would cover geographic areas in Elmbridge in which no substantial development is planned (Horsley Meadows). Effingham Common in Guildford Borough has remaining capacity but no car park, which limits the catchment area to 400m. Discussions with Guildford Borough Council regarding parking provision at Effingham Common are ongoing.

6.13 Elmbridge Borough Council have also explored the option of extending existing SANGs in Elmbridge (Brooklands Community Park and Esher Common) in support for their Local Plan. Given its urbanised context and the absence of undeveloped land in its vicinity, there is no scope for enlarging Brooklands Community Park. However, an appraisal of Esher Common indicates potential for the site to be extended in support of future residential development. There are five land parcels surrounding the existing Esher Common SANG that were assessed for their potential to form viable extensions (Parcels A-E). Natural England advised that designation as SANG would likely be inacceptable for parcels A, C, D and E, given the habitats and species present on site. Exposure of these features to significant additional pressure would have the potential to impact the condition targets for these SSSI component parts. Only parcel B has been highlighted as a potentially suitable candidate for SANG extension. The site already experiences heavy footfall and would need to be subject to discounting based on its existing recreational load. Furthermore, improvements to paths and overall permeability of the site would need to be delivered, prior to it being designated as SANG. While Natural England would prefer an alternative site for mitigation provision, primarily due to its SSSI status, it has been advised that a visitor survey and environmental sensitivity appraisal should be undertaken on Parcel B.

6.14 For a range of reasons, none of the land promoted in response to the Reg.18 and SANG-only Call-for-Sites is considered viable for mitigation. While the three Reg.18 Call-for-Sites yielded suitable SANG candidates (e.g. Hersham Golf Course and Land East of Molesey Road), these sites relied on residential development in Green Belt, which is now not proposed, and are not available as SANG-only options. The SANG-only Call-for-Sites of August / September 2021 yielded potential candidate sites being proposed, particularly where sites had the potential to be linked. However, most of these sites are in existing agricultural use (which site owners wish to maintain) and lie in areas that are at significant risk of flooding. Natural England is typically opposed to delivery of SANG in flood-prone areas, because such locations may be rendered inaccessible during periods of inclement weather.

6.15 Elmbridge has sufficient SANG capacity to meet its needs between adoption and the first 5-year Local Plan Review, and probably until the 11-15 year period of the Local Plan. While SANG have not yet been identified for the full Local Plan period numerous options are being explored and there is no current reason to assume that sufficient SANG will not be identified in time. Available SANG capacity will remain a live matter to be reconsidered at each Local Plan Review period. If, at a given Local Plan Review, there is insufficient SANG to meet Local Plan numbers for that period then this will need to be taken into account in a review of overall Local Plan numbers in order to ensure that the SPA remains protected.

Requirement for SAMM Mitigation

6.16 In line with the Thames Basin Heaths SPA Delivery Framework, Elmbridge Borough's Thames Basin Heaths Special Protection Area Avoidance & Mitigation Strategy requires all residential developments in the SPA catchment zone to make financial contributions towards SAMM measures, including awareness measures regarding site use (particularly in the breeding season), wardening services, educational events, volunteering opportunities and monitoring of both visitors and SPA birds. SAMM contributions are secured through a legal agreement prior to granting planning consent. In the case of the Thames Basin Heaths SPA, SAMM funds are collected by Hampshire County Council, the central administrative body, and utilised by Natural England. The SAMM tariff for the SPA is based on the number of bedrooms and associated average occupancy per dwelling, currently ranging from a one-bedroom property (£650) to five+ bedrooms (£1,850). Within the wider 5-7km zone, in which only developments of 50 dwellings or more require mitigation, the chargeable tariff drops to 25% of the standard rate.

Policy Mitigation in the Elmbridge Local Plan

6.17 The Elmbridge Local Plan contains several policies that extend protection to the Thames Basin Heaths SPA. **Policy ENV5 (Thames Basin Heaths Special Protection Area)** is the main protective policy mechanism in the Plan. The policy stipulates that '*development which is likely to have a significant effect on the ecological integrity of the Thames Basin Heaths Special Protection Area (TBH SPA) will be required to provide adequate measures to avoid or mitigate any potential adverse effects.*' Due reference to the relevant zonation surrounding the SPA is also made, including the 400m exclusion zone for residential development, the 5km zone of influence and the 5-7km mitigation zone for larger developments over 50 units. The policy highlights that '*4. Mitigation measures will be based on a combination of Strategic Access Management and Monitoring (SAMM), and the provision of Suitable Accessible Natural Greenspace (SANG)*', thereby being in accordance with the main mitigation measures identified in the SPA Avoidance and Mitigation Delivery Framework.

6.18 Importantly, Policy ENV5 will work synergistically with other policies in the Local Plan that protect and / or enhance green and blue infrastructure. While these additional greenspaces will not be provided to SANG standard, they will nonetheless promote an attractive public realm and enhance permeability within the borough. **Policy ENV1 (Green and Blue Infrastructure)** states that '*1. The council will protect, maintain and enhance the network of accessible, multifunctional green and blue infrastructure across the borough for the biodiversity, recreational, connectivity and health and wellbeing value it provides…3. Development proposals must be designed with green and/or blue infrastructure as an integral component, whether this be by enhancing existing features or providing new assets.*' The policy also provides particular focus on establishing new connections between existing green and blue infrastructure assets. Importantly, Policy ENV1 also ensure the long-term effectiveness of GI by stating that the '*provision of new green and/or blue infrastructure features, or the enhancement of existing features, must include provision for their long-term maintenance*', typically taken to be in-perpetuity. **Policy ENV3 (Local Green Spaces)** provides further protection to recreational assets, such as local green spaces, by protecting such spaces from development.

Conclusions & Recommendations

6.19 It is concluded that the Elmbridge Local Plan contains adequate policy mitigation mechanisms to help protect the integrity of the Thames Basin Heaths SPA. However, at the time of writing, there are remaining questions over the long-term deliverability of sufficient SANG to support residential growth, particularly from the 11-15 year period of the Plan. Therefore, it is advised that further SANG options in Elmbridge Borough are explored by the Council in collaboration with Natural England. Two feasible options include the extension to Esher Common SANG and obtaining capacity at Effingham Common SANG from Guildford Borough Council under the Duty to Cooperate. **Provided that suitable additional SANG can be identified and maintained in perpetuity, it is concluded that the Elmbridge Local Plan would not lead to adverse effects on the integrity of the Thames Basin Heaths SPA regarding recreational pressure.** This HRA will be updated when SANG options have been further evaluated and / or taken forward.

South West London Waterbodies SPA / Ramsar

6.20 The northern part of Elmbridge Borough comprises two reservoirs that are part of the South West London Waterbodies SPA / Ramsar; the Knight and Bessborough Reservoirs, which are situated between Walton-on-Thames and West Molesey. The two waterbodies lie amidst existing residential conurbations, which also places them within short travel distances of housing developments proposed in the Elmbridge Local Plan. As highlighted in the LSEs chapter, these waterbodies are designated for their overwintering populations of gadwall and shoveler, wildfowl species that are sensitive to recreational pressure particularly where water-based activities are involved.

6.21 The northern part of Elmbridge Borough also includes the Queen Elizabeth II Storage Reservoir and Island Barn Reservoir. Though not technically part of the SPA / Ramsar designation, these reservoirs act as supporting resting, loafing and foraging habitat for shoveler and gadwall. The Queen Elizabeth II Reservoir is only separated from the SPA / Ramsar by Walton Road and the Island Barn Reservoir lies a further kilometre to the east. Given the established functional linkage with the SPA / Ramsar, any potential recreational pressure impacts of the Elmbridge Local Plan

on these reservoirs must be assessed under the Conservation of Habitats and Species Regulations (as amended, 2017). A PhD thesis provides a detailed account of the accessibility of SPA / Ramsar waterbodies[87], and is the primary information source considered in this HRA report. It also identifies the functional importance of waterbodies outside the site boundary to qualifying SPA / Ramsar waterfowl.

6.22 The Knight and Bessborough Reservoirs are two adjoining waterbodies operated by Thames Water, which are maintained at relatively constant water levels. Both reservoirs support extensive algal growth, forming a high-quality food supply for gadwall. Furthermore, the steep, inaccessible banks provide shelter from wind and predation, and both gadwall and shoveler use the reservoirs for roosting. However, neither of these reservoirs have public access and there is thus no potential for the Elmbridge Local Plan to result in increased recreational disturbance to bird populations.

6.23 The Queen Elizabeth II Storage Reservoir is a large, concrete-lined waterbody over 70ha in size with no marginal vegetation. It is in regular operational use and thus subject to relatively large variations in water levels. Due to limited food availability, the reservoir is not regularly used by large numbers of gadwall and shoveler. However, the Queen Elizabeth II Reservoir is also not accessible to the general public. An increase in the local population as induced by the Elmbridge Local Plan, therefore, has no relevance to the ability of the reservoir to support SPA / Ramsar birds.

