

East Hampshire Local Plan

Habitats Regulations Assessment of the Issues & Priorities
(Regulation 18)

East Hampshire District Council

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1. Introduction

Background

- 1.1 AECOM has been appointed by East Hampshire District Council (EHDC) to undertake a Habitats Regulations Assessments (HRA) of the emerging Issues & Priorities Reg. 18 Local Plan (hereafter referred to as the East Hampshire Local Plan, EHLP). The objective of an HRA is to identify any aspects of a Plan that may result in Likely Significant Effects (LSEs) and, where relevant, adverse effect on the integrity of European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either in isolation or in combination with other plans and projects. Under the Conservation of Habitats and Species Regulations 2017 (as amended), an Appropriate Assessment (AA) of impact pathways is required, where a plan or project is likely to result in LSEs on a European site, either individually or in combination.
- 1.2 The new EHLP will cover the years 2021 to 2040. It will exclude over half of the district, for which the South Downs National Park Authority (SDNPA) is the relevant planning authority. The Issues & Priorities document does not allocate a specific quantum of development, nor does it establish its precise geographic distribution. Instead, the document identifies the key issues relevant to planning in the district, including the climate emergency, local housing needs, types of housing needs, environment and infrastructure requirements. Furthermore, it proposes four Housing Options with key differences in the distribution of growth, which are the main focus of this HRA. For example, Housing Options 2 proposes to concentrate new developments in the largest settlements, implying that a large quantum of housing could be delivered in the core recreational catchment of the Wealden Heaths Phase II SPA. Housing Option 4 proposes to deliver a large quantum of housing in a new settlement, potentially enabling housing to be situated outside the Zone of Influence of the Wealden Heaths complex. Notwithstanding this, due to the broad nature of the Housing Options, which do not explicitly exclude development in any part of the district, differential conclusions regarding the options are necessarily limited.
- 1.3 An initial assessment of the designated sites within and surrounding East Hampshire District, and the impact pathways linking to the proposed growth, highlights that several European sites require consideration, including most notably the Wealden Heaths Phase II complex situated in the north-east of the district. This comprises the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC. However, some of the impact pathways associated with the EHLP extend beyond the authority boundary, most notably in relation to water quality and water quantity, level and flow in the River Itchen SAC and Solent European sites.

Legislation

- 1.4 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, a requirement for Habitats Regulations Assessment will continue as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019¹.
- 1.5 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. To ascertain whether site integrity will be affected, an AA should be undertaken of the Plan or project in question. Figure 1 below sets out the legislative basis for AA.
- 1.6 Plans and projects that are associated with potential adverse impacts on European sites may still be permitted if there are no reasonable alternatives and there are Imperative Reasons of

¹ These don't replace the 2017 Regulations but are just another set of amendments.

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.*”

Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation is required to ensure the overall integrity of the site network.

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 (AA)

- 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 been coined to distinguish the process from the individual stage described in the law as an AA.
- 1.8 In spring 2018, the ‘Sweetman’ European Court of Justice ruling³ 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 LSEs. Mitigation should instead only be considered at the AA 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 East Hampshire District; and,
 - Other European sites within 10km shown to be linked to development in the district through a known impact pathway (discussed below).
- 1.10 Generally, it is uncommon for development plans to be deemed to have significant impacts 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 and the average vehicle commuting distance of a UK resident is approx. 10.1km. 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 are potential pathways connecting development to European sites. This takes site-specific sensitivities into account, including issues such as nutrient neutrality or water quantity, level and flow.
- 1.12 Briefly defined, impact pathways are routes by which the implementation of a policy (or Housing Option in the case of the Reg.18 EHLP) within a Plan document can lead to an effect upon a European site. An example of this is new residential development resulting in a larger local population and thus increased recreational pressure, which could affect European sites through, for example, disturbance to ground-nesting birds. Guidance from the Ministry of Housing, Communities and Local Government (MHCLG) states that the HRA should be ‘*proportionate to the geographical scope of the [plan policy]*’ and that ‘*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*’ (MHCLG, 2006, p.6).

³ People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

- 1.13 This basic principle has also been reflected in court rulings. The Court of Appeal⁴ 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 planning permissions (rather than a Plan level 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 previous (now withdrawn) Reg.18 EHLP, this HRA will discuss the following European sites (noting that overlapping European sites below are grouped where they are considered as functional units in relation to the identified impact pathways):
- Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC (located in the north-east of East Hampshire District)
 - East Hampshire Hangers SAC (stretching on a north-south axis through East Hampshire District)
 - Butser Hill SAC (located in the southern part of East Hampshire District)
 - Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC (located approx. 68m to the north-east of East Hampshire District in the adjoining authority of Waverley)
 - Chichester & Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar (located approx. 2.8km to the south of East Hampshire District in the adjoining authority of Havant)
 - Thursley & Ockley Bogs Ramsar (located 5.1km to the north-east of the East Hampshire District boundary in the adjoining authority of Waverley)
 - River Itchen SAC (3.8km to the west of the East Hampshire District boundary in the adjoining authority of Winchester)
 - Rook Clift SAC (located approx. 5.7km to the south-east of East Hampshire District in the adjoining authority of Chichester)
 - Kingley Vale SAC (located approx. 5.8km to the south-east of East Hampshire District in the adjoining authority of Chichester)
- 1.15 For the HRA, the views of the statutory nature conservation advisors, namely Natural England, will be sought as part of the consultation process on the scope of the European sites assessed. The distribution of the above European sites in relation to East Hampshire District 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.
- 1.16 In order to fully inform the screening for LSEs stage, several studies and online information databases have been consulted. These include:
- Future development proposed (and, where available, HRAs) for the adjoining authorities of Havant, Winchester, Basingstoke and Deane, Hart, Waverley, South Downs National Park and Chichester;

⁴No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015

⁵High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

- Visitor survey carried out in the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC by Footprint Ecology in 2018⁶, comprising key information on access patterns and the core recreational catchment;
- 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>);
- Data on water quality and hydrological connections available on the Environment Agency Catchment Data Explorer⁷;
- South East Water's⁸ and Portsmouth Water's⁹ Water Resources Management Plans (both 2019);
- The HRA produced by AECOM for the withdrawn Reg.18 EHLP;
- Site Improvement Plans (SIPs) and Supplementary Advice on Conservation Objectives (SACO) for relevant European sites published by Natural England;
- The UK Air Pollution Information System (www.apis.ac.uk); 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

- 1.17 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.
- 1.18 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, 2019).

⁶ Panter C. (2018). Wealden Heaths and Shortheath Common 2018 Visitor Surveys, Unpublished report by Footprint Ecology for East Hampshire District Council. 71pp.

⁷ Available at: <https://environment.data.gov.uk/catchment-planning/> [Accessed on the 25/10/2022]

⁸ South East Water. (2018). Water Resources Management Plan 2020 to 2080. 192pp. Available at: <https://cdn.southeastwater.co.uk/Publications/Water+resources+management+plan+2019/south-east-water-final-wrmp-2020-2080.pdf> [Accessed on the 25/10/2022]

⁹ Portsmouth Water. (2019). Final Water Resources Management Plan 2019. 219pp. Available at: <https://www.portsmouthwater.co.uk/wp-content/uploads/2019/11/Final-Water-Resources-Management-Plan-2019.pdf> [Accessed on the 25/10/2022]

2. Methodology

Introduction

- 2.1 The HRA has been carried out with reference to the EC guidance on HRA¹⁰ and general guidance on HRA published by government in July 2019¹¹. 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 the Plan until no significant adverse effects remain.

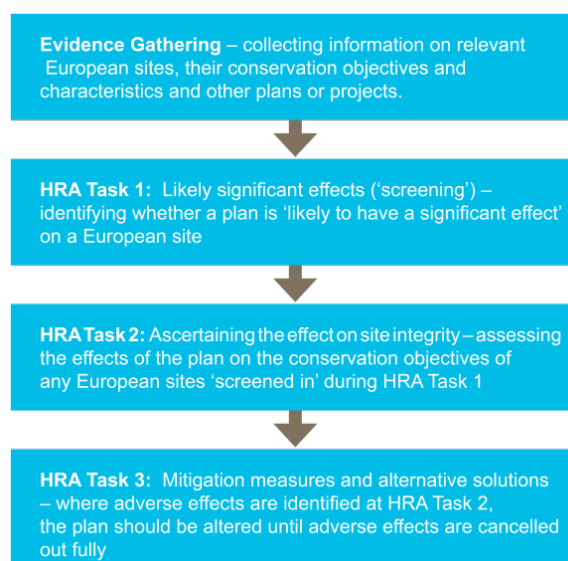


Figure 2: Four Stage Approach to Habitats Regulations Assessment. Source EC, 2001¹.

Description of HRA Tasks

- 2.3 The full HRA process also involves HRA Task 2 (Appropriate Assessment; AA), HRA Task 3 (Avoidance and Mitigation) and, sometimes, HRA Task 4 (Derogation Tests). However, these stages are not presented here because this HRA only undertakes a screening assessment (HRA Task 1).

HRA Task 1 – Screening for Likely Significant Effects (LSEs)

- 2.4 Following evidence gathering, the first stage of any Habitats Regulations Assessment is the screening for LSEs, essentially a high-level assessment to decide whether the full subsequent stage known as AA is required. The essential question is:
- 2.5 *"Is the project, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"*
- 2.6 The objective is to filter out those Plans and projects that can, without any detailed appraisal, be concluded to be unlikely to result in any impacts upon European sites, usually because there is

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/appropriate-assessment>

no mechanism for a negative interaction. This stage is undertaken in Chapter 5 of this report and in Appendix B.

- 2.7 In 2018 the Holohan ruling¹² 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]. This has been considered in relation to the Chichester and Langstone Harbours SPA / Ramsar, Portsmouth Harbour SPA / Ramsar and the Wealden Heaths Phase II SPA, which all support mobile bird species.

¹² Case C-461/17

3. European sites

Wealden Heaths Phase II SPA

Introduction

- 3.1 The Wealden Heaths Phase II lies on an arc of hilly country on the borders of Hampshire, Surrey and West Sussex. Its component parts constitute extensive areas of lowland heath similar in character to those in the Thursley, Hankley and Frensham Commons SPA and Thames Basin Heaths SPA. The SPA is designated for three breeding bird species, including Dartford warbler, nightjar and woodlark. Dartford warbler are strongly associated with lowland heath and extensive patches of mature gorse that support abundant invertebrate prey species (e.g. spiders). However, the species also nests in patches of mature heather, clearings in forestry plantations and bracken. The main strongholds of this species are within Woolmer Forest and Ludshott Common.
- 3.2 While nightjar have undergone a significant decline in recent decades, current data suggest a trend towards increasing numbers, potentially due to better protection and management of breeding grounds. Nightjar utilise areas across all of the SPA for nesting and foraging, although favoured habitats are heath with high structural diversity (e.g. bare patches and short vegetation). The majority of nightjars are recorded in Woolmer Forest and Bramshott Common.
- 3.3 Woodlark suffered a significant population decline and range contraction until the end of the 20th century. Due to improved protection of lowland heath, this species is now recovering and colonising new areas. Woodlark also utilise rotationally managed conifer plantations, where they nest in recently felled areas and sections of young regrowth. The species uses scattered trees as song posts amidst short vegetation and / or bare ground. Abundances of woodlark fluctuate over time in synchrony with succession of heaths and plantations, with large numbers being present after heath fires or tree clearances.

Qualifying Features¹³

- 3.4 The site is designated as a SPA for the following qualifying individual species listed in Annex I of the Wild Birds Directive:

During the breeding season the SPA regularly supports

- Dartford warbler *Sylvia undata*
- Nightjar *Caprimulgus europaeus*
- Woodlark *Lullula arborea*

Conservation Objectives¹⁴

- 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

¹³ Available at: <http://publications.naturalengland.org.uk/publication/5729030657540096> [Accessed on the 18/10/2022]

¹⁴ Available at: <http://publications.naturalengland.org.uk/publication/5729030657540096> [Accessed on the 18/10/2022]

- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Threats / Pressures to Site Integrity¹⁵

3.7 The following threats and pressures to the integrity of the Wealden Heaths Phase II SPA are listed in Natural England's Site Improvement Plan:

- Change in land management
- Invasive species
- Hydrological changes
- Feature location / extent / condition unknown
- Public access / disturbance
- Military
- Air pollution: Impact of atmospheric nitrogen deposition
- Wildfire / arson

Woolmer Forest SAC

Introduction

3.8 The Woolmer Forest SAC is a 670.15ha site comprising heath / scrub (62%), coniferous woodland (22%), dry grassland / steppes (10%), bogs / marshes (4%) and inland water bodies (2%). The SAC is a large expanse of lowland heathland, one of the largest in south-east England, with associated habitats such as valley mire, oligotrophic ponds, wet woodland, acid grassland, scrub and conifer plantations. The diverse array of habitats supports a large number of locally and nationally important wildlife, including all 12 British amphibians and reptiles. Furthermore, the SAC habitats also sustain the qualifying features of the partly overlapping Wealden Heaths Phase II SPA (Dartford warbler, nightjar and woodlark).

3.9 Cranmer Pond is a southern example of a dystrophic pond in an area of Northern Atlantic wet heaths and depressions on peat substrates. It is an 8ha pond with an average depth of 1m, which has resulted from past peat-cutting. The associated aquatic flora comprises bulbous rush *Juncus bulbosus* in the deeper sections and bog-mosses *Sphagnum* spp growing in the shallower areas.

3.10 Another notable feature within the SAC are the depressions on peat substrates of the *Rhynchosporion*. These are areas of seepage mires and waterlogged ground that are fed from both acidic and calcareous water sources. This feature includes a range of bog-mosses *Spaghnum* spp., cottongrasses *Eriophorum angustifolium* and *E. vaginatum*, bog asphodel *Narthecium ossifragum*, cranberry *Vaccinium oxycoccos* and marsh clubmoss *Lycopodiella inundata*.

Qualifying Features¹⁶

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

- Natural dystrophic lakes and ponds
- European dry heaths
- Depressions on peat substrates of the *Rhynchosporion*

¹⁵ Available at: <http://publications.naturalengland.org.uk/publication/5431913779036160> [Accessed on the 18/10/2022]

¹⁶ Available at: <https://sac.jncc.gov.uk/site/UK0030304> [Accessed on the 18/10/2022]

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

- Northern Atlantic wet heaths with *Erica tetralix*
- Transition mires and quaking bogs

Conservation Objectives¹⁷

3.13 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;

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

Threats / Pressures to Site Integrity¹⁸

3.15 The following threats and pressures to the integrity of the Woolmer Forest SAC have been identified in Natural England's Site Improvement Plan:

- Change in land management
- Invasive species
- Hydrological changes
- Unknown distributions
- Public access / disturbance
- Military
- Air pollution: Impact of atmospheric nitrogen deposition
- Wildfire / arson

Shortheath Common SAC

Introduction

3.16 The Shortheath Common SAC is a 58.53ha large site encompassing heath / scrub (52%), bogs / marshes (27.5%), broad-leaved deciduous woodland (13%), dry grassland / steppes (5.5%) and inland water bodies (2%). It is set within a mixed rural landscape of farmland, woodland, heathland and small settlements, and lies just within the South Downs National Park. Upon cessation of traditional commons land management practices in the late 19th century, the site was colonised by bracken *Pteridium aquilinum* and oak *Quercus* / birch *Betula* woodland. Nonetheless large areas of open heathland remain, which complete successional stages to woodland.

3.17 The key features of nature conservation interest within the SAC include a substantial valley mire of high structural and ecological diversity, an area of 'schwingmoor' on fluid peat and sections of wet woodland (some of which occurs in stable combination with mire vegetation). The valley mire across the site comprises mesotrophic and eutrophic sections. The northern mesotrophic strip is dominated by grey willow *Salix cinerea*, sedges *Carex curta* and *C. rostrata*, soft rush *Juncus*

¹⁷ Available at: <http://publications.naturalengland.org.uk/publication/4583742731452416> [Accessed on the 18/10/2022]

¹⁸ Available at: <http://publications.naturalengland.org.uk/publication/5431913779036160> [Accessed on the 18/10/2022]

effusus, marsh cinquefoil *Potentilla palustris* and bog-moss *Sphagnum recurvum*. In contrast, the southern oligotrophic part of the SAC is dominated by *S. recurvum*, cross-leaved heath *Erica tetralix*, common cottongrass *Eriophorum angustifolium*, purple moor-grass *Molinia caerulea* and round-leaved sundew *Drosera rotundifolia*, as well as high cover of cranberry *Vaccinium oxycoccos*.

Qualifying Features¹⁹

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

- Transition mires and quaking bogs

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

- European dry heaths
- Bog woodland (*Priority feature)

Conservation Objectives²⁰

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

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

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

Threats / Pressures to Site Integrity²¹

3.22 The following threats and pressures to the integrity of the Shortheath Common SAC are identified in Natural England's Site Improvement Plan:

- Inappropriate scrub control
- Public access / disturbance
- Direct impact from 3rd party
- Air pollution: Impact of atmospheric nitrogen deposition

Thursley, Hankley and Frensham Commons SPA

Introduction

3.23 The Thursley, Hankley and Frensham Commons SPA forms an extensive complex of lowland heaths situated in Surrey. It is located in a largely rural setting with unspoilt character despite its close proximity to large urban centres such as Guildford and London. The underlying geology mostly comprises free-draining soils and, locally, less permeable deposits that support wetlands (e.g. mires, flushes and wet woodlands). Much of the SPA has open public access and is very popular for various recreational activities, including walking, birdwatching, horse riding, cycling and orienteering.