6.24 The Island Barn Reservoir is a reserve storage reservoir only used in drought conditions with a relatively stable water level. The extensive algal growth around the water edge makes this waterbody particularly suitable to foraging gadwall. The site provides public access, but this is not uncontrolled and is mainly through the Island Barn Reservoir Sailing Club. Moreover, the areas of greatest value to shoveler and gadwall are the heavily vegetated shallow water margins which tend to be the areas avoided by boats. There is also no sailing after dusk, giving both species long periods to forage with no disturbance. Moreover, an increase in the local population due to the Elmbridge Local Plan will not necessarily correlate to increased recreational use of the reservoir, since there is a limit to the number of boats permitted on the water at any one time for safety reasons. Although sailing activities have high disturbance potential, the high number of gadwall appears to indicate that the site supports recreational use without compromising its nature conservation value. This could be due to habituation of gadwall to recreational activities or compartmentalisation within the site (i.e. gadwall primarily congregating in sections of the reservoir that are less used).

6.25 The potential of several smaller waterbodies in the north of Elmbridge Borough to be functionally linked to the SPA / Ramsar was also investigated. However, for varying reasons, these are currently considered to have limited value to the integrity of the site. For example, despite recent restoration efforts, the importance of Hersham Gravel Pit and Molesey Gravel Pit to SPA / Ramsar bird populations is limited due to their small size. Molesey East and West, both in the process of being restored following decommissioning, continue to experience high levels of disturbance. The value of these sites to the SPA / Ramsar is projected to increase in the future but is not judged to be impacted by the Elmbridge Local Plan.

6.26 There are several component parts of the SPA / Ramsar that lie beyond the boundary of Elmbridge Borough, but nonetheless within reasonable travel distances of major settlements including Walton-on-Thames and Weybridge. The King George VI reservoir lies approx. 1km to the north of Elmbridge in the adjoining authority of Spelthorne. According to Briggs (2007), this reservoir is particularly important for roosting shoveler but has no public access. Therefore, the Elmbridge Local Plan will not result in increased recreational pressure within this reservoir. Kempton East, just north to King George VI reservoir, is one of only two waterbodies in the area that is actively managed for wildlife. The site is owned by Thames Water and managed by a warden supported by a team of volunteers. Given the urban pressure on the site, it has been fenced off from public access to reduce waterfowl disturbance. Recreational access is now limited to the ‘Friends of Kempton’, which limits the number of people that are on-site at any given point

[87] 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. www.environmentbank.com/docs/Brian-Briggs-DPhil.pdf [Accessed: 05/09/2021]

in time. Furthermore, Kempton East is well designed for minimising disturbance through concealed footpaths and carefully positioned hides.

6.27 Several waterbodies to the north of Elmbridge Borough were also assessed for their functional importance to the South West London Waterbodies SPA / Ramsar. For example, Stain Hill East and Hampton Waterworks both lie within a few hundred metres from the Elmbridge Borough boundary. Briggs (2007) highlights that Stain Hill East is virtually undisturbed, has high foraging value and is supporting significant numbers of qualifying gadwall and, particularly, shoveler. Both waterbodies are recommended for inclusion in the SPA / Ramsar. Given that the site is not accessed by the public, it is considered unlikely that the Elmbridge Local Plan will result in material impacts, particularly if the Stain Hill reservoirs are recommissioned in the future. Hampton Waterworks are too small and disturbed to have a functional significance for the SPA / Ramsar.

6.28 The detailed data available on waterfowl numbers in the South West London Waterbodies SPA / Ramsar (and potential supporting waterbodies) and public access patterns, allow for robust conclusions to be drawn regarding recreational pressure. AECOM concludes that the Elmbridge Local Plan will not result in adverse effects on the SPA / Ramsar regarding recreational pressure for several reasons:

- No public access to many SPA / Ramsar and supporting waterbodies that encompass key roosting and foraging sites
- Recreational pressure being adequately managed and not putting Conservation Objectives at risk
- Potential functionally linked waterbodies being too small to realistically support a significant proportion (at least 1%) of the SPA / Ramsar qualifying population

Atmospheric Pollution

Thames Basin Heaths SPA

General Sensitivity

6.29 The nature and distribution of habitat, in other words the ecological context, is particularly relevant to interpreting effects on the integrity of Thames Basin Heaths SPA because this site is designated for breeding nightjar, woodlark, and Dartford warbler rather than for its vegetation or habitats. Nightjar and woodlark will nest in rotationally managed commercial forestry but not in mature permanent woodland and in this SPA they nest primarily in areas of heathland. This is relevant because much roadside habitat within this SPA constitutes permanent woodland. Nightjar probably will forage within permanent woodland and it is possible that any net increase in nitrogen deposition might somewhat reduce the abundance of some invertebrates (such as moths) in that belt. However, nightjar do not have highly specialised foraging requirements, foraging in a wide range of common and widespread habitats well beyond the SPA wherever they can obtain a supply of insects of sufficient size including heathland, plantation woodland, deciduous woodland, rough pasture, arable field margins and gardens. This is supported by Natural England's Supplementary Advice on Conserving and Restoring Site Features[88] for the Thames Basin Heaths SPA, which states on page 4 that *'Within this SPA the principal habitats supporting these qualifying species are lowland heathland and rotationally managed coniferous plantation woodland'.*

6.30 Although nightjar and woodlark do nest in rotationally managed commercial plantations, research in Breckland Forest[89] has identified that the amount of plantation in each growth stage and (for woodlark) the planting and restock period management regime (such as whether the area was de-stumped or ploughed, and factors such as brash cover and weed control) explain the vast majority of the recorded spatial and temporal variation in nightjar and woodlark abundance.

[88] http://publications.naturalengland.org.uk/file/4590853229117440

[89] Probably the largest commercial plantation in England. Reference: Dolman, P. and Morrison, C. (2012). *Temporal change in territory density and habitat quality for Breckland Forest SSSI woodlark and nightjar populations*. Report to Forestry Commission and Natural England, number ENV103/11/19.

Provided these aspects of management are appropriate, other factors are therefore less likely to influence the achievement of biodiversity objectives for these species in rotational forestry than they do in more natural habitats. This is supported locally by the Site Improvement Plan for the Thames Basin Heaths SPA which states that '*Large parts of Thames Basin Heaths are occupied by commercial forestry plantations where the maintenance of suitable conditions for Annex 1 birds is dependent upon rotational felling'*. Therefore, impacts on heathland are most relevant to consideration of whether the ability of the SPA to achieve its Conservation Objectives will be compromised.

6.31 Heathland habitats are at risk from excessive nitrogen deposition effects because they are inherently nutrient-poor ecosystems with plant communities that are specifically adapted to such conditions. At high loadings, nitrogen deposition may have a 'fertiliser' effect that leads to compositional changes in botanical communities. For example, high nutrient concentrations can lead to a shift in dominance from heather to grasses, a decline in lichens and increased sensitivity to abiotic stress.

6.32 The dwarf shrub heath components are also directly sensitive to nitrogen oxides (NOx), which are the result of reactions of oxygen and nitrogen compounds during high-temperature combustion processes. Fossil-fuelled vehicles are the primary source of NOx emissions and thus have the potential to directly impact on sensitive lichen communities. Research has shown that lichens respond to increased NOx levels through a shift towards nitrogen-tolerant communities, with resultant losses of nitrogen-sensitive species. Dwarf shrub heathland and coniferous woodland both have an annual mean NOx Critical Level of 30 µg/m^3, which is set by APIS for all vegetation types. Ammonia is also a significant source of nitrogen and is also emitted by the exhausts of some vehicles. The consideration of nitrogen deposition in this assessment therefore includes that attributable to both NOx and ammonia.

Geographic Situation of the Thames Basin Heaths SPA in Relation to Elmbridge Borough

6.33 The Thames Basin Heaths SPA is a composite site that comprises various geographically isolated patches of heathland. The SPA is set in a background of the complex road network in a highly urban area to the south-west of Greater London. Some of the major traffic arteries that traverse or adjoin Elmbridge Borough include the A3 and the M25. The A3 connects authorities to the south-west of Elmbridge with Greater London, while the M25 provides connectivity with authorities to the west, south and east of the Borough. The closest component part of the SPA to Elmbridge Borough is the Ockham and Wisley Commons SSSI that straddles the south-west of the Borough boundary, largely being situated in the adjoining authority of Guildford. The SSSI is situated adjacent to Junction 10 of the M25, connecting to the A3.

6.34 In the first instance, it was evaluated whether there is sensitive heathland habitat within 200m of the A3 and / or M25 surrounding Junction 10, as beyond this screening distance the contribution of vehicle exhausts to pollutant concentrations reduces considerably. Natural England have confirmed in personal communication that nightjar, woodlark and Dartford warbler do not nest within 200m of the M25 and A3 due to unsuitable habitat (primarily permanent woodland) and that is supported by bird surveys undertaken by EPR Ltd who assembled bird survey data for the SPA around the M25/A3 junction that covered the period 2010-2014[90], and separate surveys undertaken by Atkins for the M25 junction 10 Wisley Interchange Development Consent Order in 2016-2018. Generally, the main role of this 200m zone is purported to be as a shelterbelt for the remaining part of the Ockham and Wisley SSSI, ensuring that the site Conservation Objectives can be met through reproductive success in areas of the site more remote from traffic disturbance. Therefore, only habitat beyond 200m from the two roads is relevant to the assessment.

6.35 Commuter traffic is the main pathway through which Local Plans increase the potential for atmospheric pollution in European sites because this accounts for the vast majority of private vehicle journeys associated with future development. In the first instance, it must be established whether there is a feasible commuter link between Elmbridge and Guildford. According to Census

[90] EPR. 2015. Wisley Airfield. Information for Habitats Regulations Assessment. Report to support a planning application by Wisley Property Investments Ltd.

2011 data[91], Guildford is the fifth most important source of commuter traffic into Elmbridge (1,428 journeys; 6.8%) and sixth on the list of commuter destinations of Elmbridge residents (1,011 journeys; 5.3%). Overall, therefore, a significant portion of regular vehicular traffic associated with Elmbridge Local Plan is likely to flow past Junction 10, either on the A3 or moving on to the M25.

6.36 Moreover, both roads have high existing traffic volumes and are likely to receive additional vehicle pressure in the future. Department for Transport (DfT) road traffic statistics highlight that the A3 in southern Elmbridge (manual count point 7782[92]) had an Annual Average Daily Traffic (AADT) of 54,480 cars, 14,286 light goods vehicles and 2,593 heavy goods vehicles in 2020. The M25 to the east of Junction 10 (manual count point 7901) had an AADT of 104,935 cars, 27,873 light goods vehicles and 15,540 heavy goods vehicles in 2020. Future patterns in commuting are likely to closely mirror existing ones, meaning that at least some of the traffic increase associated with the Elmbridge Local Plan will occur on the A3 and M25.

6.37 In the HRA of the Regulation 18 Issues and Options Document for Elmbridge, AECOM identified that Air Quality Impact Assessment (AQIA) would be required to support the Elmbridge Local Plan.

Air Quality Modelling Results

6.38 Elmbridge Borough Council commissioned Cambridge Environmental Research Consultants (CERC) to undertake the air quality modelling exercise. The full modelling exercise is reported separately from this HRA in the report 'Air quality modelling to support the Elmbridge Local Plan - future scenarios (2037)'. CERC carried out air dispersion modelling to identify the current baseline air quality profile across the borough and to assess the following three growth scenarios:

- Scenario 1: 2037 Baseline (includes growth in authorities adjoining Elmbridge Borough, **but excluding** development due to the Elmbridge Local Plan)
- Scenario 2: Urban Growth Strategy (includes growth in authorities adjoining Elmbridge Borough **and** that allocated in the Elmbridge Local Plan)
- Scenario 3: Urban Growth Strategy with mitigation (includes growth in authorities adjoining Elmbridge Borough **and** that allocated in the Elmbridge Local Plan, while also **considering mitigation measures** delivered to support the Plan growth, though not specifically included to address European site considerations)

6.39 Scenario 3 is therefore the Do Something Scenario of greatest relevance. Comparison with Scenario 1 shows the contribution of Elmbridge Local Plan .The air quality model used traffic data provided by Elmbridge Borough Council's traffic modellers, in combination with emission factors from Version 10.1 of the Defra Emission Factor Toolkit and the Calculator for Road Emissions of Ammonia (CREAM; Air Quality Consultants). The modelling can be considered highly precautionary as it takes no account of the expected introduction of Euro7 standard vehicles (with further improvements in NOx emissions technology) from c. 2025, or the government's policy to ban the sale of new petrol and diesel cars and vans entirely from 2030, includes no further changes in the vehicle fleet (due to older vehicles being replaced by newer vehicles compliant with Euro6) after 2030, and utilises ammonia emission factors in CREAM that the most recent Department for Transport datasets indicate may considerably overestimate ammonia emissions from traffic in future years.

6.40 Emissions from current traffic flows across Surrey were used for the current baseline, which was then projected to 2037. Emissions from road transport were calculated using an activity data approach, which combines Annual Average Daily Traffic (AADT) for each road link with emission factors and speed data on a vehicle-by-vehicle basis. The modelling covered the South West London Waterbodies SPA / Ramsar for completeness but as already discussed in this HRA no likely significant effects are expected on that site. The CERC modelling reports total annual average NOx concentrations and nitrogen deposition rates. Contour plots for both air quality parameters were generated for all three future scenarios, allowing for assessments of the overall future pollutant loadings and the NOx / nitrogen doses.

[91] Available at: https://www.nomisweb.co.uk/census/2011/WU03UK/chart/1132462308 [Accessed on the 18/02/2022]
[92] Available at: https://roadtraffic.dft.gov.uk/manualcountpoints/7782 [Accessed on the 18/02/2022]

6.41 Regarding NOx concentrations, none of the three modelled scenarios resulted in an exceedance of the NOx Critical Level of 30 µg/m^3, even in sections of the SPA at the M25 / A3 roadsides. This is despite being precautionary in terms of assumptions for improvements in vehicle fleet mix and emission technology. This clearly indicates that adverse effects of the Elmbridge Local Plan on the Thames Basin Heaths SPA regarding NOx pollution can be excluded even in-combination with all planned growth in other authorities.

6.42 Annual mean nitrogen deposition rates were predicted for the Thames Basin Heaths SPA and included the following sources: NO_2, ammonia (NH_3), ammonium (NH_4), nitrate (NO_3) and nitric acid (HNO_3). The minimum CL for heathland (10 kg N/ha/yr) will be exceeded in large sections of the Ockham and Wisley SSSI under all three growth scenarios but that is common across much of the country and is attributable to existing sources.

6.43 In these situations, Natural England guidance[93] is as follows:

- Paragraph 5.26 states that '*An exceedance* [of the critical level or load] *alone is insufficient to determine the acceptability (or otherwise) of a project'.* So, the fact that the critical level for NOx or ammonia, or critical load for nitrogen or acid are already exceeded is not a legitimate basis to conclude that any further NOx or nitrogen (no matter how small) will result in an adverse effect; and

- Paragraph 4.25 states '…1% of critical load/level are considered by Natural England's air quality specialists (and by industry, regulators and other statutory nature conservation bodies) to be suitably precautionary, as any emissions below this level are widely considered to be imperceptible…There can therefore be a high degree of confidence in its application to screen for risks of an effect'. The lowest part of the critical load range for heathland is 10 kgN/ha/yr[94]. Therefore 1% of the critical load is 0.1 kgN/ha/yr. If the forecast worst-case nitrogen dose to the SAC/SPAs due to the scheme is less than 0.1, it can be considered imperceptible.

6.44 To evaluate the individual contribution of a development plan to atmospheric pollution, its effect must be dissociated from that of growth in other authority areas (represented here by the difference between Scenarios 3 and 1). The excerpt from the CERC report below shows the dose due to Elmbridge Local Plan in visual terms (Figure 4).

[93] http://publications.naturalengland.org.uk/publication/4720542048845824.

[94] Large amounts of woodland are present within the Thames Basin Heaths SPA and will be used for foraging and, if managed as rotational forestry, for nesting by nightjar and woodlark. APIS provides a critical load range for coniferous woodland of 5 - 15 kgN/ha/yr. However, the bottom part of this range is derived from research into botanically diverse northern pine and spruce forests. APIS directs the reader to use 10 kgN/ha/yr for woodland unless lichens/ free-living algae are important features of the site: http://www.apis.ac.uk/indicative-critical-load-values.