¹⁹ Available at: <https://sac.jncc.gov.uk/site/UK0030275> [Accessed on the 18/10/2022]

²⁰ Available at: <http://publications.naturalengland.org.uk/publication/4851353352404992> [Accessed on the 18/10/2022]

²¹ Available at: <http://publications.naturalengland.org.uk/publication/6257070747680768> [Accessed on the 18/10/2022]

- 3.24 The SPA is designated for three breeding bird species, including Dartford warbler, nightjar and woodlark. Dartford warbler, which at this site occur close to its northern range limit, are strongly associated with extensive patches of mature gorse that support abundant foraging resources (e.g. spiders). Since this is a non-migratory species, winter survival and breeding success can be greatly impacted by cold temperatures and snow cover. Its strongholds within the SPA are at Hankley Common and Frensham Common.
- 3.25 Following a period of significant declines, nightjar populations have increased in recent years due to a better protection of their core breeding areas and improved management regimes in lowland heathland. Well camouflaged during daytime, nightjar are nocturnal birds that forage ('hawk') at dusk and dawn. Favoured areas for nesting are patches of heath with high structural diversity (including bare patches and short vegetation) and clearings in conifer plantations. The largest numbers of nightjar within the SPA are recorded on the Commons of Thursley, Hankley, Frensham and Elstead.
- 3.26 Populations of woodlark experienced serious declines until the late 20th century, but this species is now recovering due to better protection and consequent expansion of lowland heaths. Woodlark also benefit from rotational management of conifer plantations where they utilise recently felled areas and areas of young re-growth. This species utilises isolated trees in sparsely vegetated areas as favoured song-posts. The highest abundances of woodlark within the SPA are found on Thursley and Frensham Commons.

Qualifying Features²²

- 3.27 The site is designated as a SPA for the following species of wild birds listed on Annex I of the European Wild Birds Directive:
- Dartford warbler *Sylvia undata*
 - Nightjar *Caprimulgus europaeus*
 - Woodlark *Lullula arborea*

Conservation Objectives²³

- 3.28 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;
- 3.29 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 Integrity²⁴

- 3.30 The following threats and pressures to the integrity of the Thursley, Hankley and Frensham Commons SPA are identified in Natural England's Site Improvement Plan:
- Public access / disturbance
 - Undergrazing

²² Available at: <http://publications.naturalengland.org.uk/publication/5735025425252352> [Accessed on the 18/10/2022]

²³ Available at: <http://publications.naturalengland.org.uk/publication/5735025425252352> [Accessed on the 18/10/2022]

²⁴ Available at: <http://publications.naturalengland.org.uk/publication/6249258780983296> [Accessed on the 18/10/2022]

- Forestry and woodland management
- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Unknown bird distributions
- Military
- Habitat fragmentation

Thursley and Ockley Bog Ramsar

Introduction

3.31 The Thursley and Ockley Bog Ramsar is a 265ha large site that comprises a valley mire complex in a matrix of heathland where drainage is impeded and a deep layer of peat has built up from decaying bog-moss *Sphagnum* spp. The Ramsar also encompasses several areas of open water, ranging from acidic boggy pools, ditches to large ponds. Its habitat diversity in turn supports a diverse assemblage of rare wetland invertebrates, six native reptile species and breeding populations of nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea*. The site overlaps with the Thursley, Hankley and Frensham Commons SPA, and the Thursley, Ash, Pirbright and Chobham SAC.

Qualifying Features²⁵

3.32 The site is designated as a Ramsar for the following criteria:

Ramsar criterion 2

Supports a community of rare wetland invertebrate species including notable numbers of breeding dragonflies.

Ramsar criterion 3

It is one of few sites in Britain to support all six native reptile species. The site also supports nationally important breeding populations of European nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea*.

Threats / Pressures to Site

3.33 Being designated as a Ramsar only, there is no Site Improvement Plan that specifically covers the Thursley and Ockley Bog Ramsar. However, the following threats / pressures to the site can be deduced from the ecological interest features present within the site and the Ramsar Information Sheet:

- Water quality
- Water quantity, level and flow
- Recreational pressure

²⁵ Available at: <https://jncc.gov.uk/jncc-assets/RIS/UK11074.pdf> [Accessed on the 26/08/2022]

Thursley, Ash, Pirbright and Chobham SAC

Introduction

- 3.34 The Thursley, Ash, Pirbright and Chobham SAC is a 5,154.5ha large composite site that encompasses heath / scrub (75%), bogs / marshes (10%), coniferous woodland (10%) and inland water bodies (10%). The SAC is an extensive complex of heath in the south-east of England that includes wet and dry heath, acid mire and bog pools. Underlying the site is a geology comprising free-draining sandstones and low permeability lenses of clay, the latter resulting in areas of surface wetness and seepages. The impeded drainage gives rise to the formation of mire systems that support very rich assemblages of wetland invertebrates, bryophytes and scarce plants.
- 3.35 The SAC represents lowland northern Atlantic wet heaths in south-east England of NVC type M16 *Erica tetralix* – *Sphagnum compactum*, associated with several rare plants including great sundew *Drosera anglica*, bog hair-grass *Deschampsia setacea*, bog orchid *Hammarbya paludosa* and brown beak-sedge *Rhynchospora fusca*. Included within the SAC boundary are also sections of European dry heaths of NVC type H2 *Calluna vulgaris* – *Ulex minor*, which support important assemblages of animal species including European nightjar *Caprimulgus europaeus*, Dartford warbler *Sylvia undata*, sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*.

Qualifying Features²⁶

3.36 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 Objectives²⁷

3.37 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;

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

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

Threats / Pressures to Site Integrity²⁸

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

- Public access / disturbance
- Undergrazing
- Forestry and woodland management

²⁶ Available at: <https://sac.jncc.gov.uk/site/UK0012793> [Accessed on the 18/10/2022]

²⁷ Available at: <http://publications.naturalengland.org.uk/publication/5141075941392384> [Accessed on the 18/10/2022]

²⁸ Available at: <http://publications.naturalengland.org.uk/publication/6249258780983296> [Accessed on the 18/10/2022]

- Hydrological changes
- Inappropriate scrub control
- Invasive species
- Wildfire / arson
- Air pollution: Impact of atmospheric nitrogen deposition
- Unknown bird distributions
- Military
- Habitat fragmentation

East Hampshire Hangers SAC

Introduction

- 3.40 The East Hampshire Hangers SAC is a 561.69ha large site comprising broad-leaved deciduous woodland (79.3%), coniferous woodland (7%), mixed woodland (5%), humid / mesophile grassland (5%) and dry grassland / steppes (3.7%). The SAC predominantly supports beech *Fagus sylvatica* woodland that is extremely rich in vascular plants, including white helleborine *Cephalanthera damasonium*, violet helleborine *Epipactis purpurata*, green-flowered helleborine *E. phyllanthes* and Italian lords-and-ladies *Arum italicum*. Located within the SAC are also transitions to mixed woodland (e.g. small-leaved lime *Tilia cordata*), stands of yew *Taxus baccata* and areas of rich bryophyte flora. The site supports high habitat diversity including areas of Chalk and calcareous grassland with early gentian *Gentianella anglica* and diverse orchid assemblages (e.g. musk orchid *Herminium monorchis*).
- 3.41 Another qualifying feature of the SAC are *Tilio-Acerion* forests of slopes, screes and ravines, which comprise ash *Fraxinus excelsior*, wych elm *Ulmus glabra*, small-leaved lime *Tilia cordata* and large-leaved lime *T. platyphyllos*. Introduced sycamore *Acer pseudoplatanus* form part of the woodland community in many places. This qualifying habitat is associated with nutrient-rich soils on rocky slopes, where inaccessibility has reduced human impact. A varied ground flora is typically present in association with these tree species.

Qualifying Features²⁹

- 3.42 Annex I habitats that are a primary reason for selection of this site:
- *Asperulo-Fagetum* beech forests
 - *Tilio-Acerion* forests of slopes, screes and ravines (*priority feature)
- 3.43 Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)
 - *Taxus baccata* woods of the British Isles (*priority feature)
- 3.44 Annex II species present as a qualifying feature, but not a primary reason for site selection:
- Early gentian *Gentianella anglica*

²⁹ Available at: <https://sac.incc.gov.uk/site/UK0012723> [Accessed on the 18/10/2022]

Conservation Objectives³⁰

- 3.45 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;
- 3.46 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 Integrity³¹

- 3.47 The following threats and pressures to the integrity of the East Hampshire Hangers SAC have been identified in Natural England's Site Improvement Plan:
- Air pollution: Risk of atmospheric nitrogen deposition
 - Invasive species
 - Forestry and woodland management

Butser Hill SAC

Introduction

- 3.48 The Butser Hill SAC is a 237.36ha large site, encompassing dry grassland / steppes (70%), coniferous woodland (15%), mixed woodland (9.9%), broad-leaved deciduous woodland (5%), and heath / scrub (0.1%). The SAC is situated on the east Hampshire chalk and supports a rich grassland flora. The predominant botanical type is sheep's-fescue *Festuca ovina* – meadow oat-grass *Helictotrichon pratense* grassland. In addition to its grassland communities, Butser Hill exhibits transitions between semi-natural dry grassland, chalk heath, mixed scrub and yew *Taxus baccata* woods.
- 3.49 Butser Hill falls within the South Downs National Character Area (NCA), much of which in turn sits in the South Downs National Park. This is recognition of the site's natural beauty, and its importance for access and recreation. The NCA is an extremely diverse landscape that has been shaped by human activity, including agriculture and forestry.

Qualifying Features³²

- 3.50 Annex I habitats that are a primary reason for selection of this site:
- Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (*important orchid sites)
 - *Taxus baccata* woods of the British Isles (*priority feature)

³⁰ Available at: <http://publications.naturalengland.org.uk/publication/6500658190483456> [Accessed on the 18/10/2022]

³¹ Available at: <http://publications.naturalengland.org.uk/publication/5890345141272576> [Accessed on the 18/10/2022]

³² Available at: <https://sac.jncc.gov.uk/site/UK0030103> [Accessed on the 18/10/2022]

Conservation Objectives³³

- 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
 - 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 Integrity³⁴

- 3.53 The following threats and pressures to the integrity of the Butser Hill SAC have been identified in Natural England's Site Improvement Plan:
- Inappropriate scrub control
 - Undergrazing
 - Air pollution: Risk of atmospheric nitrogen deposition

Ebernoe Common SAC

Introduction

- 3.54 The Ebernoe Common SAC is a 234.93ha large site comprising broad-leaved deciduous woodland (95%) and mixed woodland (5%). The Common is an extensive complex of ancient woodland and former wood pasture in West Sussex, with the central core of the site being the Ebernoe Common National Nature Reserve. Across its component parts, the underlying soils support varied woodland communities and age structures. The presence of ancient woodland in turn sustains outstanding biodiversity, including barbastelle and Bechstein's bats, which rely on the availability of roosting and feeding habitats within the SAC. While Bechstein's bats feed primarily in woodland adjoining their roosts, barbastelles commute into the surrounding countryside using woodland corridors that branch out from the site. Old-growth trees within the site also support rich lichen and fungi communities, as well as breeding bird communities.
- 3.55 The woodland feature within the SAC predominantly encompasses Atlantic acidophilous beech *Fagus sylvatica* forests over dense holly *Ilex aquifolium* understorey. Its rich epiphytic lichen flora includes *Agonimia octospora* and *Catillaria atropurpurea*. The forests show transitions to other woodland types, open glades and pools.

Qualifying Features³⁵

- 3.56 Annex I habitats that are a primary reason for selection of this site:
- Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenon*)
- 3.57 Annex II species that are a primary reason for selection of this site:
- Barbastelle *Barbastella barbastellus*
 - Bechstein's bat *Myotis bechsteinii*

³³ Available at: <http://publications.naturalengland.org.uk/publication/5067404384141312> [Accessed on the 18/10/2022]

³⁴ Available at: <http://publications.naturalengland.org.uk/publication/4842655599034368> [Accessed on the 18/10/2022]

³⁵ Available at: <https://sac.jncc.gov.uk/site/UK0012715> [Accessed on the 18/10/2022]

Conservation Objectives³⁶

- 3.58 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;
- 3.59 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 Integrity³⁷

- 3.60 The following threats and pressures to the integrity of the Ebernoe Common SAC have been identified in Natural England's Site Improvement Plan:
- Forestry and woodland management
 - Offsite habitat availability / management
 - Habitat fragmentation
 - Change in land management
 - Hydrological changes
 - Air pollution: Risk of atmospheric nitrogen deposition
 - Public access / disturbance

River Itchen SAC

Introduction

- 3.61 The River Itchen SAC encompasses an area of 303.98ha and a variety of habitats, including running water (the river itself, 40%), bogs / marshes (27%), humid / mesophile grassland (19%), broad-leaved deciduous woodland (10%), mixed woodland (2%), improved grassland (1%) and non-forest areas cultivated with woody plants (1%). The R. Itchen is a typical chalk river with relatively uniform physical characteristics from source to mouth. It supports high water quality in terms of alkalinity, clarity and dissolved oxygen concentration.
- 3.62 The river's aquatic flora is exceptionally species-rich, supporting high abundances of typical chalk stream plants. Notably, most species are present throughout the system with fewer downstream changes than in most comparable rivers. In terms of fauna, the SAC supports diverse assemblages of invertebrates and aquatic molluscs, and there are resident populations of Atlantic stream crayfish and otter. Throughout its entire length, the aquatic flora is dominated by *Ranunculus* spp. including pond water-crowfoot (in headwaters), stream water-crowfoot and river water-crowfoot (both further downstream).

³⁶ Available at: <http://publications.naturalengland.org.uk/publication/6255629165395968> [Accessed on the 18/10/2022]

³⁷ Available at: <http://publications.naturalengland.org.uk/publication/6364242571689984> [Accessed on the 18/10/2022]

3.63 Typical of lowland chalk rivers, the Itchen also supports important populations of fish, including anadromous species. For example, there are large populations of bullhead *Cottus gobio*, brook lamprey *Lampetra planeri* and Atlantic salmon *Salmo salar*. These populations are maintained through good water quality, extensive beds of submerged plants acting as shelter and coarse sediments that are vital for spawning success.

Qualifying Features³⁸

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

- Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation

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

- Southern damselfly *Coenagrion mercuriale*
- Bullhead *Cottus gobio*

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

- White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*
- Brook lamprey *Lampetra planeri*
- Atlantic salmon *Salmo salar*
- Otter *Lutra lutra*

Conservation Objectives³⁹

3.67 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;

3.68 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 Integrity⁴⁰

3.69 The following threats and pressures to the integrity of the River Itchen SAC have been identified in Natural England's Site Improvement Plan:

- Water pollution
- Physical modification

³⁸ Available at: <https://sac.incc.gov.uk/site/UK0012599> [Accessed on the 18/10/2022]

³⁹ Available at: <http://publications.naturalengland.org.uk/publication/5130124110331904> [Accessed on the 18/10/2022]

⁴⁰ Available at: <http://publications.naturalengland.org.uk/publication/5404054607888384> [Accessed on the 18/10/2022]

- Siltation
- Overgrazing
- Water abstraction
- Inappropriate weed control
- Hydrological changes
- Inappropriate water levels
- Change in land management
- Inappropriate cutting / mowing
- Invasive species
- Undergrazing
- Inappropriate ditch management
- Inappropriate scrub control
- Forestry and woodland management

Rook Cliff SAC

Introduction

3.70 The Rook Cliff SAC is a small site of 10.62ha comprising entirely broad-leaved deciduous woodland (100%). It sits on the scarp slope of the South Downs within the South Downs National Character Area. The SAC is classified as ancient woodland that remains in semi-natural condition, with large-leaved lime *Tilia platyphyllus* (dominating in the canopy), ash *Fraxinus excelsior* and beech *Fagus sylvatica*. Soils in the SAC are deeper and rocks are less exposed because the chalk is subject to greater rates of weathering than the limestones of many other sites. Other common plant species in the SAC include hart's-tongue *Phyllitis scolopendrium* and shield-fern *Polystichum* spp.

Qualifying Features⁴¹

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

- *Tilio-Acerion* forests of slopes, screes and ravines (* priority feature)

Conservation Objectives⁴²

3.72 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;

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

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

⁴¹ Available at: <https://sac.jncc.gov.uk/site/UK0030058> [Accessed on the 18/10/2022]

⁴² Available at: <http://publications.naturalengland.org.uk/publication/6335772969926656> [Accessed on the 18/10/2022]

Threats / Pressures to Site Integrity⁴³

3.74 The following threats and pressures to the integrity of the Rook Clift SAC have been identified in Natural England's Site Improvement Plan:

- Deer
- Forestry and woodland management
- Feature location / extent / condition unknown

Kingley Vale SAC

Introduction

3.75 The Kingley Vale SAC is a 200.94ha large site comprising coniferous woodland (30%), dry grassland / steppes (30%), heath / scrub (25%) and mixed woodland (15%). The site lies both within the South Downs National Character Area and the South Downs National Park. Key feature of nature conservation concern within the SAC are the yew *Taxus baccata* woods, which are considered to be among the largest and best in Europe. A grove of ancient yews contains individuals which are over 500 years old. The high quality of the site is in part due to the presence of different successional stages from scrub grassland to mature woodland, which provide variation in woodland structure and function.

3.76 The SAC also harbours three nationally uncommon habitats, including chalk grassland, juniper scrub and yew scrub. The chalk grassland component is rich in flowering plants, such as sheep's fescue *Festuca ovina*, meadow oat *Avenula pratensis*, salad burnet *Sanguisorba minor*, autumn gentian *Gentianella amarella*, roundheaded rampion *Phyteuma tenerum*, bee orchid *Ophrys apifera*, autumn lady's tresses *Spiranthes spiralis* and fly orchid *Ophrys insectifera*. Although not notified for fauna, the SAC supports many breeding birds and invertebrates, including red kite *Milvus milvus*, forester moth *Adscita statices* and the nationally rare fly *Doros sonopseus*.