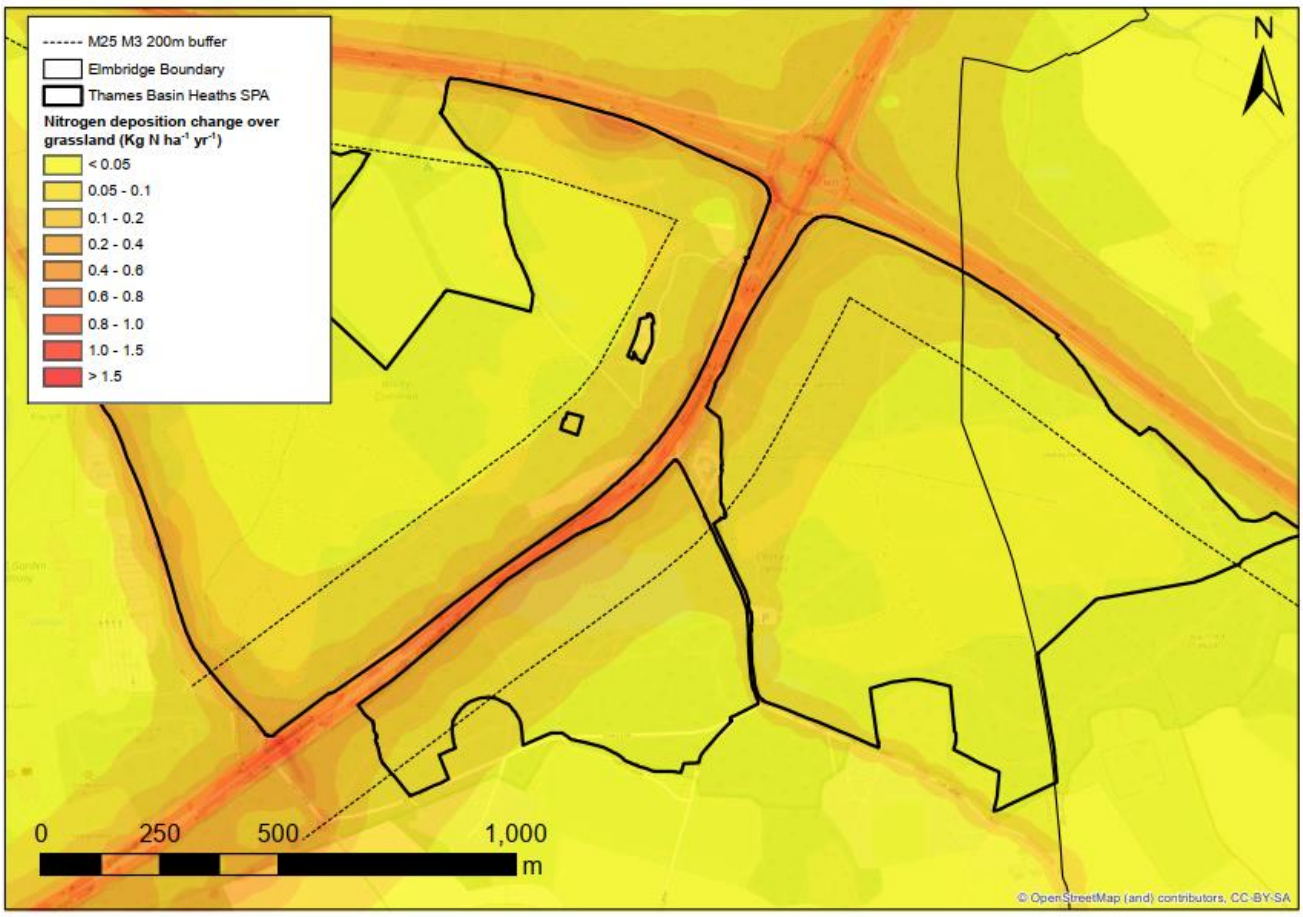


Figure 4: Map showing nitrogen deposition isopleths modelled for the A3 / M25 junction.

6.45 Beyond 200m from the roadside the nitrogen dose due to the Plan is below 0.1 kg N/ha/yr and thus below 1% of the minimum nitrogen CL for dry heaths. Indeed, the dose due to the Elmbridge Local Plan falls to below 0.5% of the Critical Load (i.e. less than 0.05 kg N/ha/yr) within 200m of the M25, and within 250-300m of the A3. Examination of mapping from the SPA bird surveys mentioned earlier does not identify any SPA bird territories within those parts of the SPA where the nitrogen dose due to Elmbridge Local Plan will exceed 0.5% of the Critical Load. A nitrogen dose of 0.05 kg N/ha/yr is only slightly above the dose that would be reported as effectively zero (< 0.01) to avoid false precision This is relevant because an individual plan or project with such a very small contribution can be dismissed on the following basis:

- In Advocate-General Sharpston's Opinion in European Court of Justice Case C-258/11 she specified in Paragraph 48 that '*the requirement for an effect to be 'significant' exists in order to lay down a de minimis threshold. Plans and projects that have no appreciable effect on the site can therefore be excluded. If all plans and projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill.*'; and

- In Wealden v SSCLG [2017] EWHC 351 (Admin) (2017), which specifically concerned the need for 'in combination' assessment in air quality modelling for European sites, Mr. Justice Jay accepted that if the contribution of an individual plan or project to traffic growth or resulting air quality effects was '*very small indeed*', it could be legitimately excluded from 'in combination' assessment.

6.46 Moreover, since coarse habitat structure, rather than details of botanical composition, are most relevant to the SPA (so botanical parameters such as species richness are not particularly relevant), the relevant consideration regarding any effect on the ability of the SPA to achieve favourable conservation status for the SPA birds would be whether the ability to maintain a suitable habitat structure (and thus extent and suitability of nesting habitat) through ongoing management would be materially compromised, or the management burden materially elevated,

6.47 The most recent Natural England condition assessment for Ockham and Wisley Commons SSSI (March 2021) states the following: '*There continues to be good progress towards meeting conservation objectives. Monitoring of key bird species indicates that the site now provides very good supporting habitat conditions for nightjar. 2020 may have seen the largest number of territories recorded at the site. Suitable habitat conditions are also available for Dartford warbler and several nesting pairs were recorded in 2020. Areas of both commons which were subject to extensive work to control encroaching scrub and bracken in 2018 have recovered well although bracken remains frequent and widespread in the open heath, especially on Wisley Common. Parts of both Wisley and Ockham Commons have higher than desirable cover of encroaching scrub and parts are dominated by tall, even-aged heather. Work is being carried out or is planned to address these key issues.*

6.48 Approximately 210 square metres of bare ground was created by hand using turf stripping in November 2020 on both Wisley and Ockham Commons. These works are a continuation of actions to create bare ground carried out in 2016 and 2018 to increase structural diversity in grazed and non-grazed areas, and to provide suitable supporting habitat for specialised invertebrates and reptiles. Structural diversity is also provided by firebreak maintenance - all existing firebreaks were mown in November by a tractor mounted mower on Wisely Common creating very short vegetation which provides a habitat for specialist invertebrates and plants.

6.49 Despite Covid19 lockdown restrictions Wisley Common was grazed extensively from April through to the end of September 2020. This helps to provide structural diversity, controls the growth of grasses and creates small-scale habitat features of value. Some planned work had to be curtailed or postponed because of lockdown restrictions but even so two areas of around 0.6ha in total of scrub and young pine was cut and removed by volunteers in October 2020 on Ockham Common and a further 0.8ha of gorse was cleared on Wisley Common in December 2020. Discussions were held on site with the land manager in March 2021 regarding additional cutting of heather-dominated vegetation to increase structural diversity. This, together with the bare ground creation in other parts of the site may increase habitat suitability for woodlark.'

6.50 In other words, the extent of heathland and otherwise suitable habitat for SPA birds has **increased** at this part of the SPA despite the long-term history of high rates of nitrogen deposition, because of the overriding role of management in maintaining and establishing good quality heathland. Therefore, this part of the SPA is progressing well towards achievement of favourable conservation status for its bird populations notwithstanding elevated nitrogen deposition.

6.51 Given that this part of the SPA is achieving its Conservation Objectives (all units are achieving Favourable Condition or Unfavourable Recovering status), it is considered that atmospheric pollution is not currently having, and is not forecast to have, adverse effects on site integrity, both alone and in combination and the contribution of Elmbridge Local Plan to elevated nitrogen deposition compared to a situation with no growth will be imperceptible.

Elmbridge Local Plan Policy

6.52 Additionally, although not specifically targeted at European sites and not intended as mitigation, the Elmbridge Local Plan also contains several policies that will result in improved air quality across the borough. Primarily, these policies promote a shift away from the use of fossil-fuelled vehicles towards sustainable transport modes. For example, **Policy ENV8 (Air Quality)** states that '*Development in areas of existing poor air quality, or proposals that might lead to a deterioration in air quality…, either by itself, or in combination with other development, will require the submission of an Air Quality Assessment.*' Such assessments will consider the cumulative effect of further emissions, while also proposing mitigation measures (e.g. good design and technical solutions). The policy goes on to state that '*3. All development proposals should promote a shift to the use of sustainable low emission transport modes, to minimise the impact of vehicle emissions on air quality. In doing so, they should provide on-site infrastructure to support these types of transport, including vehicle charging points and adequate cycle storage…*' The supporting text to Policy ENV8 highlights the importance of clean air to habitats and biodiversity, which will include the qualifying features of the Thames Basin Heaths SPA.

6.53 The Plan also contains policy wording regarding the provision of infrastructure to support the modal shift in transport. **Policy CC4 (Sustainable Transport)** aims at improving sustainable transport in Elmbridge Borough. It states that '*1. New development will be required to contribute*

to the delivery of an integrated, accessible and safe sustainable transport network, and maximise the use of sustainable transport modes; including walking, cycling and public transport.' Furthermore, the policy provides further detail relating to each of these uses. For example, regarding cycling and walking it specifies that development should be '*a) promoting active living environments to include the provision of quality, safe and direct routes for cycling and walking that have priority over other forms of traffic;* [and] *b) improving existing cycle and walking routes to local facilities and public transport nodes.*' Clause 5 of the Policy INF6 stipulates that '*5. All development proposals will be required to provide cycle and vehicle parking and associated facilities, including electric vehicle charging points in line with the standards set out in the Parking Supplementary Planning Document (SPD).*'

6.54 The above policies will work in synergy with other policies in the Plan that deliver a network of green and blue infrastructure (e.g. **Policy ENV1 – Green and Blue Infrastructure**). Delivering a more attractive public realm with accessible, multifunctional and connected natural spaces will encourage more residents to engage in active transport modes, such as walking and cycling.

Conclusions

6.55 Overall, it is concluded that the Elmbridge Local Plan will not result in adverse effects on the integrity of Thames Basin Heaths SPA regarding atmospheric pollution. Air quality modelling undertaken by CERC shows that beyond the 200m shelterbelt adjoining the M25 / A3 junction, which is known to have little value to breeding SPA birds, the contribution of the Plan will be negligible both in terms of nitrogen deposition and ammonia concentrations (i.e. far below the established thresholds of 1% for the Critical Load / Critical Level). This negligible impact is forecast despite the very precautionary nature of the modelling, not taking account of improvements in vehicle emission factors after 2030, not taking account of the significant shift to electric vehicles that can be expected after the government ban on the sale of new petrol and diesel cares in 2030 and using an ammonia modelling tool that is likely to significantly overestimate ammonia emissions in future years. Furthermore, evidence from Natural England monitoring indicates that the suitability of this part of the SPA for nightjar, woodlark and Dartford warbler has significantly increased over the past decade, despite high nitrogen deposition rates.

7. Conclusions & Recommendations

7.1 This HRA assessed whether the growth allocated in the Elmbridge Local Plan would have the potential to result in LSEs and, where relevant, adverse effects on the integrity of European sites, including the Thames Basin Heaths SPA, South West London Waterbodies SPA / Ramsar, Thursley, Ash, Pirbright & Chobham SAC, Mole Gap to Reigate Escarpment SAC, Windsor Forest & Great Park SAC, Richmond Park SAC and Wimbledon Common SAC. A potential for impacts was identified in relation to recreational pressure, atmospheric pollution, water quality and water quantity, level and flow. While LSEs were excluded for most sites, the Thames Basin Heaths SPA (regarding recreational pressure and atmospheric pollution) and the South West London Waterbodies SPA / Ramsar (regarding recreational pressure) were taken forward to Appropriate Assessment.

Thames Basin Heaths SPA

7.2 Due to its proximity to dense urban development, recreational pressure is a well-established impact pathway in the Thames Basin Heaths SPA. As a result, the Thames Basin Heaths Partnership (TBHP) formally adopted the Thames Basin Heaths SPA Delivery Framework in 2009, which sets out a housing exclusion zone and two mitigation zones (5km and 5-7km for larger developments respectively) surrounding the SPA. The mitigation approach encompasses dual-pillar interventions in the form of Suitable Alternative Natural Greenspace (SANGs) provision and Strategic Access Management and Monitoring (SAMM). The Elmbridge Local Plan duly recognises these zones in **Policy ENV5 (Thames Basin Heaths Special Protection Area)**, such that an adequate policy mechanism for protecting these heathlands exists. Elmbridge Borough's Thames Basin Heaths Special Protection Area Avoidance & Mitigation Strategy sets out that all housing developments within the relevant catchment zones are to financially contribute towards SAMM measures. Furthermore, the Council's SANG Options Assessment identifies that sufficient SANG is available to cover housing growth in the first ten years of the Plan period. However, a shortage of SANG has been highlighted for the 11-15 year period of the Plan, such that additional SANG will need to be identified to address this need.

7.3 While SANG have not yet been identified for the full Local Plan period numerous options are being explored and there is no current reason to assume that sufficient SANG will not be identified in time. Available SANG capacity will remain a live matter to be reconsidered at each Local Plan Review period. If, at a given Local Plan Review, there is not sufficient SANG to meet Local Plan numbers for that period then this will need to be taken into account in a review of overall Local Plan numbers in order to ensure that the SPA remains protected. The Council is currently exploring two feasible options, which include the potential extension of Esher Common SANG and / or obtaining capacity at Effingham Common SANG from Guildford Borough Council under the Duty to Cooperate. **Provided that suitable additional SANG can be identified and maintained in perpetuity, it is concluded that the Elmbridge Local Plan will not lead to adverse effects on the integrity of the Thames Basin Heaths SPA regarding recreational pressure.** AECOM advises that Elmbridge Borough Council liaise with Natural England at the earliest opportunity to ensure the suitability of any proposed SANG solutions.

7.4 Regarding atmospheric pollution, the HRA showed that one component part of the Thames Basin Heaths SPA could experience an increase in commuter flows within 200m of sensitive heathland habitat. The A3 and M25 that meet at Junction 10, both major potential commuter arteries, both run along heathland in the Ockham and Wisley Commons SSSI. Additionally, Guildford Borough was identified as a significant contributor of and destination for commuters associated with Elmbridge. Cambridge Environmental Research Consultants (CERC) were commissioned to undertake air quality modelling for this part of the SPA, including both nitrogen deposition rates and ammonia concentrations. Three growth scenarios were modelled, comprising a 2037 Baseline, a 2037 Urban Growth Strategy (i.e. the Elmbridge Local Plan) and a 2037 Urban Growth Strategy with mitigation (i.e. the Elmbridge Local Plan with a range of transport measures incorporated). The data from the air quality modelling exercise show that the contribution of the Elmbridge Local Plan will fall well below the 1% Critical Load threshold beyond 200m from both roads, and thus in areas of the SPA beyond the shelterbelt which support nightjar, woodlark and

Dartford warbler territories. Moreover, evidence from surveys to inform Natural England's condition assessment for this part of the SPA identify that the extent of suitable habitat for SPA birds, and the number of territories found, has increased significantly over the past decade despite high levels of nitrogen deposition, due to good management. Overall, it was concluded that the Elmbridge Local Plan will not result in adverse effects on the Thames Basin Heaths SPA regarding atmospheric pollution.

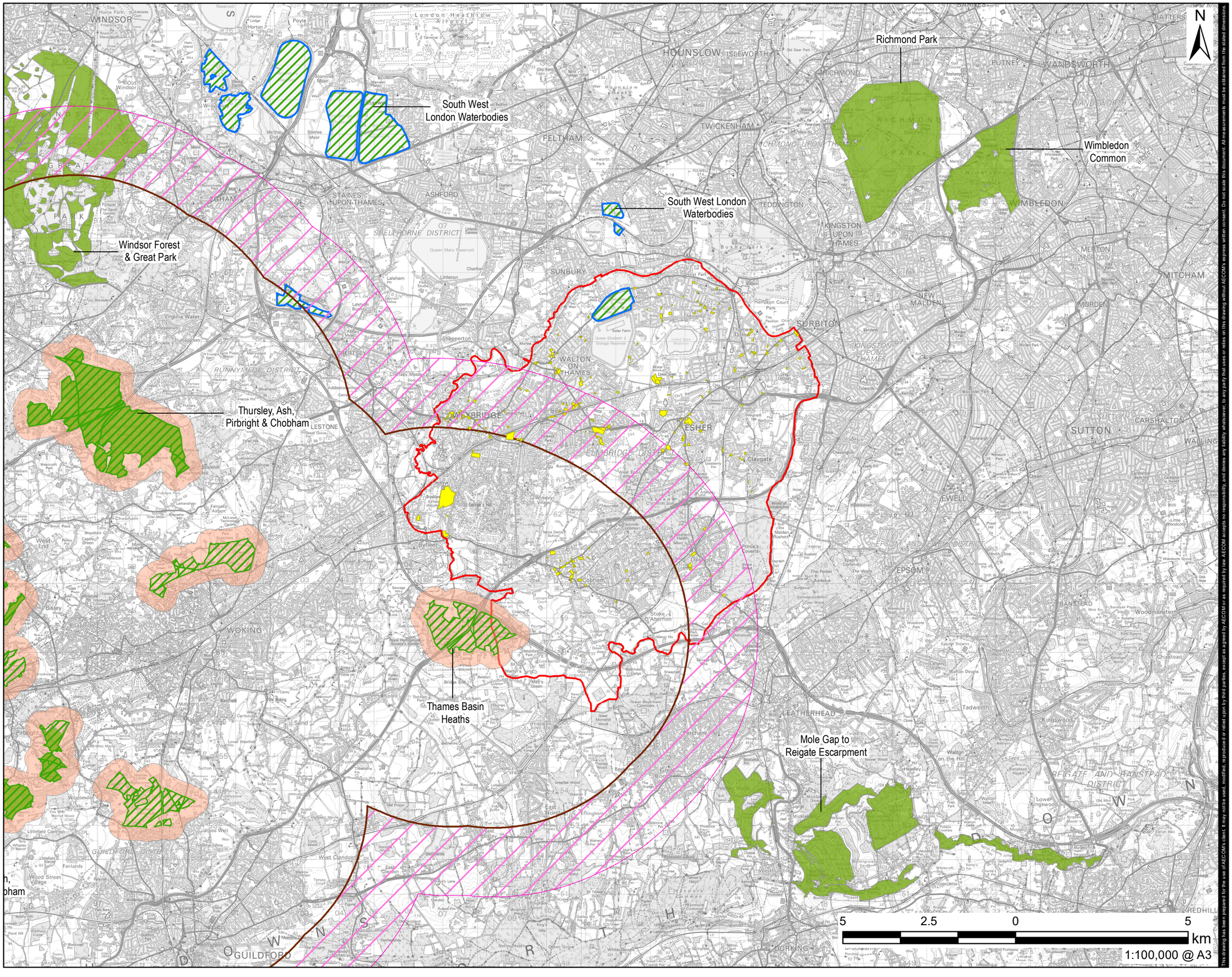
South West London Waterbodies SPA / Ramsar

7.5 The South West London Waterbodies SPA / Ramsar is spread across several authorities and is situated amidst dense housing development. Given that the site is designated for overwintering waterfowl that are sensitive to disturbance, the potential impacts of the Elmbridge Local Plan regarding recreational pressure were appraised. The assessment focussed on component parts of the SPA / Ramsar that are situated within and just beyond the Elmbridge Borough boundary, as well as waterbodies that are known to be functionally linked to the site, including the Knight & Bessborough Reservoirs SSSI, Queen Elizabeth II Storage Reservoir, Island Barn Reservoir, King George VI Reservoir and Kempton East Reservoir.