Qualifying Features⁴⁴

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

- *Taxus baccata* woods of the British Isles (* priority feature)

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

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

Conservation Objectives⁴⁵

3.79 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;

3.80 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
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely

⁴³ Available at: <http://publications.naturalengland.org.uk/publication/6352739575529472> [Accessed on the 18/10/2022]

⁴⁴ Available at: <https://sac.jncc.gov.uk/site/UK0012767> [Accessed on the 18/10/2022]

⁴⁵ Available at: <http://publications.naturalengland.org.uk/publication/5727834794360832> [Accessed on the 18/10/2022]

Threats / Pressures to Site Integrity⁴⁶

3.81 The following threats and pressures to the integrity of the Kingley Vale SAC have been identified in Natural England's Site Improvement Plan:

- Deer
- Undergrazing
- Agriculture
- Air pollution: Impact of atmospheric nitrogen deposition

Chichester and Langstone Harbours SPA / Ramsar

Introduction

3.82 The Chichester and Langstone Harbours SPA lies on the south coast of England in Hampshire and West Sussex. It comprises large, sheltered estuarine basins with extensive sandflats and mudflats that are exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Mudflats within the SPA are rich in invertebrates (used as foraging resources by many qualifying waders) and also support extensive beds of algae, including eelgrasses (*Zostera* spp.) and *Enteromorpha* spp (used for foraging by dark-bellied brent goose). The site is designated as a SPA for its range of waders and waterfowl.

SPA Qualifying Features

3.83 Species referred to in Article 4 of the Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC:

Breeding

- Sandwich tern *Sterna sandvicensis*
- Common tern *Sterna hirundo*
- Little tern *Sterna albifrons*
- Dark-bellied brent goose

Overwintering

- Dark-bellied brent goose *Branta bernicla bernicla*
- Common shelduck *Tadorna tadorna*
- Eurasian wigeon *Anas penelope*
- Eurasian teal *Anas crecca*
- Northern pintail *Anas acuta*
- Northern shoveler *Anas clypeata*
- Red-breasted merganser *Mergus serrator*
- Ringed plover *Charadrius hiaticula*
- Grey plover *Pluvialis squatarola*
- Sanderling *Calidris alba*

⁴⁶ Available at: <http://publications.naturalengland.org.uk/publication/6393220716036096> [Accessed on the 18/10/2022]

- Dunlin *Calidris alpina alpina*
- Bar-tailed godwit *Limosa lapponica*
- Eurasian curlew *Numenius arquata*
- Common redshank *Tringa totanus*
- Ruddy turnstone *Arenaria interpres*

Furthermore, the site supports an important assemblage of waterbirds referred to in Article 4.2 (79/409/EEC)

3.84 Over winter the area regularly supports 93,230 waterfowl (5 year peak mean 1991/92-1995/96), including *Branta bernicla bernicla*, *Tadorna tadorna*, *Anas penelope*, *Anas crecca*, *Anas acuta*, *Anas clypeata*, *Mergus serrator*, *Charadrius hiaticula*, *Pluvialis squatarola*, *Calidris alba*, *Calidris alpina alpina*, *Limosa lapponica*, *Numenius arquata*, *Tringa totanus* and *Arenaria interpres*.

Ramsar Qualifying Features⁴⁷

3.85 The site is designated as a Ramsar for the following criteria:

Ramsar criterion 1

Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.

Ramsar criterion 5

Assemblages of international importance

Species with peak counts in winter – 76,480 waterfowl (5 year peak mean 1998/99 – 2002/03)

Ramsar criterion 6

Species / populations occurring at levels of international importance (identified at the time of designation)

Species with peak counts in spring / autumn:

- Ringed plover *Charadrius hiaticula*, 853 individuals representing an average of 1.1% of the population (5 year peak mean 1998/99 – 2002/03)
- Black-tailed godwit *Limosa limosa islandica*, 906 individuals representing an average of 2.5% of the population (5 year peak mean 1998/99 – 2002/03)
- Common redshank *Tringa totanus*, 2,577 individuals representing an average of 1% of the population (5 year peak mean 1998/99 – 2002/03)

Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*, 12,987 individuals representing an average of 6% of the population (5 year peak mean 1998/99 – 2002/03)
- Common shelduck *Tadorna tadorna*, 1,468 individuals representing an average of 1.8% of the GB population (5 year peak mean 1998/99 – 2002/03)
- Grey plover *Pluvialis squatarola*, 3,043 individuals representing an average of 1.2% of the population (5 year peak mean 1998/99 – 2002/03)
- Dunlin *Calidris alpina alpina*, 33,436 individuals representing an average of 2.5% of the population (5 year peak mean 1998/99 – 2002/03)

⁴⁷ Available at: <https://jncc.gov.uk/jncc-assets/RIS/UK11013.pdf> [Accessed on the 18/10/2022]

Species / populations identified subsequent to designation for possible future consideration under criterion 6

Species regularly supported during the breeding season:

- Little tern *Sterna albifrons albifrons*, 130 apparently occupied nests representing an average of 1.1% of the breeding population (Seabird 2000 Census)

SPA Conservation Objectives⁴⁸

3.86 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;

3.87 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 the Integrity of the SPA⁴⁹

3.88 The following threats and pressures to the integrity of the Chichester and Langstone Harbours SPA have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological resource use
- Change in land management
- Inappropriate pest control
- Air pollution: Impact of atmospheric nitrogen deposition
- Hydrological changes
- Direct impact from 3rd party
- Extraction: Non-living resources

⁴⁸ Available at: <http://publications.naturalengland.org.uk/publication/5789102905491456> [Accessed on the 18/10/2022]

⁴⁹ Available at: <http://publications.naturalengland.org.uk/publication/4692013588938752> [Accessed on the 18/10/2022]"

- Insufficient boundaries to cover qualifying features

Portsmouth Harbour SPA / Ramsar

Introduction

3.89 The Portsmouth Harbour SPA / Ramsar is part of the Solent complex and comprises approx. 77ha of seagrass beds concentrated mainly in the north-west of the harbour. These beds support extensive assemblages of *Zostera marina* on the low shore and *Zostera noltii* on the upper to middle shore. The seagrass beds are the primary food source for dark-bellied brent goose. Areas of saltmarsh are predominantly comprised of cordgrass *Spartina* swards and provide feeding and roosting habitat for a variety of overwintering birds. The SPA / Ramsar has been designated for its internationally important numbers of dark-bellied brent goose, red-breasted merganser, dunlin and black-tailed godwit.

Qualifying Features⁵⁰

3.90 Species referred to in Article 4 of the Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC:

Overwintering

- Dark-bellied brent goose *Branta bernicla bernicla*
- Red-breasted merganser *Mergus serrator*
- Dunlin *Calidris alpina alpina*
- Black-tailed godwit *Limosa limosa islandica*

Ramsar Qualifying Features⁵¹

The site is designated as a Ramsar for the following criteria:

Ramsar criterion 3

3.91 The intertidal mudflat areas possess extensive beds of eelgrass *Zostera angustifolia* and *Zostera noltei* which support the grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp. and sea lettuce *Ulva lactuca*. More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species.

Ramsar criterion 6

3.92 Species / populations occurring at levels of international importance (identified at the time of designation)

Species with peak counts in winter:

- Dark-bellied brent goose *Branta bernicla bernicla*, 2,105 individuals representing an average of 2.1% of the GB population (5 year peak mean 1998/99 – 2002/03)

⁵⁰ Available at: <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9011051.pdf> [Accessed on the 19/10/2022]

⁵¹ Available at: <https://jncc.gov.uk/jncc-assets/RIS/UK11055.pdf> [Accessed on the 19/10/2022]

Conservation Objectives⁵²

- 3.93 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;
- 3.94 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 the Integrity of the SPA⁵³

- 3.95 The following threats and pressures to the integrity of the Portsmouth Harbour SPA have been identified in Natural England's Site Improvement Plan:
- Public access / disturbance
 - Coastal squeeze
 - Fisheries: Commercial marine and estuarine
 - Water pollution
 - Changes in species distributions
 - Climate change
 - Change to site conditions
 - Invasive species
 - Direct land take from development
 - Biological resource use
 - Change in land management
 - Inappropriate pest control
 - Air pollution: Impact of atmospheric nitrogen deposition
 - Hydrological changes
 - Direct impact from 3rd party
 - Extraction: Non-living resources
 - Insufficient boundaries to cover qualifying features

⁵² Available at: <http://publications.naturalengland.org.uk/publication/4857883850178560> [Accessed on the 19/10/2022]

⁵³ Available at: <http://publications.naturalengland.org.uk/publication/4692013588938752> [Accessed on the 19/10/2022]"

Solent Maritime SAC

Introduction

3.96 The Solent Maritime SAC is a 11,243.12ha large site encompassing a wide variety of aquatic habitats, including tidal rivers / estuaries / mudflats / sandflats (59%), saltmarshes (23%), marine areas / sea inlets (14%), shingle / sea cliffs (3%), coastal sand dunes / beaches (0.5%) and broad-leaved deciduous woodland (0.5%). The Solent represents a major estuarine system on the south coast of England with four coastal plain estuaries and four bar-built estuaries. It is unique in its hydrographic regime that exhibits four tides per day and habitat complexity. Sediment habitats include extensive flats with frequent intertidal areas that support eelgrass *Zostera* spp. and green algae. Its mudflats are characterised by varying degrees of salinity (from low salinity in the upper reaches of the estuaries to fully marine muds in the Chichester and Langstone Harbours).

3.97 Other notable habitats include *Spartina* swards (*Spartinion maritimae*) and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*). The Solent Maritime SAC is the only site for smooth cordgrass *Spartina alterniflora* in the UK and one of only two sites where significant amounts of small cordgrass *S. maritima* are found. The site supports the second largest aggregation of Atlantic salt meadows in southern England, which is representative of the ungrazed type with sea purslane *Atriplex portulacoides*, common sea lavender *Limonium vulgare* and thrift *Armeria maritima*.

Qualifying Features⁵⁴

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

- Estuaries
- *Spartina* swards (*Spartinion maritimae*)
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

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

- Sandbanks which are slightly covered by sea water all the time
- Mudflats and sandflats not covered by seawater at low tide
- Coastal lagoons (* priority feature)
- Annual vegetation of drift lines
- Perennial vegetation of stony banks
- *Salicornia* and other annuals colonising mud and sand
- Shifting dunes along the shoreline with *Ammophila arenaria* (“white dunes”)

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

- Desmoulin’s whorl snail *Vertigo moulinsiana*

Conservation Objectives⁵⁵

3.101 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;

⁵⁴ Available at: <https://sac.jncc.gov.uk/site/UK0030059> [Accessed on the 19/10/2022]

⁵⁵ Available at: <http://publications.naturalengland.org.uk/publication/5762436174970880> [Accessed on the 19/10/2022]

3.102 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 Integrity⁵⁶

3.103 The following threats and pressures to the integrity of the Solent Maritime SAC have been identified in Natural England's Site Improvement Plan:

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological resource use
- Change in land management
- Inappropriate pest control
- Air pollution: Impact of atmospheric nitrogen deposition
- Hydrological changes
- Direct impact from 3rd party
- Extraction: Non-living resources
- Insufficient boundaries to cover qualifying features

Solent and Dorset Coast SPA

Introduction

3.104 The Solent and Dorset Coast SPA encompasses an area of the shallow marine environment specifically designated to protect important foraging areas of three species of tern (common tern, sandwich tern and little tern), which are qualifying features of nearby SPAs / Ramsars. It lies on

⁵⁶ Available at: <http://publications.naturalengland.org.uk/publication/4692013588938752> [Accessed on the 19/10/2022]"

the south coast within the English Channel and covers approx. 255.2km² between the Isle of Purbeck in the west to Bognor Regis in the east. The area of the SPA was established as a result of extensive visual tracking studies and augmented by statistical modelling of foraging behaviour.

Qualifying Features⁵⁷

3.105 Species referred to in Article 4 of the Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC:

Breeding

- Sandwich tern *Sterna sandvicensis*
- Common tern *Sterna hirundo*
- Little tern *Sternula albifrons*

Conservation Objectives⁵⁸

3.106 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;

3.107 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

3.108 No Site Improvement Plan has been published by England for the Solent and Dorset Coast SPA. However, the threats and pressures are likely to be similar to the ones identified for other European sites in the Solent, including:

- Public access / disturbance
- Coastal squeeze
- Fisheries: Commercial marine and estuarine
- Water pollution
- Changes in species distributions
- Climate change
- Change to site conditions
- Invasive species
- Direct land take from development
- Biological resource use
- Change in land management

⁵⁷ Available at: <https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020330.pdf> [Accessed on the 19/10/2022]

⁵⁸ Available at: <http://publications.naturalengland.org.uk/publication/5294923917033472> [Accessed on the 19/10/2022]

- Inappropriate pest control
- Air pollution: Impact of atmospheric nitrogen deposition
- Hydrological changes
- Direct impact from 3rd party
- Extraction: Non-living resources
- Insufficient boundaries to cover qualifying features

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. Increasing access levels have been strongly linked with surrounding housing development. For example, a recent study demonstrated that more housing in proximity to European sites is associated with significantly higher visitor numbers at parking locations and foot access points across a range of different habitats⁵⁹. Furthermore, urban development has also been directly linked with ecological impacts in European sites^{60 61}. These patterns may apply to any European site, but recreational pressure associated with housing growth is particularly significant for European sites designated for birds. The precise pathways of impact differ between European sites and depend on their qualifying features. HRAs of planning documents tend to focus on recreational sources of disturbance due to new residents⁶².

Bird Disturbance

- 4.2 Human activity can affect birds either directly (e.g. by eliciting vigilance behaviour and / or flight responses) or indirectly (e.g. by damaging supporting habitats or inducing physiological stress responses). Some of the most obvious direct impacts include mortality through predation by free-roaming dogs and trampling of eggs in nests, both of which are important pressures on ground-nesting birds. But human disturbance also leads to much subtler behavioural changes (e.g. reduced foraging / chick provisioning, avoidance of highly disturbed areas and use of sub-optimal foraging areas) and physiological responses (e.g. an increase in heart rate). While such changes may be less noticeable, they can result in major population-level changes if impacts are sufficiently pervasive⁶³.
- 4.3 The primary concerns regarding disturbance effects in birds relate to energy expenditure and foraging / provisioning⁶⁴. Disturbance increases energetic expenditure while reducing calorific intake, which can negatively affect the 'condition' and ultimately survival of breeding and overwintering birds. For example, chicks in disturbed nests may not receive sufficient nutrients and can exhibit reduced fledgling survival rates. Moreover, the more time a breeding bird adult spends away from its nest, the more likely it is that eggs will cool and eggs or chicks are taken by predators. Overwintering birds that do not sufficiently stock up their energy reserves may not successfully complete their long migrations. 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 birds⁶⁵. 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^{66 67}.

⁵⁹ 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>

⁶⁰ 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. Unpublished report by Footprint Ecology for Natural England.

⁶¹ 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. Unpublished report by Footprint Ecology for Dorset County Council.

⁶² The RTP1 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'.

⁶³ Riley, J. (2003). Review of recreational disturbance research on selected wildlife in Scotland. Scottish Natural Heritage.

⁶⁴ Riddington, R. (1996). The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279.

⁶⁵ Gill, J.A., Sutherland, W.J. & Norris, K. (1998). The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72.

⁶⁶ 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>.

⁶⁷ 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.

- 4.4 Several factors (e.g. seasonality, type of recreational activity) may have pronounced impacts on the magnitude of bird disturbance. Disturbance in winter may be more impactful because food shortages make birds more vulnerable at this time of year. However, this increased impact 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 hiking⁶⁸. Scientific evidence also suggests that key disturbance parameters, such as areas of influence and flush distance, are significantly greater for dog walkers than hikers⁶⁹. 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 should be taken into account in HRAs.

Trampling Damage and Nutrient Enrichment

- 4.5 Most terrestrial habitats (especially heathland and woodland) can be affected by trampling and other mechanical damage, which dislodges individual plants, leads to soil compaction and erosion. The following studies have assessed trampling impact of different recreational activities in various habitats:

- Wilson & Seney⁷⁰ 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 al⁷¹ 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.
- Cole⁷² 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 trampers caused a greater reduction in vegetation height than lighter trampers, but there was no differential impact on vegetation cover.
- Cole & Spildie⁷³ 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

⁶⁸ Banks P.B. & Bryant J.Y. (2007). Four-legged friend or foe? Dog walking displaces native birds from natural areas. *Biology Letters* **3**: 14pp.

⁶⁹ Miller S.G., Knight R.L. & Miller C.K. (2001). Wildlife responses to pedestrians and dogs. *Wildlife Society Bulletin* **29**: 124-132.

⁷⁰ 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

⁷¹ 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

⁷² 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.

⁷³ 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

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.

- 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 invertebrates⁷⁴. 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.

- 4.6 A major concern for nutrient-poor terrestrial habitats, such as heathland, is nutrient enrichment associated with dog fouling (addressed in various reviews, e.g.⁷⁵). 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 nutrients from 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 annually⁷⁶. While there is limited information on the chemical constituents of dog faeces, nitrogen is one of the main components⁷⁷. Nutrient availability is the major determinant of plant community composition and the effect of dog defecation in sensitive habitats may be comparable to a high-level application of fertiliser, potentially resulting in a shift towards plant communities that are more typical of improved grasslands.