7.6 There is detailed data available on waterfowl numbers and public access patterns in the SPA / Ramsar site (and its supporting waterbodies), allowing for robust conclusions to be drawn regarding recreational pressure. Overall, AECOM concluded that the Elmbridge Local Plan will not result in adverse effects on the SPA / Ramsar regarding recreational pressure, both alone and in combination, for the following reasons:

- No public access to some SPA / Ramsar and supporting waterbodies that encompass key roosting and foraging sites
- Recreational pressure being adequately managed and not putting Conservation Objectives at risk
- Potential functionally linked waterbodies being too small to realistically support a significant proportion (at least 1%) of the SPA / Ramsar qualifying population

Appendix A European sites and site allocations



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AECOM

PROJECT

HABITATS REGULATIONS ASSESSMENT OF THE REGULATION 19 ELMBRIDGE LOCAL PLAN

CLIENT

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LEGEND

- Elmbridge Borough Boundary
- Allocation Sites
- 400m Exclusion Zone
- 5km Core Recreational Catchment
- 5-7km Wider Mitigation Zone
- Ramsar Site
- Special Areas of Conservation
- Special Protection Areas

NOTES

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ISSUE PURPOSE

DRAFT

PROJECT NUMBER

60593085

SHEET TITLE

European sites relevant to Elmbridge Borough and residential / employment sites included in the Elmbridge Local Plan

SHEET NUMBER

Figure 1

Appendix B LSEs Screening

Table 3: Likely Significant Effects (LSEs) screening assessment of the policies contained in Elmbridge's new Local Plan. Where the LSEs Screening Outcome column is shaded green, impacts on European sites have been excluded and the policy is screened out from Appropriate Assessment (AA). Orange shading of the LSEs Screening Outcome column indicates that LSEs could not be excluded and the policy is taken forward to AA.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy SS1 – Responding to the climate emergency	Policy SS1 stipulates that all development must respond to the climate emergency by minimising carbon emissions, promoting renewable / low carbon energy schemes and mitigating / adapting towards climate change.	LSEs of Policy SS1 on European sites can be excluded. This spatial strategy policy contains several positive elements for the environment, including the minimisation of carbon emissions, promoting sustainable transport modes and conserving water resources. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy SS1 is screened out from Appropriate Assessment.
Policy SS2 – Sustainable place-making	Policy SS2 applies the presumption of sustainable development, balancing economic, social and environmental objectives. For example, it protects the natural environment (including the Green Belt), delivers homes for all and aims at providing a varied choice of business accommodations.	LSEs of Policy SS2 on European sites can be excluded. This spatial strategy policy expresses support for sustainable development with preservation of the natural, historic and built environment at heart. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy SS2 is screened out from Appropriate Assessment.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy SS3 – Scale and location of growth	Policy SS3 provides the spatial strategy for Elmbridge, making provision for at least 6,785 additional homes in the Plan period between 2021 to 2037. The policy also provides for a range of business and employment floorspace development across Elmbridge. The Local Plan adopts a brownfield-first approach, focusing development in the most sustainable locations and promoting high-density schemes. Specific sites for important development targets are provided, including Brooklands College, Lower Green and Whiteley Village.	LSEs of Policy SS3 on European sites cannot be excluded. This is a policy that defines the spatial strategy for Elmbridge Borough, including both the location and quantum of residential growth. For example, a minimum of 6,785 additional homes will be delivered in the borough between 2021 and 2037. Both these parameters are key factors in influencing the type and magnitude of impact pathways linking to European sites. The following impact pathways are relevant to Policy SS3: • Recreational pressure • Atmospheric pollution Policy SS3 is screened in for Appropriate Assessment.
Policy CC1 – Energy efficiency, renewable and low carbon energy	Policy CC1 sets out that developments will have to achieve the highest levels of energy efficiency. For example, housing proposals will need to reduce carbon dioxide emissions by at least 20% compared to the targets set out in the Building Regulations. The policy also supports decentralised energy sources.	LSEs of Policy CC1 on European sites can be excluded. This development management policy supports energy efficiency and zero / low-carbon energy schemes across Elmbridge Borough. While positive for the environment in general, the policy content has no bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy CC1 is screened out from Appropriate Assessment.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy CC2 – Minimising waste and promoting a circular economy	Policy CC2 requires all development proposal to adopt a circular economy approach to building design and construction in order to reduce waste. Examples of this approach include resource efficiency, sustainable materials, and durability / flexibility of materials.	LSEs of Policy CC2 on European sites can be excluded. This development management policy supports the reduction of waste and a circular economy of construction. While positive for the environment in general, the policy content has no bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy CC2 is screened out from Appropriate Assessment.
Policy CC3 – Sustainable design standards	Policy CC3 expects all development proposals to achieve high standards of design and construction through a variety of mechanisms, including minimisation of mains water usage (e.g. through smart metering, retrofitting), rainwater harvesting, greywater recycling, 110 litres per person per day water efficiency and 'Excellent' BREEAM standard.	LSEs of Policy CC3 on European sites can be excluded. This development management policy delivers high standards of design and construction across Elmbridge Borough. For example, it promotes water efficiency by supporting smart metering. While positive for the environment in general, the policy content has no bearing on the European sites that are relevant to Elmbridge Borough. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy CC3 is screened out from Appropriate Assessment.
Policy CC4 – Sustainable Transport	Policy CC4 delivers improved sustainable transport across the borough through a range of measures,	LSEs of Policy CC4 on European sites can be excluded.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	including integrated sustainable transport networks and maximising the use of transport modes such as walking, cycling and public transport. The policy also requires development proposals to promote active living environments (e.g. by prioritising active travel modes), improving cycling and walking routes, and providing electric vehicle charging facilities. Residential developments of 50 dwellings or more will need to prepare a Travel Plan. Cycle and vehicle parking will need to be provided in line with the Parking Supplementary Planning Document (SPD).	This development management policy enhances the usage of sustainable transport modes across Elmbridge Borough through a range of means, including improvements to walking / cycling routes and prioritising sustainable transport over traditional car usage. This is a positive policy for human health as well as the environment. Making the borough more accessible will reduce the volume of traditional commuter traffic and likely lead to a reduction in the number of journeys within 200m of the Thames Basin Heaths SPA. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy CC4 is screened out from Appropriate Assessment.
Policy CC5 – Managing Flood Risk	Policy CC5 addresses the overall flood risk and management of water resources in Elmbridge Borough. All developments must ensure that they lie within the lowest appropriate flood risk zone in accordance with the Elmbridge Strategic Flood Risk Assessment. Furthermore, the natural function and flood storage capacity of flood plains must not be impeded. Development to take place in flood zones 2 and 3 must be supported by flood resistance / resilience measures in line with Environment Agency advice. Furthermore, developments must attenuate surface run-off to greenfield rates and deliver Sustainable Drainage Systems (SuDS).	LSEs of Policy CC5 on European sites can be excluded. This development management policy protects development from flood risk as well as ensuring the continued functionality of flood plains. It promotes positive elements including greenfield run-off rates and Sustainable Drainage Systems (SuDS). Ensuring that flood risk is minimised will help protect the water levels and quality of the natural environment, including European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
		Policy CC4 is screened out from Appropriate Assessment.
Policy ENV1 – Green and Blue Infrastructure	Policy ENV1 protects, maintains and enhances the network of accessible and multifunctional green / blue infrastructure assets across the borough. Development proposals must be designed with green and / or blue infrastructure as integral components, and such elements will be safeguarded from development.	LSEs of Policy ENV1 on European sites can be excluded. This development management policy protects and enhances green and blue infrastructure across Elmbridge Borough. This is positive because sufficiently large, well-connected and attractive local greenspaces are key aids in reducing recreational pressure in more sensitive European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV1 is screened out from Appropriate Assessment.
Policy ENV2 – Landscape, Trees and Woodlands	Policy ENV2 protects against the loss of and damage to existing trees and hedgerows, including both during the construction and operational periods. Furthermore, development proposals should provide for street trees.	LSEs of Policy ENV2 on European sites can be excluded. This development management policy protects trees and hedgerows across the borough against loss from development. This is positive, because these features are crucial components of green / blue infrastructure, making alternative recreation destinations more appealing to local residents. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV2 is screened out from Appropriate Assessment.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy ENV3 – Local Green Spaces	Policy ENV3 protects Local Green Spaces from development, unless development would enhance the functioning of such greenspace.	LSEs of Policy ENV3 on European sites can be excluded. This development management policy protects Local Green Spaces from development. This is positive for recreation-sensitive European sites, because, in addition to SANGs, such spaces will add to the inventory of locally accessible sites, potentially helping to reduce recreational pressure in the former. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV3 is screened out from Appropriate Assessment.
Policy ENV4 – Development in the Green Belt	Policy ENV4 protects Elmbridge's Green Belt from inappropriate development, unless a proposal constitutes an exception.	LSEs of Policy ENV4 on European sites can be excluded. This development management policy protects Elmbridge's Green Belt against inappropriate development. However, the protection of the Green Belt in itself has no direct bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV4 is screened out from Appropriate Assessment.
Policy ENV5 – Thames Basin Heaths Special Protection Area	Policy ENV5 provides strategic protection to the Thames Basin Heaths Special Protection Area. The policy identifies three strategic zones, including a 400m exclusion zone for residential developments, a	LSEs of Policy ENV5 on European sites can be excluded. This policy represents the key mitigation policy tool in the Elmbridge Local Plan with regard to the Thames