Summary

- 4.7 Several European sites in East Hampshire District and adjoining authorities are designated for habitats and species that are sensitive to recreational pressure, such as the Wealden Heaths Phase II SPA (designated for ground-nesting birds), Woolmer Forest SAC, Shortheath Common SAC, East Hampshire Hangers SAC and Butser Hill SAC. The increase in residential development allocated under the four Housing Options in the Reg.18 Local Plan would lead to an increase in the local population and additional demand for access to outdoor spaces. The HRA process needs to adequately appraise potential recreational pressure effects of the Plan on sensitive European sites.
- 4.8 Overall, the following European sites within 10km of the East Hampshire District boundary are potentially sensitive to increased recreational access due to the allocation of residential development in the Local Plan (the sites in **bold** are taken forward into the following HRA chapters):
- **Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC (located in the north-east of East Hampshire District)**
 - **East Hampshire Hangers SAC (stretching on a north-south axis through East Hampshire District)**
 - **Butser Hill SAC (located in the southern part of East Hampshire District)**
 - **Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC (located approx. 68m to the north-east of East Hampshire District in the adjoining authority of Waverley)**

⁷⁴ 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.

⁷⁵ Taylor K., Anderson P., Taylor R.P., Longden K. & Fisher P. (2005). Dogs, access and nature conservation. English Nature Research Report, Peterborough.

⁷⁶ 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.

⁷⁷ 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.

- **Thames Basin Heaths SPA (located approx. 3.3km north-east of East Hampshire District in the adjoining authority of Hart)**
- **Rook Clift SAC (located approx. 5.7km to the south-east of East Hampshire District in the adjoining authority of Chichester)**
- **Kingley Vale SAC (located approx. 5.8km to the south-east of East Hampshire District in the adjoining authority of Chichester)**
- **Chichester & Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar (located approx. 2.8km to the south of East Hampshire District in the adjoining authority of Havant)**

Water Quality

4.9 Water quality is an important determinant of the nature and condition of qualifying habitats and species in European sites. Declining 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 have additional detrimental effects (even at lower levels), such as increased vulnerability to disease and changes in wildlife behaviour.
- Eutrophication, the enrichment of plant nutrients in water, 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, exacerbating the ongoing oxygen depletion. In the marine environment, nitrogen is the main growth-limiting plant nutrient and so eutrophication is primarily 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.

4.10 The main pathway of impact associated with the Reg.18 East Hampshire Local Plan is an increase in the discharge of treated sewage effluent from Wastewater Treatment Works (WwTWs) serving East Hampshire District. Treated sewage effluent contains a high loading of nutrients (both phosphorus and nitrogen) and increases nutrient concentrations in European sites that are hydrologically connected to waterbodies receiving discharge from WwTWs. The role of nutrients differs between ecosystems, with phosphorus being the growth-limiting element in freshwater ecosystems and nitrogen being more important in the marine environment. There are sensitive freshwater and marine European sites within a potential zone of impact for the district, meaning that both types of nutrients are relevant to Local Plan development.

4.11 Typically, nutrient effects on European sites are considered through the Environment Agency Review of Consents process, which assigns permissible discharge limits to WwTWs to allow development coming forward, while also protecting the integrity of European sites. The Local Plan assessed in this HRA provides for development in a geographic area that is served by Southern Water and Thames Water. However, Natural England highlighted a number of European sites that are in 'Unfavourable' condition and where future additional discharge of treated sewage effluent would result in adverse effects on site integrity. The standing advice is that new development in the hydrological catchment of these sites should achieve nutrient neutrality⁷⁸ or, where this is unfeasible, must provide adequate mitigation measures.

4.12 Overall, the following European sites within 10km of the East Hampshire District boundary are sensitive to negative changes in water quality, primarily due to increased discharge volumes of treated sewage effluent from WwTWs (**sites in bold are taken forward to Chapter 5 of the HRA**):

⁷⁸ Natural England. (June 2020). Advice on Achieving Nutrient Neutrality for new Development in the Solent Region. Version 5. 56pp.

- **River Itchen SAC (3.8km to the west of the East Hampshire District boundary in the adjoining authority of Winchester). For this site it is specifically development in East Hampshire served by package treatment plants that has been identified as being a concern by Natural England.**
- **Chichester & Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar (located approx. 2.8km to the south of East Hampshire District in the adjoining authority of Havant)**
- **Woolmer Forest SAC (located in the north-east of East Hampshire District)**
- **Thursley & Ockley Bogs Ramsar (located 5.1km to the north-east of the East Hampshire District boundary in the adjoining authority of Waverley)**

Water Quantity, Level and Flow

- 4.13 The water level, its flow rates and the mixing conditions are important determinants of the condition of European sites and their qualifying features. Hydrological processes are critical in influencing habitat characteristics in rivers, wetlands and coastal waters, including current velocity, water depth, dissolved oxygen levels, salinity gradients and water temperature. In turn these abiotic parameters determine the short- and long-term viability of plant and animal species, as well as overall ecosystem composition. Changes to the water flow rate within an estuary can be associated with a multitude of further impact pathways, including substratum loss, smothering of plants and changes in wave exposure, often interacting with coastal squeeze.
- 4.14 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. Overwintering, migrating and breeding wetland bird species are particularly reliant on these food sources, as they need to build up enough nutritional reserves to sustain their long migration routes or feed their hatched chicks.
- 4.15 Coastal habitats rely on hydrological connections with other surface waters, such as rivers, streams and lakes. A constant supply of freshwater is fundamental to maintaining the ecological integrity of coastal marine areas. 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 of qualifying birds, invertebrate or plant species. In extreme cases, this might lead to the loss of the structure and functioning of marine ecosystems.
- 4.16 There are two mechanisms through which urban development might negatively affect freshwater supply to European Sites:
- The supply of new housing with potable water may require increased abstraction from surface water and groundwater bodies. Depending on the level of water stress in the geographic region, this may decrease freshwater input to European sites sharing the same catchment.
 - The proliferation of impermeable surfaces in urban areas increases 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. This can contribute to so-called flash floods and increased water flow into European sites. Some of the knock-on impacts of surface water runoff include increases in sedimentation, turbidity and anthropogenic pollutants.
- 4.17 Additional water abstraction to meet public water demand is of particular concern in areas with little rainfall (and limited recharge potential) or where water resources are already depleted. In 2013 the Environment Agency published a map of water-stressed areas, highlighting that the south-east of England is generally identified as an area of elevated water stress (see Figure 3 below). This is due to its large population, high water demand and the lower annual rainfall in this area of England.

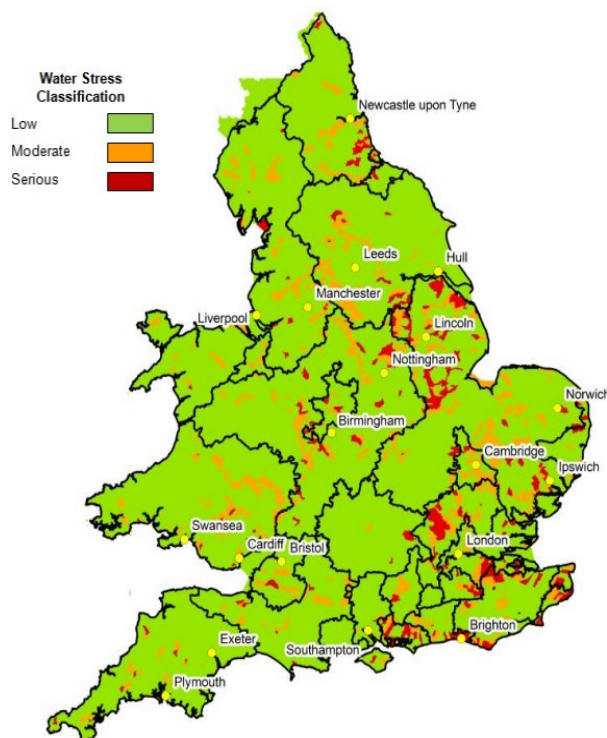


Figure 3: Areas of water stress within England.

- 4.18 The water supply in East Hampshire District is provided by South East Water and Portsmouth Water. Both companies have published Water Resources Management Plans (WRMPs) that identify the future strategy to meet water demand, while safeguarding important environmental assets including European sites. WRMPs are key resources for undertaking HRAs because they identify potential deficits in baseline supply-demand balances and options proposed to meet potential shortfalls (including increases to abstraction licenses). They are also subject to their own statutory consenting process including HRA, which takes account of hydrological dependencies of European sites.
- 4.19 Overall, the following European sites in East Hampshire District and within 10km of its boundary are sensitive to changes in their water quantity, level and flow as a result of urban development (**the sites in bold are taken forward into Chapter 5 of the HRA**):
- **River Itchen SAC (3.8km to the west of the East Hampshire District boundary in the adjoining authority of Winchester)**
 - **Chichester & Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar (located approx. 2.8km to the south of East Hampshire District in the adjoining authority of Havant)**
 - **Woolmer Forest SAC (located in the north-east of East Hampshire District)**

Atmospheric Pollution

- 4.20 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂) and are summarised in Table 1. NH₃ can have directly toxic effects upon vegetation, particularly at close distances to the source such as near road verges⁷⁹. NO_x can also be toxic at very high concentrations (far above the annual average Critical Level). High levels of NO_x and NH₃ are likely to increase the total nitrogen (N) deposition to soils, potentially leading to deleterious knock-on effects in resident ecosystems. Increases in N deposition from the atmosphere can, if sufficiently great, enhance soil fertility and lead to eutrophication. This

⁷⁹ http://www.apis.ac.uk/overview/pollutants/overview_NOx.htm.

often has adverse effects on the community composition and quality of semi-natural, nitrogen-limited terrestrial and aquatic habitats^{80 81}.

Table 1: Main sources and effects of air pollutants on habitats and species⁸²

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide (SO ₂)	<p>The main sources of SO₂ are electricity generation, and industrial and domestic fuel combustion. However, total SO₂ emissions in the UK have decreased substantially since the 1980's.</p> <p>Another origin of sulphur dioxide is the shipping industry and high atmospheric concentrations of SO₂ have been documented in busy ports. In future years shipping is likely to become one of the most important contributors to SO₂ emissions in the UK.</p>	<p>Wet and dry deposition of SO₂ acidifies soils and freshwater, and may alter the composition of plant and animal communities.</p> <p>The magnitude of effects depends on levels of deposition, the buffering capacity of soils and the sensitivity of impacted species.</p> <p>However, SO₂ background levels have fallen considerably since the 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.</p>
Acid deposition	<p>Leads to acidification of soils and freshwater via atmospheric deposition of SO₂, NO_x, ammonia and hydrochloric acid. Acid deposition from rain has declined by 85% in the last 20 years, which most of this contributed by lower sulphate levels.</p> <p>Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, increased N emissions may cancel out any gains produced by reduced S levels.</p>	<p>Gaseous precursors (e.g. SO₂) can cause direct damage to sensitive vegetation, such as lichen, upon deposition.</p> <p>Can affect habitats and species through both wet (acid rain) and dry deposition. The effects of acidification include lowering of soil pH, leaf chlorosis, reduced decomposition rates, and compromised reproduction in birds / plants.</p> <p>Not all sites are equally susceptible to acidification. This varies depending on soil type, bed rock geology, weathering rate and buffering capacity. For example, sites with an underlying geology of granite, gneiss and quartz rich rocks tend to be more susceptible.</p>
Ammonia (NH ₃)	<p>Ammonia is a reactive, soluble alkaline gas that is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but ammonia concentrations are directly related to the distribution of livestock.</p> <p>Ammonia reacts with acid pollutants such as the products of SO₂ and NO_x emissions to produce fine ammonium (NH₄⁺) - containing aerosol. Due to its significantly longer lifetime, NH₄⁺ may be transferred much longer distances (and can therefore be a significant trans-boundary issue).</p> <p>While ammonia deposition may be estimated from its atmospheric concentration, the deposition rates are strongly influenced by meteorology and ecosystem type.</p>	<p>The negative effect of NH₄⁺ may occur via direct toxicity, when uptake exceeds detoxification capacity and via N accumulation.</p> <p>Its main adverse effect is eutrophication, leading to species assemblages that are dominated by fast-growing and tall species. For example, a shift in dominance from heath species (lichens, mosses) to grasses is often seen.</p> <p>As emissions mostly occur at ground level in the rural environment and NH₃ is rapidly deposited, some of the most acute problems of NH₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.</p>

⁸⁰ 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.

⁸¹ 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.

⁸² Information summarised from the Air Pollution Information System (<http://www.apis.ac.uk/>).

Pollutant	Source	Effects on habitats and species
Nitrogen oxides (NO _x)	<p>Nitrogen oxides are mostly produced in combustion processes. Half of NO_x emissions in the UK derive from motor vehicles, one quarter from power stations and the rest from other industrial and domestic combustion processes.</p> <p>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.</p>	<p>Direct toxicity effects of gaseous nitrates are likely to be important in areas close to the source (e.g. roadside verges). A critical level of NO_x for all vegetation types has been set to 30 ug/m³.</p> <p>Deposition of nitrogen compounds (nitrates (NO₃), nitrogen dioxide (NO₂) and nitric acid (HNO₃)) contributes to the total nitrogen deposition and may lead to both soil and freshwater acidification.</p> <p>In addition, NO_x contributes to the eutrophication of soils and water, altering the species composition of plant communities at the expense of sensitive species.</p>
Nitrogen deposition	<p>The pollutants that contribute to the total nitrogen deposition derive mainly from oxidized (e.g. NO_x) or reduced (e.g. NH₃) nitrogen emissions (described separately above). While oxidized nitrogen mainly originates from major conurbations or highways, reduced nitrogen mostly derives from farming practices.</p> <p>The N pollutants together are a large contributor to acidification (see above).</p>	<p>All plants require nitrogen compounds to grow, but too much overall N is regarded as the major driver of biodiversity change globally.</p> <p>Species-rich plant communities with high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication. This is because many semi-natural plants cannot assimilate the surplus N as well as many graminoid (grass) species.</p> <p>N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.</p>
Ozone (O ₃)	<p>A secondary pollutant generated by photochemical reactions involving NO_x, volatile organic compounds (VOCs) and sunlight. These precursors are mainly released by the combustion of fossil fuels (as discussed above).</p> <p>Increasing anthropogenic emissions of ozone precursors in the UK have led to an increased number of days when ozone levels rise above 40ppb ('episodes' or 'smog'). Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.</p>	<p>Concentrations of O₃ above 40 ppb can be toxic to both humans and wildlife, and can affect buildings.</p> <p>High O₃ concentrations are widely documented to cause damage to vegetation, including visible leaf damage, reduction in floral biomass, reduction in crop yield (e.g. cereal grains, tomato, potato), reduction in the number of flowers, decrease in forest production and altered species composition in semi-natural plant communities.</p>

4.21 SO₂ 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) shipping⁸³. NH₃ emissions originate mainly from agricultural practices⁸⁴, with some chemical processes and certain vehicles also making notable contributions. As such, it is unlikely that material increases in SO₂ emissions will be associated with the Reg.18 East Hampshire Local Plan Housing Options. NO_x 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 NO_x footprint (92%) through associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison⁸⁵. Therefore, emissions of NO_x and NH₃ can reasonably be expected to increase

⁸³ http://www.apis.ac.uk/overview/pollutants/overview_SO2.htm.

⁸⁴ Pain, B.F.; Weerden, T.J.; Chambers, B.J.; Phillips, V.R.; Jarvis, S.C. (1998). A new inventory for ammonia emissions from U.K. agriculture. *Atmospheric Environment* **32**: 309-313.

⁸⁵ 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]

as a result of the Plan, primarily due to an increase in the volume of commuter traffic associated with housing growth.

- 4.22 The World Health Organisation identifies the following critical thresholds for plant communities: The critical NO_x concentration (or Critical Level) for the protection of vegetation is 30 µg_m⁻³ and the threshold for SO₂ is 20 µg_m⁻³. Additionally, ecological studies have determined Critical Loads⁸⁶ of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃).
- 4.23 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 4 and reference ⁸⁷). This distance is typically used in HRAs to determine whether Likely Significant Effects (LSEs) on sensitive European sites may arise due to development allocated in strategic plans.

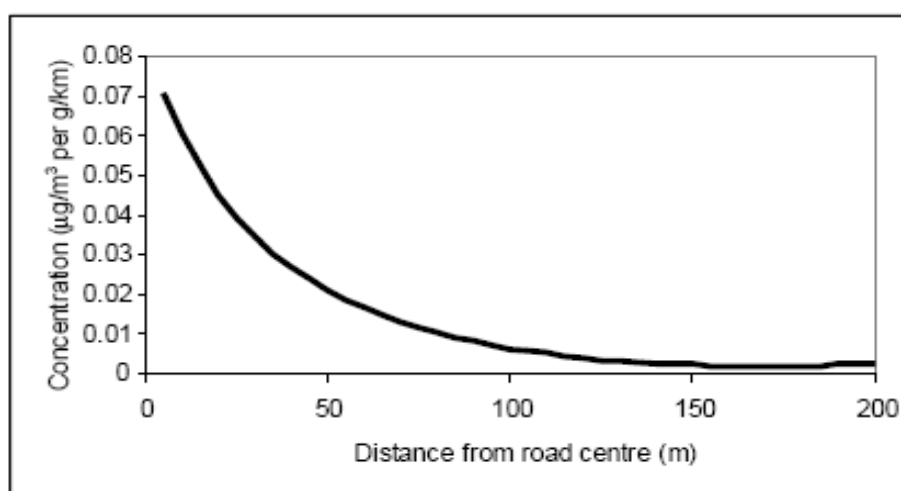


Figure 4: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT⁸⁸).

- 4.24 Overall, the following European sites in East Hampshire District and within 10km of its administrative boundary are sensitive to atmospheric nitrogen deposition, primarily due to the presence of nutrient-limited habitats and / or species that rely on air-quality sensitive habitats (the sites in **bold** are taken forward into Chapter 5 of the HRA):

- **Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC (located in the north-east of East Hampshire District)**
- **East Hampshire Hangers SAC (stretching on a north-south axis through East Hampshire District)**
- **Butser Hill SAC (located in the southern part of East Hampshire District)**
- **Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC (located approx. 68m to the north-east of East Hampshire District in the adjoining authority of Waverley)**
- **Thames Basin Heaths SPA (located approx. 3.5km to the north of East Hampshire District in the adjoining authority of Waverley)**

⁸⁶ A Critical Load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur.

⁸⁷ Available at: <http://www.dft.gov.uk/webtag/documents/expert/unit3.3.3.php#013> [Accessed on the 21/10/2021]

⁸⁸ Available at: <http://www.dft.gov.uk/ha/standards/dmr/vol11/section3/ha20707.pdf> [Accessed on the 21/10/2021]

Loss of Functionally Linked Habitat

- 4.25 While most European sites have been geographically defined to encompass the key features that are necessary for coherence of their structure and function, and the support of their qualifying features, this is not necessarily the case. A diverse array of qualifying species including birds, bats and amphibians are not always confined to the boundary of designated sites.
- 4.26 For example, the highly mobile nature of both wader and waterfowl species implies that areas of habitat of crucial importance to the integrity of their populations lie outside the physical limits of European sites. Despite not being part of the formal designation, these habitats are integral to the maintenance of the structure and function of the designated site, for example by encompassing important foraging grounds. Therefore, land use plans that may affect such functionally linked habitat require further assessment.
- 4.27 There is now an abundance of authoritative examples of HRA cases on plans affecting bird populations, where Natural England recognised the potential importance of functionally linked habitats⁸⁹. For example, bird surveys in relation to a previous HRA established that approximately 25% of the golden plover population in the Somerset Levels and Moors SPA could be impacted by development on functionally linked habitat, and this required the inclusion of mitigation measures in the relevant plan policy wording. Another important case study originates from the Mersey Estuary SPA / Ramsar, where a nearby functionally linked habitat parcel had a peak survey count of 108% of the SPA's / Ramsar's 5 year mean peak population of golden plover. This finding led to considerable amendments in the planning proposal to ensure that the site integrity of the SPA / Ramsar was not adversely affected.
- 4.28 Generally, the identification of an area as functionally linked habitat is not always a straightforward process. The importance of non-designated land parcels may not be apparent and thus might require the analysis of existing data sources (e.g. Bird Atlases or data from records centres) to be firmly established. In some instances, data may not be available at all, requiring further survey work.
- 4.29 While all qualifying bird species are mobile to some extent (e.g. ground-nesting birds in the Wealden Heaths Phase II SPA), some species of overwintering waders and waterfowl form stronger associations with habitats outside designated site boundaries. The Solent Waders and Brent Goose Strategy (SWBGS)⁹⁰, a conservation partnership project focusing particularly on brent geese and wading birds in the Solent, undertook surveys over three winters between 2016 and 2019. The strategy is an attempt to identify the functionally linked sites these birds rely on outside the boundaries of the formally designated sites. This network of functionally linked feeding and roosting sites has been mapped, identifying Core Areas, Primary Support Areas, Secondary Support Areas, Low Use areas and Candidate sites.
- 4.30 Overall, the following European sites in East Hampshire District and within 10km of its administrative boundary are sensitive to the loss of functionally linked habitats due to the presence of mobile bird species (**the sites in bold are taken forward into Chapter 5 of the HRA**):
- **Wealden Heaths Phase II SPA (located in the north-east of East Hampshire District)**
 - **Chichester & Langstone Harbours SPA / Ramsar and Portsmouth Harbour SPA / Ramsar (located approx. 2.8km to the south of East Hampshire District in the adjoining authority of Havant)**

⁸⁹ Chapman C & Tyldesley D. 2016. Functional linkage: How areas that are functionally linked to European sites have been considered when they may be affected by plans and projects – A review of authoritative decisions. *Natural England Commissioned Reports 207*. 73pp

⁹⁰ Solent Waders and Brent Goose Strategy Steering Group. November 2010. Solent Waders and Brent Goose Strategy. 37pp. Available at: <https://solentwbgs.wordpress.com/page-2/> [Accessed on the 25/10/2022]

5. Screening for Likely Significant Effects (LSEs)

Recreational Pressure

Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC

- 5.1 The Wealden Heaths Phase II SPA is designated for two ground-nesting (or low nesting in the case of Dartford warbler) bird species: Dartford warbler, nightjar and woodlark. All birds are sensitive to disturbance, particularly during the breeding season when recreational activities may result in reduced egg incubation and chick provisioning. Due to the fact that all three species nest on the ground, they are particularly sensitive to off-track walking and dog walking. Visitors hiking away from established trails may inadvertently crush eggs, while free-roaming dogs may predate on eggs and chicks. Natural England's Site Improvement Plan (SIP) specifies public access and disturbance as a threat to the SPA, highlighting that '*visitor access provision is not currently coordinated between sites or managed so as to reduce impacts on ground-nesting birds.*' An access strategy for the SPA is to be developed and implemented as a basis for the effective management of recreational use.
- 5.2 Commissioned by AECOM on behalf of EHDC, Footprint Ecology undertook a visitor survey in the SPA (and nearby Shortheath Common SAC) in summer 2018. In addition to establishing baseline evidence regarding visitor numbers, access patterns and recreational activities undertaken, the survey also collected interviewee postcode data to establish a core recreational catchment for the site. Postcode data analysis established that the majority of visitors (85%) originated from East Hampshire District, with certain parishes contributing significantly to the overall recreational footfall (e.g. Headley, Whitehill & Bordon and Bramshott and Liphook). The survey also identified that the distance travelled by interviewees differed considerably between survey points, SSSI component part, recreational activity undertaken, mode of transport used and frequency of visit. For example, 75% of interviewees travelled 6.9km to visit Kingsley Common, whereas 75% of visitors to Woolmer Forest came from within 3.19km. When considering the type of activity, 75% of dog walkers originated from within 3.4km, while interviewees on outings with the family tended to travel much further (26km). Since completion of the survey, Natural England have confirmed that a 5km catchment for the SPA and SACs will be adopted going forward, within which LSEs regarding recreational pressure cannot be excluded.
- 5.3 While the precise quantum or distribution of growth has not been established for the four Housing Options, it is clear that all would involve the delivery of housing within 5km of the Wealden Heaths Phase II complex to varying degrees. Depending on the locations of new housing, Option 1 (Disperse new development to a wider range of settlements) and Option 4 (Concentrate development in a new settlement) have the potential to be less impactful in relation to recreational pressure by allocating more growth in the north-western and southern part of the district. **However, in conclusion, LSEs of the Reg.18 Local Plan on the Wealden Heaths Phase II complex regarding disturbance cannot be excluded for any of the growth options. A more detailed assessment of this impact pathway in an Appropriate Assessment is required.**

Thames Basin Heaths SPA

- 5.4 Recreational pressure has been a long-standing issue in the Thames Basin Heaths SPA, designated for ground-nesting nightjar and woodlark, and low-nesting Dartford warbler. Evidence of disturbance impacts led to a mitigation strategy being established for the SPA, including a 400m development exclusion zone and a 400m – 5km mitigation zone. Within the mitigation zone, developments must provide a financial contribution towards Strategic Access Management and Monitoring (SAMM), as well as providing alternative greenspace solutions. The latter may

comprise financial contributions towards strategic council-owned Suitable Alternative Natural Greenspaces (SANGs) or delivering bespoke SANGs / other acceptable mitigation solutions.

- 5.5 Some of the smaller settlements in the north-east of East Hampshire District fall within the identified 5km mitigation zone for the Thames Basin Heaths SPA. Importantly, these also fall outside the core recreational catchments for the Wealden Heaths Phase II complex and Thursley, Hankley & Frensham Commons SPA. Notably, Option 1 (Disperse new development to a wider range of settlements) could be associated with higher mitigation requirements in relation to the SPA, as it proposes to distribute growth to smaller settlements, including the north-east of the district.
- 5.6 **In conclusion, LSEs of the Reg.18 Local Plan on the Thames Basin Heaths SPA regarding recreational pressure cannot be excluded for any of the growth options. A more detailed assessment of this impact pathway in an Appropriate Assessment is required.**

Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC

- 5.7 The Thursley, Hankley & Frensham Commons SPA is also designated for Dartford warbler, nightjar and woodlark. As highlighted in the previous sections, these birds have high sensitivity to recreational disturbance. It is covered in Natural England's SIP on the Thames Basin, which identifies public access as the primary pressure / threat to the site complex. Many component parts of the Thames Basin are subject to high levels of recreational use, with dog walking making up a large proportion of the visitor pool⁹¹. The current unsustainable recreational use of the complex is likely to affect the overall abundance, distribution and breeding success of Annex I qualifying species. Natural England have identified a core recreational catchment for the SPA of 5km, including a 400m development exclusion zone and a 400m – 5km mitigation zone. Within that mitigation zone, developments comprising 20 dwellings or fewer do not require mitigation. Flexible mitigation should be provided for developments between 21 – 49 dwellings and bespoke SANG must be identified for developments of 50 dwellings or more. There are presently no SAMM requirements for the site.
- 5.8 The Thursley, Ash, Pirbright & Chobham SAC is covered under the mitigation strategy for the Thames Basin Heaths SPA. An avoidance strategy, comprising on-site SAMM and off-site SANG provision is in place to help mitigate adverse recreational impacts. The mitigation strategy establishes a core recreational catchment for the complex of 5km, within which housing developers must make financial contributions to the SANG and SAMM elements.
- 5.9 The Thursley, Hankley & Frensham Commons SPA (and overlapping Thursley, Ash, Pirbright & Chobham SAC) lies approx. 68m to the north-west of East Hampshire District in the adjoining authority of Waverley. Therefore, there is the potential that new housing allocated in the north-west of the district under any of the Housing Options would be delivered within 5km of the Thames Basin. However, the following pieces of evidence indicate that LSEs of the Reg.18 Local Plan regarding recreational pressure in the Thursley, Hankley & Frensham Commons SPA and overlapping SAC can be excluded:
- Visitor survey data in the Whitehill & Bordon HRA (a large residential development located within 5km of the SPA / SAC) indicated that no residents from this development use these sites for recreational purposes.
 - Most residents in East Hampshire District have alternative sites with similar habitats, landscapes and wildlife characteristics much closer to home (i.e. the component parts of the Wealden Heaths Phase II SPA). Given considerably shorter travel durations, new residents are much more likely to visit natural greenspaces that are closer to home.
 - Most dwellings that will be delivered in East Hampshire in the 5km core recreational catchment of the Thursley, Hankley and Frensham Commons SPA, would also fall within the emerging strategic mitigation zone for the Wealden Heaths Phase II SPA. These developments will need

⁹¹ As established through repeat visitor surveys undertaken by Footprint Ecology in 2012 and 2018.

to provide SANG solutions regarding the Phase II SPA, which would also help reduce additional recreational visits in the Thames Basin complex.

- 5.10 Overall considering the above evidence, it is concluded that the emerging Reg.18 Local Plan Housing Options will not result in LSEs on the Thames Basin regarding recreational pressure. The Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC are screened out from Appropriate Assessment in relation to this impact pathway.

East Hampshire Hangers SAC

- 5.11 The East Hampshire Hangers SAC is a composite site comprising woodlands that are distributed along a north-south axis throughout the district. All qualifying features of the SAC (semi-natural dry grasslands on calcareous substrates, beech forests, mixed woodland and yew woodland) are potentially sensitive to recreational impacts such as trampling damage, which is particularly concerning where orchid assemblages or ancient / veteran trees are present. While Natural England's SIP does not specify public access as a threat or pressure to the site, the Supplementary Advice on Conservation Objectives (SACO) refer to a target of maintaining the soil structure around mature and ancient trees in an un-compacted condition. In compacted soils, which may result to varying extents from different recreational activities, there is little space for air and water, both of which are essential substances for root and tree growth.
- 5.12 While the exact quantum and distribution of growth due to the emerging Local Plan is not known, it is likely that some housing will be delivered in the core catchment zone of the SAC of approx. 5-7km (based on data from other terrestrial and woodland European sites). Given that there are few formal car parks that serve as official access points to the SAC, it is likely that residents walking to the site from nearby housing represent the typical profile of a recreationist within the SAC. Therefore, any residential allocation within a typical walking distance of between 1-2km is likely to increase the recreational footfall within the site.
- 5.13 However, there are several factors that support a conclusion of 'no LSEs' regarding the SAC. It is noted that the SAC is permeated by an extensive network of Public Right of Ways (PRoWs). Generally, some recreational impacts are 'naturally' managed through existing access networks in nature conservation sites. For example, unless paths show significant erosion and expose underlying roots, impacts of any recreational activity that is kept on-track will be somewhat buffered. An additional buffer against off-track activities is imposed by the steep slopes and challenging overall topography of the site, which is likely to encourage visitors to stick to the formal path network. Furthermore, as was relevant in relation to the Thames Basin, the emerging mitigation approach for the Wealden Heaths Phase II SPA will ensure a net increase in alternative recreational greenspaces (in the form of SANGs or more flexible infrastructure projects) in close proximity to new housing developments. This will help ensure that a portion of recreational activities is undertaken closer to home and reduce footfall in more sensitive European sites, including the East Hampshire Hangers SAC.
- 5.14 Given the above evidence, it is concluded that the emerging Reg.18 Local Plan Housing Options will not result in LSEs on the East Hampshire Hangers SAC regarding recreational pressure. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Butser Hill SAC

- 5.15 The Butser Hill SAC, designated for semi-natural dry grasslands and scrubland facies and yew-dominated woodland, is potentially sensitive to recreational impacts such as trampling damage and nutrient enrichment. The site partly overlaps with the Queen Elizabeth Country Park (QECP). Mapping on Outdooractive indicates that the SAC is permeated by a well-established network of PRoWs, including at least one long-distance hiking trail. Furthermore, there are at least two formal car parks and one visitor centre (this is in the adjoining QECP, but visitors parking here could easily access the SAC on the other side of the A3) serving as formal entry points to the site, potentially drawing visitors from further afield. The primary pathway of impact would arise from visitors venturing off-track and causing direct physical damage to the ecological interest features of the site.

- 5.16 However, it should be noted that recreational access is not highlighted as a prevalent issue in Natural England's SIP⁹² or the SACO for the Butser Hill SAC⁹³. This is supported by a SSSI condition assessment undertaken in 2020, which identifies the majority of the site to be in 'Favourable' condition. Only one component (003 – Whitelands Copse) is classified as 'Unfavourable Recovering', but this is due to existing woodland management practices⁹⁴. Overall, recreational impacts are not identified as impacting the vegetation in any of the assessed units. It is also noted that the relatively steep slopes within the SAC are likely to discourage visitors from leaving the footpaths, reducing the potential for direct trampling damage to qualifying features.
- 5.17 Overall, while residential sites allocated under all four options in the emerging Local Plan have the potential to lead to an increase in footfall within the SAC (particularly within its core recreational catchment in nearby settlements such as Clanfield), it is very unlikely that these would result in LSEs within the site. Therefore, all four Housing Options are screened out from AA with regard to recreational pressure in the Butser Hill SAC.

Rook Cliff SAC

- 5.18 The Rook Cliff SAC is designated for *Tilio-Acerion* forests of slopes, screes and ravines, which in this instance are dominated by large-leaved lime. As is typical for woodland SACs, the primary concern are visitors that leave the established path network (causing soil compaction around and direct physical damage to tree roots) and, to a lesser extent, nutrient enrichment from free-roaming dogs (causing changes in vegetation community composition). Notably, recreational pressure is not mentioned in Natural England's SIP⁹⁵ or the SACO⁹⁶, indicating that there are no historic concerns regarding public access. According to the latest SSSI condition assessment, the site is in 'Favourable' condition, supporting good woodland cover and an impressive array of ground flora.
- 5.19 Furthermore, the SAC is located approx. 5.7km to the east of East Hampshire District in the adjoining authority of Chichester. This would place large parts of East Hampshire District outside or on the fringes of a typical core recreational catchment (approx. 5-7km) for inland terrestrial sites. There are woodland sites with similar habitat characteristics and sceneries (e.g. East Hampshire Hangers SAC and Butser Hill SAC) much closer to all relevant settlements, further reducing the likelihood that East Hampshire residents would make a significant contribution to the recreational load within the site. Moreover, this site is well within the South Downs National Park and is therefore well outside the zone of influence of any allocations that would be made in the East Hampshire Local Plan.
- 5.20 It is concluded that the emerging Reg.18 Local Plan Housing Options will not result in LSEs on the Rook Cliff SAC regarding recreational pressure. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Kingley Vale SAC

- 5.21 The Kingley Vale SAC is designated for *Taxus baccata* woods and semi-natural dry grasslands / scrubland facies with potential sensitivity to recreational impacts, such as trampling damage and nutrient enrichment. It is situated in a rural area of the adjoining authority of Chichester, approx. 5.8km to the south-east of East Hampshire District. The SAC is permeated by an extensive network of PRoWs, criss-crossing woodland and more open parcels within the site boundary. There is one formal car park providing access to the SAC at Lambdown Hill, but most visitors are likely to originate from the few smaller settlements and villages surrounding the site. The fact that the site lies in an undeveloped part of Chichester District and does not support the infrastructure to draw visitors from further afield, may indicate that overall visitor numbers are relatively low. Recreational pressure is not specified as a concern in the SIP⁹⁷ or SACO⁹⁸ for the SAC.