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	5km Zone of Influence in which all developments must contribute to mitigation measures and a 5-7km zone in which this only applies to developments over 50 dwellings. Mitigation measures will be provided in the form of Strategic Accessible Natural Greenspaces (SANGs) and Strategic Access Management and Monitoring (SAMM). These approaches would have to be delivered prior to occupation and in perpetuity.	Basin Heaths SPA. It recognises the three critical 'development' zones around the SPA (400m exclusion zone, 5km core catchment and the wider 5-7km zone for larger residential developments). Furthermore, it supports the two main pillars of mitigation, namely the provision of SANG and SAMM. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV5 is screened out from Appropriate Assessment.
Policy ENV6 – Protecting, enhancing and recovering biodiversity	Policy ENV6 commits the Elmbridge Borough Council to conserve and enhance the borough's biodiversity value, contributing towards a national network of wildlife-rich places. Development proposals are required to protect the integrity of internationally, nationally and locally designated sites. Other requirements include a minimum 10% Biodiversity Net Gain on all sites.	LSEs of Policy ENV6 on European sites can be excluded. This policy protects and enhances the borough's biodiversity value, such as through requiring all development sites to deliver a minimum of 10% Biodiversity Net Gain. It also extends generic protection to all internationally, nationally and locally designated sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV6 is screened out from Appropriate Assessment.
Policy ENV7 – Environmental Quality	Policy ENV7 requires development proposals to minimise the emission of pollutants, including in the form of noise, odour and light. Proposals should incorporate zoning of pollution sources and adopt mitigation measures where relevant. Further	LSEs of Policy ENV7 on European sites can be excluded. This policy is positive for the environment, because it aims at minimising noise, odour and light pollution.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	provisions are made with regard to lighting impacts on biodiversity and use of contaminated land.	However, while positive, these requirements have no direct bearing on the European sites relevant to Elmbridge Borough. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV7 is screened out from Appropriate Assessment.
Policy ENV8 – Air Quality	Policy ENV8 stipulates that new development must be designed and located such that it contributes to improvements in air quality. It also identifies that all proposals should promote a shift towards sustainable low-emission transport modes, such as through providing adequate vehicle charging points and cycle storage in line with the Parking Supplementary Planning Document (SPD).	LSEs of Policy ENV8 on European sites can be excluded. This policy is positive for the environment, because it requires development proposals to contribute to improvements in air quality. For example, these need to be in accordance with the Council's latest Air Quality Action Plan and promote a shift towards sustainable, low emission transport modes. A reduction in the number of fossil-fuelled vehicles will benefit European sites that are sensitive to atmospheric pollution, including the Thames Basin Heaths SPA. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV8 is screened out from Appropriate Assessment.
Policy ENV9 – Urban Design Quality	Policy ENV9 requires all new developments to be of high urban design quality and contribute to public realm improvements. The design features that are included in this policy comprise scale, massing,	LSEs of Policy ENV9 on European sites can be excluded.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	height, layout, landscape, materials and security. Importantly, the policy requires all developments to be adaptable and resilient with regard to climate change.	This is a design management policy that requires all development proposals to encompass high urban design quality. However, the features that are subject to the design requirements have no direct bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV9 is screened out from Appropriate Assessment.
Policy ENV10 – Heritage Assets	Policy ENV10 extends protection to designated heritage assets. Development proposals should sustain and / or enhance the significance of such assets. Proposals that would result in the partial or total demolition of buildings / structures in conservation areas must meet a set of stringent criteria.	LSEs of Policy ENV10 on European sites can be excluded. This is a development management policy that sustains and enhances designated heritage assets across Elmbridge Borough. However, such assets have no relevance to European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV10 is screened out from Appropriate Assessment.
Policy ENV11 – Strategic Views	Policy ENV11 protects the strategic views in the borough from the inappropriate effects of development. Proposals that comprise new or reinstated views will be supported.	LSEs of Policy ENV11 on European sites can be excluded. This is a development management policy that preserves strategic views across Elmbridge Borough. However, the protection of such views has no relevance to European sites.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
		The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ENV11 is screened out from Appropriate Assessment.
Principle 3 – Delivering Homes for Our Residents		
Policy HOU1 – Housing Delivery	Policy HOU1 delivers a minimum of 6,785 dwellings in Elmbridge Borough over the Plan period. This target is to include a minimum of 30% affordable homes. Furthermore, it maximises the delivery of homes on unallocated suitable / available land and ensures that land use efficiency is improved. The policy does not support proposals that would result in the net loss of residential units.	LSEs of Policy HOU1 on European sites cannot be excluded. This is the main policy for housing delivery contained in the Elmbridge Local Plan, specifying a minimum delivery of 6,785 homes over the Plan period. An increase in the local population is of primary importance in determining the magnitude of impact pathways, include the number of visits to natural greenspaces and private vehicle journeys. The following impact pathways are relevant to Policy HOU1: • Recreational pressure • Atmospheric pollution Policy HOU1 is screened in for Appropriate Assessment. Individual housing allocations are discussed in the Appropriate Assessment where relevant (i.e. where they lie within 5km and 5-7km of the Thames Basin Heaths SPA).
Policy HOU2 – Optimisation of Sites	Policy HOU2 aims at optimising the use of land within the urban areas, including in within or edge-of-town sites and sites adjacent to train stations. These optimisations will be delivered through provision of	LSEs of Policy HOU2 on European sites can be excluded.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	higher density housing, infill / backland developments, increased building heights and comprehensive redevelopment.	This is a housing management policy that maximises the land use efficiency associated with the Elmbridge Local Plan. While this is generally very positive for the environment (e.g. much less greenfield land will need to be developed), the European sites relevant to Elmbridge are not heavily reliant on supporting habitat beyond their designated site boundaries. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy HOU2 is screened out from Appropriate Assessment.
Policy HOU3 – Housing Mix	Policy HOU3 ensures that an adequate housing mix will be delivered across the borough, in line with demonstrated needs. This includes the relative proportion of dwellings of different size, housing in multiple occupation and live work units.	LSEs of Policy HOU3 on European sites can be excluded. This is a development management policy that relates to the housing mix to be provided across Elmbridge Borough. However, the type of housing provided has no relevance to European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy HOU3 is screened out from Appropriate Assessment.
Policy HOU4 – Affordable Housing	Policy HOU4 ensures that affordable housing will be delivered in all development proposals. For example, on brownfield sites of 10 units or more, 30% of the units will need to be delivered as affordable on-site (affordable being defined as 30% below market price).	LSEs of Policy HOU4 on European sites can be excluded. This is a development management policy that relates to the provision of affordable housing, which generally needs to encompass at least 30% of sites comprising