⁹² Available at: <http://publications.naturalengland.org.uk/publication/4842655599034368> [Accessed on the 20/10/2022]

⁹³ Available at: <http://publications.naturalengland.org.uk/publication/5067404384141312> [Accessed on the 20/10/2022]

⁹⁴ Available at: <https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1007935> [Accessed on the 20/10/2022]

⁹⁵ Available at: <http://publications.naturalengland.org.uk/publication/6352739575529472> [Accessed on the 20/10/2022]

⁹⁶ Available at: <http://publications.naturalengland.org.uk/publication/6335772969926656> [Accessed on the 20/10/2022]

⁹⁷ Available at: <http://publications.naturalengland.org.uk/publication/6393220716036096> [Accessed on the 20/10/2022]

⁹⁸ Available at: <http://publications.naturalengland.org.uk/publication/5727834794360832> [Accessed on the 20/10/2022]

- 5.22 Given the distance of the SAC to East Hampshire District (approx. 5.8km), this places most settlements in the district outside or on the fringes of a typical core recreational catchment (approx. 5-7km) for inland terrestrial sites. Furthermore, as highlighted in relation to the Rook Cliff SAC, there are woodland sites with similar habitat characteristics and sceneries (e.g. East Hampshire Hangers SAC and Butser Hill SAC) much closer to settlements in East Hampshire, further reducing the likelihood that future residents would make a significant contribution to the recreational load within the site. Moreover, this site is well within the South Downs National Park and is therefore well outside the zone of influence of any allocations that would be made in the East Hampshire Local Plan.
- 5.23 It is concluded that the emerging Reg.18 Local Plan Housing Options will not result in LSEs on the Kingley Vale SAC regarding recreational pressure. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar

- 5.24 The Chichester and Langstone Harbours SPA / Ramsar and Portsmouth Harbour SPA / Ramsar are designated for a range of breeding and overwintering bird species, all of which are sensitive to recreational disturbance to varying degrees. For example, the breeding success of sandwich tern, common tern and little tern may be impacted as a result of direct damage to eggs (e.g. through trampling and predation by dogs) and indirect effects, such as reduced egg incubation, lower chick provisioning and nest abandonment. The build-up of nutritional reserves of overwintering waterfowl and waders may be impeded by disturbance as a result of reduced foraging, heightened alertness and energy lost due to flight responses. Some habitats in the Solent Maritime SAC (e.g. annual vegetation of drift lines, vegetation of stony banks) are also sensitive to recreational impacts, principally as a result of direct access to the foreshore.
- 5.25 Over concerns of recreational disturbance impacts in the Solent, extensive research as part of the three phases of the Solent Disturbance and Mitigation Project was undertaken between 2009 and 2013. The main aims of the project were to document existing access patterns in the Solent, bird responses to disturbance events and predicting the number of future additional recreational visits as a result of forecast housing development. The data showed that current recreational use already impacted bird behaviour (dogs that are off-lead elicit 47% of all major flight responses) and that a 13% increase in visitor numbers was predicted due to future housing growth. Trends in visitor postcode data indicated that 75% of visitors to the Solent coastline live within 5.6km of the site complex. Therefore, the Solent Recreation Mitigation Strategy (SRMS) adopted this 5.6km zone as the core recreational catchment for the Solent, within which developer contributions to Strategic Access Management and Monitoring (SAMM) measures are required. It was also subsequently identified that Suitable Alternative Natural Greenspace (SANG) provision would provide a useful additional mitigation tool if they are closely linked to management at the coast, sited in the right locations and accompanied by active promotion.
- 5.26 While there are differences in the distribution of growth between the four Housing Options considered in the Reg.18 Local Plan, it currently cannot be excluded for any of the Options that housing will be delivered in the southern part of East Hampshire District within the established 5.6km core recreational catchment for the Solent. **In conclusion, LSEs of the Reg.18 Local Plan on the Solent European sites regarding recreational pressure cannot be excluded for any of the growth options. A more detailed assessment of this impact pathway in an Appropriate Assessment is required.**

Water Quality

River Itchen SAC

- 5.27 The River Itchen SAC is designated for its water course of plain to montane levels with *Ranunculus fluitans* and *Callitriche-Batrachion* vegetation. Furthermore, the site is also notified for a range of Annex II species, including Atlantic salmon, brook lamprey, bullhead, southern damselfly, white-clawed crayfish and otter. The qualifying vegetation and animal species all fully

or partially depend on aquatic habitats with good water quality. Treated sewage effluent from existing and new development is a major cause of nutrient enrichment and associated decline in water quality. Typically, excessive levels of nutrients can cause the rapid growth of algae through eutrophication, causing knock-on impacts such as low dissolved oxygen concentrations, increased turbidity and overall biodiversity loss. While the water quality in European sites is typically safeguarded through the implementation of discharge limits at Wastewater Treatment Works (WwTWs), this is no longer deemed sufficient for sites in 'Unfavourable' condition.

- 5.28 Natural England's SIP for the River Itchen SAC⁹⁹ species water pollution as the primary threat to qualifying features of the site. It states that *'the Diffuse Water Pollution Plan identifies numerous issues with water quality, in addition to point sources from Waste Water Treatment Works... Pollution causes excessive algal growth, smothering macrophytes, and increased BOD, decreasing oxygen availability for spawning gravels used by salmon and trout.'* Due to these existing impacts, Natural England have established a requirement for nutrient neutrality for developments with hydrological connectivity to the SAC¹⁰⁰. While the River Itchen SAC encompasses a freshwater environment (in which phosphorus is the primary growth-limiting nutrient), nutrient neutrality requirements have been extended to also include nitrogen (presumably because the SAC is part of the wider Solent marine catchment). A bespoke nutrient budget calculator¹⁰¹ and accompanying guidance document¹⁰² have been published for the River Itchen SAC, which is to be used to quantify potential nutrient inputs arising from development plans.
- 5.29 According to available mapping data, the north-west part of East Hampshire District (including Ropley, Medstead, Bentworth, Four Marks and Wield Parishes) discharges to the catchment of the River Itchen SAC, potentially contributing nutrients to the river system. However, while future residential allocations in this area may lie within the SAC catchment, WwTWs or package treatment plants serving this development may discharge to waterbodies that are not in continuity with the catchment. Any of the four Housing Options proposed in the Reg.18 Local Plan may allocate residential growth in this part of the district, which would trigger the need for an AA of water quality issues. An AA would require a detailed appraisal of WwTW infrastructure and, if a hydrological linkage to the SAC exists, neutrality calculations for phosphorus and nitrogen discharges.
- 5.30 **In conclusion, LSEs of the Reg.18 Local Plan on the River Itchen SAC regarding water quality cannot be excluded for any of the growth options. A more detailed assessment of this impact pathway is required in an Appropriate Assessment.**

Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar

- 5.31 The Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar (which collectively form part of the Solent complex) are all sensitive to changes in water quality. Suboptimal water quality has the potential to affect qualifying birds in SPAs / Ramsars indirectly via impacts on foraging resources. For example, excessive algal growth and concomitant changes in water quality parameters may lead to changes in ecosystem composition, reducing the availability for foraging resources (e.g. eelgrass, invertebrates and fish) to qualifying waterfowl and waders. Eutrophication can also lead to increased turbidity, which reduces the ability of visual hunters (e.g. terns) to locate their prey. Furthermore, where elevated nutrients reach SAC habitats, these have the potential to directly affect their structure and function. Given the Solent sites all encompass marine habitats, nitrogen is the main nutrient of concern as it is growth-limiting in these ecosystems.

⁹⁹ Available at: <http://publications.naturalengland.org.uk/publication/5404054607888384> [Accessed on the 20/10/2022]

¹⁰⁰ Advice in a letter to relevant Local Planning Authorities. Natural England. (March 2022). Advice for development proposals with the potential to affect water quality resulting in adverse nutrient impacts on habitats sites. 25pp.

¹⁰¹ Available on the East Hampshire District Council website at: <https://www.easthants.gov.uk/nutrient-neutrality-what-developers-need-know> [Accessed on the 20/10/2022]

¹⁰² Ricardo Energy and Environment. (2022). Nutrient Budget Calculator Guidance Document for the River Itchen SAC. 14pp. Available at: <https://www.southdowns.gov.uk/wp-content/uploads/2022/05/Nutrient-Budget-Calculator-Guidance-Documents-River-Itchen-Issue1.pdf> [Accessed on the 20/10/2022]

- 5.32 Water pollution is identified as a threat to the Solent in Natural England's SIP¹⁰³, which states that *'water pollution affects a range of habitats and bird species at the site through eutrophication and toxicity. Sources include both point source discharges (including flood alleviation / storm discharges) and diffuse water pollution from agriculture / road runoff, as well as historic contamination of marine sediments, primarily from copper and Tributyltin (TBT).'* While treated sewage effluent is not specifically referred to in the SIP, data from the Environment Agency Catchment Data Explorer indicate that dissolved inorganic nitrogen from sewage discharge is contributing to Chichester Harbour not attaining good overall ecological status¹⁰⁴.
- 5.33 Natural England's 2022 advice on European sites that are in unfavourable condition due to negative water quality impacts includes the wider Solent area. This means that LSEs of future development resulting in a net increase in nitrogen and phosphorus input to the Solent catchment cannot be excluded. It is advised that all development resulting in a net increase in population (i.e. overnight accommodation such as new homes, student and tourist accommodation) must demonstrate nutrient neutrality in order to be granted planning consent. According to available mapping¹⁰⁵, the Solent has a large hydrological catchment that includes the southern and north-western parts of East Hampshire District. Although the geographic distribution of growth coming forward under the four Housing Options is not known, it is probable that varying quanta of residential development will be coming forward within the hydrological catchment of the Solent.
- 5.34 **Therefore, LSEs on the water quality in the Solent cannot be excluded for any of the growth options included in the Reg.18 Local Plan. A more detailed assessment of this impact pathway is required in an Appropriate Assessment.**

Woolmer Forest SAC

- 5.35 The Woolmer Forest SAC is partly designated for habitats that rely on the maintenance of good water quality, including natural dystrophic ponds and transition mires / quaking bogs. Generally, dystrophic waterbodies contain high amounts of humic substances and dissolved organic carbon. Notwithstanding this, they are regarded as nutrient-poor because nutrients are trapped in organic matter and, therefore, unavailable to primary producers. An increase in bioavailable nutrients, primarily phosphorus, in treated sewage effluent may affect the plant communities present in the Cranmer and Woolmer Ponds.
- 5.36 Review of the SIP for the Woolmer Forest SAC indicates that water pollution has not been identified as a threat to or pressure on the site. Indeed, the EA Catchment Data Explorer indicates that the Hollywater and Deadwater Water Body (at Bordon), the surface waterbody draining the wider area around the two ponds, has 'Good Ecological Status', with dissolved oxygen concentrations classified as 'Good' and phosphorus concentrations identified as 'High' quality. According to available catchment mapping, there are no upstream waterbodies that could feed into the dystrophic ponds of the SAC. Furthermore, no WwTWs with potential hydrological connectivity to the ponds have been identified. It is concluded that the emerging Reg.18 Local Plan Housing Options will not result in LSEs on the Woolmer Forest SAC regarding water quality. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Thursley & Ockley Bogs Ramsar

- 5.37 The Thursley and Ockley Bogs Ramsar is partly designated as a Ramsar site because it supports a community of rare wetland invertebrate species, including notable numbers of breeding dragonflies. The Ramsar also has an oligotrophic nutrient status, implying that its faunal species and the aquatic flora they depend on have adapted to a low-nutrient environment. It is to be noted that most bogs primarily depend on recharge through precipitation and typically only limited connectivity with surface waterbodies exists. However, the Ramsar is considered further as a precautionary measure.

¹⁰³ Available at: <http://publications.naturalengland.org.uk/publication/4692013588938752> [Accessed on the 20/10/2022]

¹⁰⁴ Information on the ecological status of Chichester Harbour can be obtained on the Environment Agency Catchment Data Explorer. Available at: <https://environment.data.gov.uk/catchment-planning/WaterBody/GB580705210000?cycle=3> [Accessed on the 20/10/2022]

¹⁰⁵ The nutrient neutrality map for the Solent is available at: <https://cdn.easthants.gov.uk/public/documents/Nutrient%20Neutrality%20map%20Solent.pdf> [Accessed on the 20/10/2022]

- 5.38 Partly draining the site are two surface waterbodies, the Royal Brook and Truxford Brook Water Bodies. The Royal Brook is identified as having 'bad ecological status' on the EA Catchment Data Explorer (CDE)¹⁰⁶. However, this is unlikely to be due to physico-chemical parameters (dissolved oxygen and phosphorus are both classified as having 'High status'), but rather bad condition in relation to fish. The Joint Nature Conservation Committee (JNCC) Information Sheet¹⁰⁷ highlights that there are no past, present or future factors adversely affecting the site's character
- 5.39 Like the Ramsar site, the north-east part of East Hampshire District (including the main conurbations of Alton and Whitehill & Bordon) lie in the Wey Operational Catchment. However, mapping on the CDE indicates that any WwTWs serving this part of the district would discharge to waterbodies that lie downstream of the Royal and Truxford Brooks. Therefore, there is now hydrological connection between treated sewage effluent arising in East Hampshire and the Thursley and Ockley Bogs Ramsar. It is concluded that the emerging Reg.18 Local Plan Housing Options will not result in LSEs on the Thursley & Ockley Bogs Ramsar regarding water quality. This site is screened out from Appropriate Assessment in relation to this impact pathway.

Water Quantity, Level and Flow

River Itchen SAC

- 5.40 The River Itchen SAC is designated for a habitat (water course from plain to montane levels with associated characteristic vegetation) and various Annex II species (including anadromous fish and otter). Flow regimes in rivers determine a wide range of parameters, including current velocities, water depth, wetted area, temperature range and dissolved oxygen concentrations. All qualifying features either directly or indirectly depend on adequate hydrological regimes. For example, anadromous fish (e.g. Atlantic salmon) directly depend on sufficient longitudinal hydrological connectivity to reach their upstream spawning grounds. Otter forage on fish and crustaceans, the abundance and distribution of which will be shaped by the prevailing flow regime.
- 5.41 NE's SACO for the River Itchen SAC targets the restoration of the natural flow regime of the river which would be expected in the absence of abstractions and discharges. The SIP for the SAC specifies water abstraction as a main pressure to the site. It states that '*abstraction modifies the natural flow regime on which the Annex I river habitat depends for its proper functioning... All parts of the flow regime may be affected but low-to-intermediate flows are most likely to be significantly impacted... Natural England does not endorse any particular solution at this time.*' Specifically, water flow issues are to be targeted through an amendment to the abstraction license for Southern Water (as part of the EA Review of Consents process), which will identify alternatives to the large abstraction on the R. Itchen.
- 5.42 The water supply in the northern part of East Hampshire District (north of Petersfield) is provided by South East Water (SEW). Overall, the company supplies clean drinking water to a population of around 2.2 million customers. The potable water comes from a mix of sources, including 73% from groundwater (more than 250 boreholes and wells), 19% from surface water (six river intakes and three reservoirs) and 8% from trading with other water companies (e.g. Affinity Water and Southern Water). This part of the district is located in Water Resource Zone (WRZ) 5 (Farnham) in which 100% of the water supply is met through the exploitation of 12 groundwater sources.
- 5.43 Considering the supply-demand balance between the years 2020 and 2080, the period covered by the company's Water Resources Management Plan (WRMP), is key in determining whether additional water resources may be needed to meet future demand. For WRZ 5, a negative average supply-demand balance of 1.3 MI/d is forecast by 2059/60 and of 0.5 MI/d much earlier (by 2039/40) in the summer period. This implies that interventions will be needed to meet the forecast demand, either through demand management measures or the development of additional water resources. However, SEW's preferred plan for WRZ 5 indicates that the options taken forward include leakage reductions and water efficiency measures, focussing entirely on demand

¹⁰⁶ Available at: <https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039017760> [Accessed on the 21/10/2022]

¹⁰⁷ Available at: <https://jncc.gov.uk/jncc-assets/RIS/UK11074.pdf> [Accessed on the 21/10/2022]

management. Overall, SEW's future approach to water resource management in WRZ 5 will have no impact on the hydrology in the River Itchen SAC.

- 5.44 Water supply in the southern part of East Hampshire District (including the main settlements of Clanfield and Horndean) is provided by Portsmouth Water. Potable water supply to meet the additional water demand due to any of the Housing Options could affect the water flow in the River Itchen SAC, if it involved additional abstractions from any water sources in hydrological continuity with the site. A broad-level review of Portsmouth Water's WRMP indicates that a baseline supply-demand deficit is forecast for the entire WRMP period, ranging from -27.9 MI/d in 2019/20 to -80 MI/d in 2044/45. Therefore, several options were considered to bring the supply-demand balance into surplus, including demand and resource management interventions. However, as detailed in the WRMP, the deficit will be largely addressed by addressing demand management (e.g. leakage reduction and smart metering). While the final WRMP does involve maximising the Deployable Output from existing groundwater sources, all schemes are projected to remain within existing abstraction licenses. Therefore, the potential environmental impact of the relevant maximum consented abstraction volumes would have already been considered under the statutory Review of Consents process.
- 5.45 In summary, there will be no additional water abstractions beyond existing abstraction consents to meet the water demand arising from any of the four Housing Options and impacts on the flow volume in the River Itchen SAC can, therefore, be excluded. An AA of this impact pathway will not be required.

Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar

- 5.46 The Solent European sites that are relevant to East Hampshire District (the Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar) all depend on an adequate balance of freshwater and saltwater input. The qualifying birds of the SPAs / Ramsars may be indirectly impacted by reduced freshwater input through effects on their foraging sources. Natural England's SACO specify a target of maintaining the availability of freshwater on mudflats used by SPA / Ramsar birds for feeding and resting. The SACO state that '*changes in source, depth, duration, frequency, magnitude and timing of water supply or flow can have important implications for this feature. Such changes may affect the quality and suitability of habitats used by birds for drinking, preening, feeding or roosting.*' Similarly, as highlighted in its SACO, changes in freshwater supply to the Solent Maritime SAC may alter a range of abiotic conditions (e.g. sediment input, dissolved oxygen concentration, salinity gradient, temperature regime) that in turn can lead to changes in the characteristic vegetation and invertebrate communities that are present. For example, an increase in salinity in saltmarshes may result in the disappearance or geographic shifts of less salt-tolerant species and associated invertebrates.
- 5.47 Potable water in East Hampshire District is supplied by SEW (northern part of the district north of Petersfield) and Portsmouth Water (southern part of the district including the main settlements of Clanfield and Horndean). However, the WRMP for SEW indicates that the baseline supply-demand deficit in WRZ 5, the zone in which this part of the district lies, will be addressed entirely through demand management options. While Portsmouth Water's WRMP does specify that options will include maximising the Deployable Outputs from existing groundwater sources, these schemes will remain within the existing consented abstraction licenses. Neither of the water companies propose to increase water abstraction (beyond existing consents) from sources in hydrological continuity with the Solent European sites.
- 5.48 Overall, none of the four Housing Options will result in LSEs on the water quantity, level and flow in the Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Harbour SPA / Ramsar. An AA of this impact pathway in relation to the Solent will not be required.

Woolmer Forest SAC

- 5.49 The Woolmer Forest SAC encompasses two natural dystrophic ponds (Cranmer Pond and Woolmer Pond) that depend on sufficient freshwater input to maintain adequate ecosystem

conditions. Dystrophic systems often occur on bogs in plains and valley bottoms, where incomplete decomposition of organic matter leads to water-logging and the formation of seasonal / permanent waterbodies. Both Cranmer Pond and Woolmer Pond are predominantly groundwater-fed, which enable relatively stable water levels to be maintained throughout the year. The water supply to the ponds determines water flushing rates and residence times, which in turn are important for dilution, removal of nutrients and phytoplankton, and reduced sedimentation. For example, reduced water supply in summer is thought to promote bloom conditions.

- 5.50 The dystrophic ponds are situated in a wider area of transition mires and quaking bogs. Bogs are effectively mires that, due to their location relative to the surrounding landscape, obtain most of their water from rainfall (i.e. they are ombrotrophic). However, all bogs may also be groundwater and / or surface water fed to varying degrees. In summary, depending on the water strategy for the wider area, there is a potential pathway for the East Hampshire Local Plan to affect hydrological conditions in the SAC.
- 5.51 However, as highlighted in the preceding sections, SEW's and Portsmouth Water's strategy for potable water supply in East Hampshire District does not involve an increase in surface water or groundwater abstractions beyond existing consents. It follows that LSEs of the four Housing Options on the hydrology in the Woolmer Forest SAC can be excluded and the East Hampshire Local Plan is screened out from AA.

Atmospheric Pollution

Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC

- 5.52 The Wealden Heaths Phase II SPA is designated for three ground-nesting bird species (nightjar, woodlark and Dartford warbler), which depend on a matrix of bare ground and dwarf shrub heath (e.g. heather and gorse) for successful nesting and foraging. Heathland ecosystems are adapted to low-nutrient conditions and are sensitive to additional atmospheric nitrogen deposition. The Air Pollution Information System (APIS) identifies all three species to be sensitive to nitrogen deposition on dwarf shrub heath (with a nitrogen Critical Load (CL) of 10-20 kg N/ha/yr). Exceedance impacts encompass a wide range of ecosystem changes, including transition from heather to grass dominance, declines in lichens, changes in plant biochemistry and increased sensitivity to abiotic stress. Natural England's SIP also identifies air pollution as a key pressure to the site, stating that '*nitrogen deposition exceeds the site-relevant critical load for ecosystem protection.*'
- 5.53 The Woolmer Forest SAC is designated for a range of habitats, including natural dystrophic lakes and ponds, transition mires and quaking bogs, and dry / wet heathland components. As highlighted on APIS, these features have varying sensitivity to nitrogen deposition. For example, dystrophic lakes and ponds have a nitrogen CL of 3-10 kg N/ha/yr and exceedance impacts include increased algal productivity and a shift in nutrient limitation (from N to P). Transition mires and quaking bogs (CL of 10-15 kg N/ha/yr) and dry / wet heathland (CL of 10-20 kg N/ha/yr) may also experience ecosystem changes as a result of excessive atmospheric nitrogen deposition. Nitrogen deposition trends on APIS indicate that the maximum nitrogen deposition (15.7 kg N/ha/yr) exceeds the critical upper limit of 10 kg N/ha/yr for the natural dystrophic lakes and ponds feature. Regarding the Woolmer Forest SAC, Natural England's SIP states that '*aerial pollution may be promoting changes in species composition of mires towards *Molinia* and sedge dominated systems rather than *Sphagnum* dominated; ponds may be losing characteristic aquatic plant assemblage partly because of increasing nutrient status.*'
- 5.54 The Shortheath Common SAC lies to the north-west of Bordon and is considered to be a functional part of the Wealden Heaths Phase II SPA complex, partly because it also supports ground-nesting birds. It is designated for a range of habitats that are potentially sensitive to atmospheric nitrogen deposition, including transition mires and quaking bogs, European dry heaths and bog woodland. However, a review of existing road infrastructure surrounding the SAC indicates that there are no major commuter routes (A roads) within 200m of the site boundary.

Potential traffic-related nitrogen deposition impacts of the four Housing Options on the Shortheath Common SAC are therefore screened out from further consideration.

- 5.55 The SPA is a composite site that lies in the east of East Hampshire District and is widely distributed within 200m of (and in many places directly adjoining) major commuter routes, including the A3 and A325 (the same applies to the Woolmer Forest SAC, which overlaps with the SPA to the south of Bordon). Furthermore, habitat mapping on MAGIC indicates that sensitive lowland heathland within the designated site boundary also occurs within 200m from these roads and, in many places, adjoins the roadside. Importantly, Woolmer Pond lies approx. 79m from the A325, placing it well within the screening distance for atmospheric pollution effects. Any of the four Housing Options may allocate residential and employment development in Bordon, Bramshott and Liphook, the settlements that lie closest to the SPA. Development in these conurbations, and indeed other parts of the district, are likely to lead to an increase in commuter traffic on the identified roads.
- 5.56 **Overall, LSEs of the four Housing Options on the Wealden Heaths Phase II SPA and Woolmer Forest SAC regarding atmospheric pollution cannot be excluded. An AA of this impact pathway, including traffic and air quality modelling, will be required at the Reg.19 stage of the Local Plan, regardless of the Housing Option taken forward.**

East Hampshire Hangers SAC

- 5.57 The East Hampshire Hangers SAC is a composite site that bisects East Hampshire District on a north-south axis. The SAC is designated for a range of habitats and species which are sensitive to atmospheric pollution. Its feature that is most sensitive to atmospheric nitrogen deposition is the *Taxus baccata* wood of the British Isles (nitrogen CL of 5-15 kg N/ha/yr). Exceedance impacts listed on APIS encompass changes in soil processes, nutrient imbalances, and altered composition of mycorrhiza and ground vegetation. The maximum nitrogen deposition of 33.3 kg N/ha/yr exceed the maximum nitrogen CL for all designated woodland habitats (e.g. *Taxus baccata* woods, *Asperulo-Fagetum* beech forest, *Tilio-Acerion* forests of slopes, scree and ravines). Furthermore, the qualifying 'semi-natural dry grasslands and scrubland facies' and '*Asperulo-Fagetum* beech forests' also harbour lichens and bryophytes, which are sensitive to direct toxicity effects from high ammonia (NH₃) concentrations with an identified Critical Level of 1 µg/m³.
- 5.58 A review of the road infrastructure along the SAC indicates that there are no major commuter routes within 200m of the site. However, there are several smaller B roads (B3004, B3006) alongside the SAC that connect the conurbations of Whitehill & Bordon and Alton. While B roads are less likely to experience significant increases in traffic flows, this cannot be excluded particularly where large developments (dwellings and / or employment floorspace) are situated in close proximity.
- 5.59 **Overall, LSEs of the four Housing Options on the East Hampshire Hangers SAC regarding atmospheric pollution cannot be excluded. An AA of this impact pathway, including traffic and air quality modelling, will be undertaken at the Reg.19 stage of the Local Plan as a precautionary measure.**

Butser Hill SAC

- 5.60 The Butser Hill SAC lies in the southern part of East Hampshire District to the north of Clanfield and Horndean. It is designated for two habitats, including semi-natural dry grasslands and scrubland facies on calcareous substrates, and *Taxus baccata* woods of the British Isles. APIS identifies both habitats as being sensitive to atmospheric nitrogen deposition with nitrogen CLs of 15-25 kg N/ha/yr and 5-15 kg N/ha/yr respectively. The potential exceedance impacts differ depending on the ecosystem type that is present. For example, in dry grasslands excessive atmospheric nitrogen deposition generally leads to an increase in tall grasses, overall decline in biodiversity, nitrogen leaching and surface acidification. In *Taxus baccata* woods, ecosystem changes mainly relate to ground flora and associated soil processes.
- 5.61 Review of the road infrastructure alongside the SAC indicates that the A3 is the only commuter route requiring consideration. The Butser Hill SAC adjoins the A3, and habitat mapping indicates

that lowland calcareous grassland and woodland within the designated site boundary occurs widely near to the roadside. The A3 connects the southern and north-eastern parts of East Hampshire District, as well as providing direct / indirect links to the adjoining authorities of Havant, Chichester and Waverley. Residential and employment development allocated under any of the four Housing Options has the potential to lead to an increase in commuter traffic along the A3, with potential knock-on effects on air quality within the Butser Hill SAC.

- 5.62 Generally, it is to be noted that over 90% of the SAC lies beyond 200m from the A3 and atmospheric nitrogen deposition from traffic would not occur in these parts of the site. Furthermore, even the closest parts of the SAC are often separated from the A3 by a 20-40m wide road embankment, which would experience the largest proportion of traffic-related nitrogen deposition. Notwithstanding this, Natural England's SIP identifies atmospheric pollution as a threat to the site, highlighting that '*nitrogen deposition exceeds site relevant critical loads for the *Taxus baccata* woodlands and is approaching the upper critical load in the chalk grassland... Overall, this creates conditions less favourable to the characteristic vegetation of the SAC features.*'
- 5.63 **Overall, LSEs of the four Housing Options on the Butser Hill SAC regarding atmospheric pollution cannot be excluded. An AA of this impact pathway, including traffic and air quality modelling, will be required at the Reg.19 stage of the Local Plan, irrespective of the Housing Option taken forward.**

Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC

- 5.64 The Thursley, Hankley & Frensham Commons SPA and part of the overlapping Thursley, Ash, Pirbright & Chobham SAC lie to the north-east of East Hampshire District in the adjoining authority of Waverley. The SPA is designated for its populations of breeding Dartford warbler, nightjar and woodlark, which all nest on the ground. All three species rely on a combination of bare ground and dwarf shrub heath (e.g. heather and gorse) for successful nesting and foraging. Clearly, the suitability of their supporting habitats depends on limited additional nutrient inputs such as through atmospheric nitrogen deposition. APIS identifies a nitrogen CL of 10-20 kg N/ha/yr for dry heath, adopted as the applicable supporting habitat class for these species. The same nitrogen CLs apply to European dry heaths and northern Atlantic wet heaths, qualifying features of the overlapping Thursley, Ash, Pirbright & Chobham SAC. An exceedance of CLs leads to ecosystem-level changes, including a transition from heather to grass dominance, decline in lichens, change in plant biochemistry and increased sensitivity to abiotic stress.
- 5.65 However, a broad review of the road traffic infrastructure indicates that there are no major commuter routes within 200m of these sites, that are likely to experience a significant increase in traffic volume due to the Reg.18 Local Plan. Therefore, LSEs of the four Housing Options on the Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright & Chobham SAC regarding atmospheric pollution can be excluded. An AA of this impact pathway in relation to these sites will not be required.

Thames Basin Heaths SPA

- 5.66 The Thames Basin Heaths SPA, the closest component part of which lies in the northernmost section of Waverley, is also designated for ground-nesting Dartford warbler, nightjar and woodlark. As highlighted above, there is a clear potential for traffic-related atmospheric nitrogen deposition to reduce the suitability of supporting habitats for these qualifying species. However, it is very unlikely that major roads within 200m of these sites constitute journey-to-work routes for East Hampshire residents for several reasons. The approx. driving distance to the closest parcel of the SPA within 200m of a major road (the Colony Bog and Bagshot Heath SSSI adjoining the M3) is over 25km, which is significantly more than the average commuting distance for a UK resident of 10.1km. Furthermore, the Thames Basin Heaths SPA sits amidst a very complex and convoluted road network, meaning that commuters can choose between various routes to reach their destination, including several that would not involve travelling within 200m of sensitive habitats. There are areas of Thames Basin Heaths SPA closer to the East Hampshire boundary but they tend not to lie on roads expected to be journey to work routes for East Hampshire

residents. Thames Basin Heaths SPA may therefore be able to be excluded depending on whether specific allocations are made in the predominantly rural north-east of the district around Binsted and Bentley. This will be kept under review as the Local Plan is developed.

Loss of Functionally Linked Habitat

Wealden Heaths Phase II SPA

- 5.67 The ground-nesting species in the Wealden Heaths Phase II SPA, Dartford warbler, nightjar and woodlark, are likely to be largely confined to the designated site boundary. However, all species are mobile and may routinely travel beyond the designated site boundary. None of the three species have specialised requirements for foraging habitats. For example, while nightjar may forage up to 6km from their nesting territory, they feed on various prey (flying moths, beetles, dragonflies, flies) in a wide range of habitats, including deciduous woodland, open oak scrubland, young conifer plantations, heathland, wetlands, mature hedges and old pastures. Woodlark use a range of habitats adjacent to heathland for foraging, including short grassland, stubble fields, golf courses and bare areas in quarry sites. Overall, potential loss of non-designated foraging habitat is unlikely to be a threat to the three qualifying species.
- 5.68 Regarding breeding and roosting habitats, all three species are tightly linked to structurally diverse dwarf shrub vegetation, including areas of bare ground, heather and gorse. Such habitat patches may be located in open heath or at the heathland – woodland interface. Ideally, nesting locations support a clear line of sight for the early detection of predators. Research undertaken in the Breckland Forest area indicates that nightjar and woodlark will also nest in rotationally managed conifer plantations (both within and outside designated site boundaries) at different times in the management cycle. Where suitable undesignated nesting habitats (i.e. areas of structurally diverse heath and conifer plantations) for nightjar and woodlark lie within 2km of a designated site, a potential loss of functionally linked habitat should be evaluated. However, no such habitats in East Hampshire District in proximity of the Wealden Heaths Phase II SPA have been identified.
- 5.69 Overall, LSEs of the four Housing Options included in the Reg.18 Local Plan on the Wealden Heaths Phase II SPA regarding loss of functionally linked habitat can be excluded. This impact pathway is screened out from AA.

Chichester & Langstone Harbours SPA / Ramsar and Portsmouth Harbour SPA / Ramsar

- 5.70 The Chichester and Langstone Harbours SPA / Ramsar and Portsmouth Harbour SPA / Ramsar are designated for a range of waterfowl and wader species that are mobile, routinely travelling beyond the designated site boundaries for foraging, roosting and resting. Within these sites, the species with strongest associations with functionally linked habitats are dark-bellied brent goose (qualifying species of both SPAs / Ramsars) and, to a lesser extent, wigeon, curlew and redshank (Chichester and Langstone Harbours SPA / Ramsar only). Given the importance of greenfield sites along the Solent coastline to qualifying birds and the increasing pressure of development, the Solent Waders & Brent Goose Strategy (SWBGS) was developed by the Solent Waders & Brent Goose Steering Group, with the ultimate objective to safeguard the most important non-designated supporting habitats (i.e. functionally linked habitats) in the Solent region.
- 5.71 In their guidance on Impact Risk Zones (IRZs) for SSSIs notified for birds¹⁰⁸, Natural England specify that wintering waders, brent goose and wigeon have a maximum foraging distance of 2km. At its closest point, East Hampshire District lies approx. 2.8km to the north of the Chichester and Langstone Harbours SPA / Ramsar and, therefore, outside the IRZ associated with its qualifying species. Furthermore, mapping undertaken in support of the SWBGS shows no functionally linked habitat parcels within (or indeed close to) East Hampshire District. Therefore, LSEs of the four Housing Options included in the Reg.18 Local Plan on the Solent European

¹⁰⁸ Knight M. (2019). Impact Risk Zones Guidance Summary – Sites of Special Scientific Interest Notified for Birds. Version 1.1. 8pp.

sites regarding loss of functionally linked habitat can be excluded. This impact pathway is screened out from AA.

In-Combination Assessment

- 5.72 The potential anticipated growth in East Hampshire District will need to be assessed in the context of the growth in adjoining authorities, such as Hart, Waverley, Chichester, Havant, Winchester, South Downs National Park and Basingstoke & Deane. Development in these authorities has the potential to act in-combination with East Hampshire growth, thereby exacerbating the potential impacts associated with the EHLP. In practice, in-combination assessment is of greatest relevance where an impact pathway to the EHLP exists, but it would be screened out based on its small individual contribution. However, no impacts have been screened out based on a small (i.e. de minimis) contribution of the EHLP. Appropriate Assessments for the impact pathways that were identified as a cause for concern (e.g. recreational pressure, atmospheric pollution) will involve in-combination assessment. For example, survey data that are used to identify recreation patterns consider visitors from all authorities and 'apportion' the contribution of different authorities based on postcode data. Data that inform air quality modelling encompass in-combination traffic flows and allow for an appraisal of different scenarios (contribution of the EHLP alone and in-combination with development plans of other authorities).
- 5.73 It is to be noted that all planning documents will be subject to their own HRA prior to implementation, ensuring that their own impacts regarding recreational pressure, water quality and atmospheric pollution will be adequately mitigated. Therefore, no residual in-combination effects with other strategic development plans will remain. Relevant HRAs will be consulted in the AA of the Reg.19 Preferred Strategy.