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	Furthermore, of the affordable homes, 25% will need to be provided as First Homes.	more than 10 dwellings. However, affordable housing provision has no bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy HOU4 is screened out from Appropriate Assessment.
Policy HOU5 – Housing Technical Standards	Policy HOU5 supports liveable, functional, adaptable and accessible homes with regard to sufficient internal space, visual / acoustic privacy, daylight factor and Building Regulations standard.	LSEs of Policy HOU5 on European sites can be excluded. This is a design management policy that specifies a range of technical requirements in new homes, such as space standards and accessibility. However, these parameters have no bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy HOU5 is screened out from Appropriate Assessment.
Policy HOU6 – Specialist Accommodation	Policy HOU6 recognises the need for delivering specialist accommodation across Elmbridge Borough, including almshouses, care centres and other older persons' accommodations.	LSEs of Policy HOU6 on European sites can be excluded. This is a housing management policy that specifies requirements regarding the delivery of specialist accommodation across Elmbridge Borough, such as older persons' accommodation. However, this has no relevance for European sites.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
		The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy HOU6 is screened out from Appropriate Assessment.
Policy HOU7 – Gypsy, Roma, Traveller and Travelling Showpeople Accommodation	Policy HOU7 specifies the requirements for gypsy and traveller plots in Elmbridge Borough. Amongst other conditions, planning applications must be situated in sustainable locations, provide safe access, have adequate on-site services and adequate layouts.	LSEs of Policy HOU7 on European sites can be excluded. This is a housing management policy that specifies requirements for gypsy and traveller pitches. While such pitches would entail a population increase, this policy only addresses development criteria rather than allocating individual sites. This has no direct bearing on European sites. Policy HOU7 is screened out from Appropriate Assessment.
Policy HOU8 – Self and Custom Build Housing	Policy HOU8 supports proposals for self and custom build housing on residential sites. Such site types must take account of affordable housing requirements and technical standards set in other Plan policies.	LSEs of Policy HOU8 on European sites can be excluded. This is a housing management policy that supports proposals for self and custom build housing. However, the provision of such plots has no direct relevance for European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy HOU8 is screened out from Appropriate Assessment.
Principle 4 – Growing a Prosperous Economy		

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy ECO1 – Supporting the Economy	Policy ECO1 supports Elmbridge Borough's economy by maintaining and intensifying employment floorspace. It safeguards and provides new employment land in Strategic Employment Land (SEL), Small and Medium Enterprises (SMEs) and mixed-use developments.	LSEs of Policy ECO1 on European sites cannot be excluded. This is the main policy for maintaining and increasing employment growth across Elmbridge Borough. Its main focus is the safeguarding and intensifying of existing employment uses / sites. While the policy does not identify a quantum of employment growth, Strategic Employment Land (SEL) is demarcated on the Policies Map. The following impact pathways are relevant to Policy ECO1: • Atmospheric pollution Policy ECO1 is screened in for Appropriate Assessment.
Policy ECO2 – Strategic Employment Land	Policy ECO2 safeguards Strategic Employment Land (SEL), as identified on the Policies Map, for employment opportunities in the following Class uses: Office and work space, light industry, general industry and storage and distribution. The policy also specifies criteria for successful planning applications, which include high-quality design and efficient space usage.	LSEs of Policy ECO2 on European sites cannot be excluded. Similar to Policy ECO1, this policy safeguards Strategic Employment Land (SEL) for future employment opportunities in a range of use classes. While no quantum of development is prescribed, the policy has a geographic element, identifying where future employment development may occur. The following impact pathways are relevant to Policy ECO2: • Atmospheric pollution Policy ECO2 is screened in for Appropriate Assessment.
Policy ECO3 – Supporting our Town, District and Local Centres	Policy ECO3 identifies that retail, office, community, culture and leisure uses will be supported in Elmbridge	LSEs of Policy ECO3 on European sites cannot be excluded.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	Borough's town, district and local centres. It also defines a core activity area in which the conversion of employment uses to residential uses will not be supported. Mixed-use developments that contribute to increasing footfall and vibrancy will also be encouraged.	This is an economic development policy that encourages the provision of a range of employment uses in Elmbridge's town, district and local centres (as identified on the Policies Map). While no quantum of development is allocated, the geographic element of the policy will influence where future increases in commuter traffic will occur, such as potentially within 200m of the Thames Basin Heaths SPA. The following impact pathway is relevant to Policy ECO3: • Atmospheric pollution Policy ECO3 is screened in for Appropriate Assessment.
Policy ECO4 – Promoting Visitor Attractions and Arts and Cultural Venues	Policy ECO4 resists the loss of visitor attractions, arts and cultural venues across Elmbridge Borough, unless the facility is no longer fit for purpose. Explicit support is provided to new attractions and venues in town, district and local centres, particularly where they are accessible by public transport or active travel routes.	LSEs of Policy ECO4 on European sites can be excluded. This is an economic development policy that safeguards existing and supports new visitor attractions, arts and cultural venues. While such venues could result in a temporary increase of the local population (and contribute to impact pathways such as atmospheric pollution and recreational pressure), no specific quantum / geographic location for such developments are provided. As such, the policy has no direct bearing on European sites. Policy ECO4 is screened out from Appropriate Assessment.
Policy ECO5 – Equestrian-related Development	Policy ECO5 permits equestrian development, provided that a range of criteria are met, including compatible scale and intensity, re-use of existing	LSEs of Policy ECO5 on European sites can be excluded. This development management policy supports equestrian development, provided that a range of

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
	buildings and accordance with Policy ENV4 (where the site lies in the Green Belt).	criteria are met. However, a general support of equestrian development has no direct bearing on European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy ECO5 is screened out from Appropriate Assessment.
Principle 5 – Delivering Infrastructure and Connectivity		
Policy INF1 – Infrastructure Delivery	Policy INF1 assures that the Council will work in partnership with infrastructure providers to ensure the timely delivery of services that support emerging development. Development proposals will be supported where they are in accordance with the Council's Infrastructure Delivery Plan (IDP). Importantly, the policy stipulates that new developments must contribute to the provision of infrastructure and services.	LSEs of Policy INF1 on European sites can be excluded. This infrastructure management policy ensures that Elmbridge Borough Council will collaborate with infrastructure providers, ensuring that all essential services will be delivered in a timely manner. This is a positive approach for the environment, because it ensures that adequate provision of potable water and sewage treatment capacity will be in place. In turn, this means that these services can be provided without adversely impacting European sites that depend on good water quality and / or sufficient water levels. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy INF1 is screened out from Appropriate Assessment.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy INF2 – Social and Community Uses	Policy INF2 protects existing social and community facilities across Elmbridge Borough, unless a range of criteria are met, including evidence that a facility is no longer needed / viable. The policy also supports new facilities, where they entail an efficient use of land.	LSEs of Policy INF2 on European sites can be excluded. This development management policy protects existing and supports new facilities for social and community uses. However, social / community facilities have no relevance for European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy INF2 is screened out from Appropriate Assessment.
Policy INF3 – Health and Wellbeing of Communities	Policy INF3 requires development proposals to contribute to healthy and active lifestyles, such as through active design principles, supporting sustainable transport modes, access to green infrastructure and blue infrastructure corridors. Major developments will need to provide a Health Impact Assessment (HIA).	LSEs of Policy INF3 on European sites can be excluded. This development management policy promotes a healthy and active lifestyle in Elmbridge Borough, such as by supporting sustainable transport modes and providing green / blue infrastructure. These deliverables are positive for European sites because they will help reduce reliance on fossil-fuelled vehicles (reducing atmospheric pollution) and encourage residents to spend time outdoors locally (reducing recreational pressure). The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy INF3 is screened out from Appropriate Assessment.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy INF4 – Play and Informal Recreation Space	Policy INF4 secures that adequate play and informal recreation space for children and young people will need to be delivered in new residential developments. This includes potential off-site provision, where on-site provision is not feasible. The policy stipulates that play and informal recreation space will need to encompass good-quality design and provide a stimulating environment.	LSEs of Policy INF4 on European sites can be excluded. This infrastructure management policy provides for adequate amounts and quality of play areas and recreational spaces for children, both on- and off-site. Generally, this is a positive policy because it will encourage families to spend time near their home, potentially reducing car usage and the need to visit other areas for recreation. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy INF4 is screened out from Appropriate Assessment.
Policy INF5 – Communications	Policy INF5 relates to the provision of broad band connectivity in new properties. Furthermore, Elmbridge Borough Council supports the roll-out of 5G network as well as delivering telecommunications development, where this is needed.	LSEs of Policy INF5 on European sites can be excluded. This infrastructure management policy relates to the provision of broadband connectivity, 5G network and telecommunications developments across the borough. However, the general support for these types of development has no direct implication for European sites. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy INF5 is screened out from Appropriate Assessment.

Policy Number / Name	Summary of Policy Text	LSEs Screening Outcome
Policy INF6 – Rivers	Policy INF6 conserves and enhances the special character of the River Thames, while also supporting appropriate development proposals associated with river-related activities. The policy also supports proposals for the wider River Thames Scheme and tourism / leisure activities. Importantly, development proposals will need to demonstrate that there is no unacceptable impact on biodiversity and flood risk, including from new moorings.	LSEs of Policy INF6 on European sites can be excluded. This development management policy protects the character of the River Thames, while also promoting new leisure and tourism developments. Importantly, the policy requires such proposals to be delivered without unacceptable impacts on biodiversity. Furthermore, it is to be noted that the publicly accessible sections of the River Thames around Elmbridge Borough are not part of a European site. The policy does not propose any location or quantum of employment and residential growth. There are no impact pathways linking to European sites. Policy INF6 is screened out from Appropriate Assessment.

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