6. Conclusions & Recommendations

6.1 This report undertakes a LSEs screening assessment (the first stage of HRA) on the Reg.18 Issues & Priorities document for East Hampshire. The following impact pathways were considered relevant in the context of development in East Hampshire District:

- Recreational pressure
- Water quality
- Water quantity, level and flow
- Atmospheric pollution
- Loss of functionally linked habitat

Recreational Pressure

6.2 LSEs of the EHLP on the Thursley, Hankley & Frensham Commons SPA and Thursley, Ash, Pirbright and Chobham SAC regarding recreational pressure were excluded. This was due to visitor data indicating that very few residents from the authority visiting this heathland complex and there being outdoor spaces with similar habitat characteristics (i.e. the Wealden Heaths complex) much closer to settlements in East Hampshire. Furthermore, LSEs on the East Hampshire Hangers SAC, Butser Hill SAC, Rook Clift SAC and Kingley Vale SAC were also excluded for various reasons (see main body of text).

6.3 LSEs of the EHLP on the Wealden Heaths complex, Thames Basin Heaths SPA and the Solent European sites could not be excluded. All four Housing Options may, to varying extents, allocate housing growth within the core recreational catchments of the heathland sites (5km) and the Solent sites (5.6km). LSEs from additional residential growth within these zones will arise due to a forecast increase in the number of recreational visits to these sensitive areas. An AA of this impact pathway will be required, which will involve a detailed appraisal of visitor data, an assessment of residential allocations in the core catchment areas and an examination or proposed SANG / SAMM solutions. Furthermore, a specific policy in the emerging EHLP is likely to be needed to secure adequate mitigation.

Water Quality

6.4 LSEs of the EHLP on the water quality in the Woolmer Forest SAC and Thursley & Ockley Bogs Ramsar were excluded due to there being no realistic hydrological pathways to these European sites.

6.5 However, all four Housing Options are concluded to result in LSEs on the water quality in the River Itchen SAC and Solent European sites. SSSI component parts in both European sites are in 'Unfavourable' condition due to high nutrient concentrations. LSEs of development associated with the discharge of additional treated sewage effluent in hydrological connectivity with these sites cannot be excluded. Mapping for the River Itchen SAC and Solent European sites show that the hydrological catchments include the north-western and southern parts of EHD respectively. An AA of this impact pathway will be required, which will comprise a detailed assessment of allocations in relation to the catchments and discharge points of relevant WwTWs. For allocations with demonstrable hydrological linkages, nutrient neutrality calculations (phosphorus and / or nitrogen) and, where relevant, mitigation measures (e.g. targeted SuDS) will need to be documented. Furthermore, a specific policy in the emerging EHLP is likely to be needed to secure adequate nutrient neutrality assessment and mitigation.

Water Quantity, Level and Flow

6.6 LSEs of the EHLP on the water quantity, level and flow in the River Itchen SAC, Solent sites and Woolmer Forest SAC were excluded. This was due to the WRMPs of South East Water and

Portsmouth Water highlighting that no additional water abstraction beyond existing consents would occur to meet the potable water demand in the district.

Atmospheric Pollution

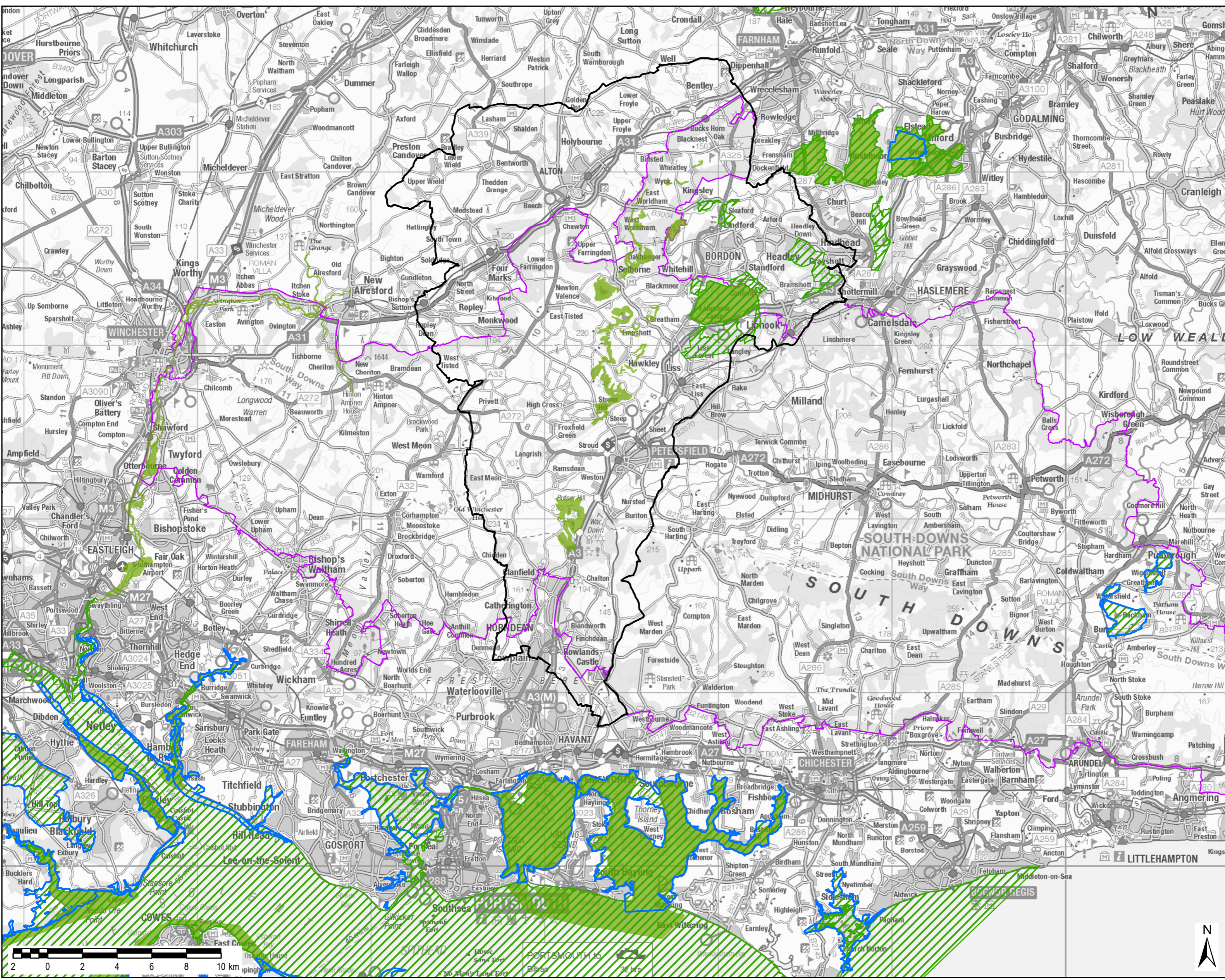
- 6.7 LSEs of the EHLP on the Shortheath Common SAC, Thursley, Hankley & Frensham Commons SPA, and Thursley, Ash, Pirbright & Chobham SAC were excluded for several reasons, such as there being no major commuter routes relevant to East Hampshire within 200m of these sites and sensitive parcels lying beyond the likely commuting distance for East Hampshire residents.
- 6.8 The increase in residential and employment development in EHD will lead to an increase in commuter traffic within the district and to neighbouring authorities. Depending on the route taken by individual residents, this is likely to lead to an increase in flows within 200m of sensitive designated habitats. Based on a preliminary analysis of road infrastructure and existing commuter trends, this HRA has identified that LSEs on the Wealden Heaths complex, East Hampshire Hangers SAC and Butser Hill SAC regarding atmospheric pollution cannot be excluded. The AA for this impact pathway will encompass traffic and air quality modelling to identify effects on air quality, in-combination with other plans and projects. Thames Basin Heaths SPA may be able to be excluded depending on whether specific allocations are made in the predominantly rural north-east of the district around Binsted and Bentley.

Loss of Functionally Linked Habitat

- 6.9 LSEs of the EHLP on the Wealden Heaths Phase II SPA and the Solent SPAs regarding loss of functionally linked habitat were excluded. With regard to the Wealden Heaths Phase II SPA this was due to there being no significant parcels of non-designated conifer plantations and heathland that may be utilised by breeding nightjar and woodlark. Furthermore, the district lies beyond the maximum foraging / roosting distances for Solent waders and waterfowl. The SWBGS shows no mapped functionally linked habitat parcels near East Hampshire.

Appendix A Map of European sites

File Name: \\na.aecomnet.com\is\ENEA\Basingstoke\UKBAS\PEP\LW001\4400 - Management Services\604 - Information Systems\60572250 - East Hampshire HRA\02_Maps\Figure 1 - Map of Site Allocations and European Sites.mxd



THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

LEGEND

- East Hampshire District Council
- Ramsar
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- South Downs National Park

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Purpose of Issue: **FINAL**

Client: **EAST HAMPSHIRE DISTRICT COUNCIL**

Project Title: **EAST HAMPSHIRE HRA**

Drawing Title: **EUROPEAN SITES WITHIN THE SCOPE OF EAST HAMPSHIRE'S REGULATION 18 LOCAL PLAN**

Drawn TD	Checked JW	Approved GW	Date 10/11/2022
AECOM Internal Project No. 60572250		Scale @ A3 1:200,000	

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Drawing Number: **FIGURE 1**

Appendix B Screening for Likely Significant Effects (LSEs)

Figure 5: Likely Significant Effects (LSEs) screening for the four Housing Distribution Options included in the Reg.18 East Hampshire Local Plan. Where the Screening Outcome column is shaded orange, LSEs of the Housing Option on European sites cannot be excluded and an Appropriate Assessment would be required if the option was taken forward¹⁰⁹. Where the Screening Outcome column is shaded green, the Housing Option will not lead to LSEs on European sites and no AA would be required.

Housing Distribution Option	Description	Likely Significant Effects (LSEs) Screening Outcome.
Option 1: Disperse new development to a wider range of settlements	This option distributes new housing to a wide range of settlements, including some of the smaller villages in the north-western and eastern part of EHD. It is based on the concept of living locally and would promote active transport modes such as walking and cycling.	<p>LSEs of this Housing Option on European sites cannot be excluded.</p> <p>Although housing growth will be dispersed across the district, some residential allocations would continue to be delivered within the core recreational catchment of the Wealden Heaths complex (including the Wealden Heaths Phase II SPA, Woolmer Forest SAC and Shortheath Common SAC) and the Solent (including the Chichester and Langstone Harbours SPA / Ramsar, Solent Maritime SAC and Portsmouth Water SPA / Ramsar). New residents within these zones will make a significant contribution to recreational footfall within these sites, resulting in LSEs.</p> <p>Notwithstanding this, delivering a more dispersed housing growth across EHDC's planning area would likely result in lower recreational pressure impacts compared to Options 2 and 3. Residential allocations in the northern and north-western part of the authority would fall outside the 5km catchment zone (i.e. not contributing to the overall recreational burden) and, therefore, be exempt from mitigation requirements.</p> <p>Nutrient neutrality is a key issue in the north-western (catchment of the River Itchen SAC) and southern parts (catchment of the Solent European sites) of EHD. Option 1 poses no material benefit to the water quality in European sites, as growth in the smaller villages in the north-west part of the district would result in additional discharge of treated sewage effluent to the catchment of the River Itchen SAC.</p> <p>Overall, Housing Option 1 is screened in for AA in relation to the following impact pathways:</p> <ul style="list-style-type: none"> • Recreational pressure (Wealden Heaths complex, Thames Basin Heaths SPA, the Solent area) • Water quality (River Itchen SAC, the Solent area)

¹⁰⁹ Due to the broad descriptive nature of the Housing Options (with no quantification or explicit distribution of growth), no clear differences regarding impact pathways can be identified at this stage. However, qualitative statements on potential differences in implications for European sites are made wherever possible.

		<ul style="list-style-type: none"> • Atmospheric pollution (Wealden Heaths complex, East Hampshire Hangers SAC and Butser Hill SAC)
<p>Option 2: Concentrate new development in the largest settlements</p>	<p>This option concentrates the highest portion of new housing development in the ten largest settlements of the planning area, including Alton, Whitehill & Bordon, Liphook, Grayshott, Horndean, Clanfield and Rowlands Castle. Housing growth would be delivered where facilities and services are most readily available, reducing the need to travel.</p>	<p>LSEs of this Housing Option on European sites cannot be excluded.</p> <p>Some of the largest existing settlements lie fully or partially within the core recreational catchments of the Wealden Heaths Phase II complex and the Solent European sites, including Whitehill & Bordon, Liphook, Grayshott, Alton, Clanfield and Horndean. Delivering a large proportion of growth in these settlements would increase the overall mitigation requirements associated with the emerging Local Plan. It is unlikely that sufficient housing growth could be delivered in large settlements outside the applicable catchment zones.</p> <p>Nutrient neutrality is a key issue in the north-western (catchment of the River Itchen SAC) and southern parts (catchment of the Solent European sites) of EHD. Option 2 would allocate a significant portion of growth to conurbations outside the nutrient neutrality catchments (e.g. Whitehill & Bordon, Liphook, Grayshott and Alton), growth in the southern part of EHD falls within the Solent catchment, requiring nitrogen neutrality.</p> <p>Overall, Housing Option 2 is screened in for AA in relation to the following impact pathways:</p> <ul style="list-style-type: none"> • Recreational pressure (Wealden Heaths complex, Thames Basin Heaths SPA, the Solent area) • Water quality (River Itchen SAC, the Solent area) • Atmospheric pollution (Wealden Heaths complex, East Hampshire Hangers SAC and Butser Hill SAC)
<p>Option 3: Distribute new development by population</p>	<p>This option would focus housing growth on areas where the current population levels are the highest. Therefore, the largest portion of development (approx. 39%) would occur in the north-east of the district. The main benefit of this option is to place new homes in communities that are best equipped to accommodate an increase in population.</p>	<p>LSEs of this Housing Option on European sites cannot be excluded.</p> <p>There is considerable overlap in HRA implications with Option 2, since population levels will be highest in the largest settlements. As highlighted above, some of the largest existing settlements lie fully or partially within the identified core recreational catchments for the Wealden Heaths Phase II complex and the wider Solent area, including Whitehill & Bordon, Liphook, Grayshott, Alton, Clanfield and Horndean. Delivering a large proportion of growth in these settlements would increase the overall mitigation requirements associated with the emerging Local Plan. It is unlikely that sufficient housing growth could be delivered in the North West and South sections of the planning area, which lie outside both recreational catchment zones.</p> <p>Nutrient neutrality is a key issue in the north-western (catchment of the River Itchen SAC) and southern parts (catchment of the Solent European sites) of EHD. While Option 3 would allocate a significant portion of growth</p>

to conurbations outside the nutrient neutrality catchments (e.g. Whitehill & Bordon, Liphook, Grayshott and Alton), growth in the southern part of EHD falls within the Solent catchment, requiring nitrogen neutrality.

Overall, Housing Option 3 is screened in for AA in relation to the following impact pathways:

- Recreational pressure (Wealden Heaths complex, Thames Basin Heaths SPA, the Solent area)
- Water quality (River Itchen SAC, the Solent area)
- Atmospheric pollution (Wealden Heaths complex, East Hampshire Hangers SAC and Butser Hill SAC)

Option 4: Concentrate development in a new settlement

This option would deliver a new settlement of over 1,500 dwellings accompanied by community facilities, employment opportunities and open space (following the principles of a 'garden village'). In 2019 EHDC identified a range of large development sites with the potential to deliver 600+ new homes, some of which remain options for the emerging Local Plan. One of the advantages of delivering a new settlement is that it could be accompanied by phased delivery of services and facilities.

LSEs of this Housing Option on European sites cannot be excluded.

A location for this potential new settlement has not been identified and implications regarding recreational pressure in the Wealden Heaths complex or Solent area are uncertain. If the garden village were to be delivered in the north-western or southern part of the district, outside both core recreational catchment zones, LSEs could be excluded and no mitigation measures would be required for this new settlement. However, given a site for this potential settlement has not been identified, LSEs cannot be excluded at this time. Furthermore, it is to be noted that this Housing Option alone will not meet the identified housing need for EHD. Therefore, any preferred development option taken forward in the Local Plan would involve at least one of Options 1-3, such that it would not be possible to avoid AA regarding recreational pressure.

Nutrient neutrality is a key issue in the north-western (catchment of the River Itchen SAC) and southern parts (catchment of the Solent European sites) of EHD. While a potential new settlement could be situated outside the two relevant hydrological catchments (thus negating a need for nutrient neutrality), this growth option would not supply sufficient housing to meet the identified need. Therefore, in practice, LSEs of Option 4 regarding water quality cannot be excluded.

Overall, Housing Option 4 is screened in for AA in relation to the following impact pathways:

- Recreational pressure (Wealden Heaths complex, Thames Basin Heaths SPA, the Solent area)
- Water quality (River Itchen SAC, the Solent area)
- Atmospheric pollution (Wealden Heaths complex, East Hampshire Hangers SAC and Butser Hill SAC)

